CURRICULUM VITA

CONTACT INFORMATION

NAME: Todd M. Swannack

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EDUCATION

2007	Ph.D.	Wildlife and Fisheries Sciences	Texas A & M University	College Station, TX
2000	M.S.	Biology	Texas State University	San Marcos, TX
1995	B.A.	Biology	Texas A & M University	College Station, TX

LANGUAGES

English (native), Spanish (intermediate)

SOFTWARE PACKAGES

Netlogo, R, Python, STELLA, VB.NET

PROFESSIONAL APPOINTMENTS

Aug. 2016-pres.	 Senior Research Biologist (DBV), Wetlands and Coastal Ecology Branch, Environmental Laboratory, U.S. Army Engineer Research and Development Center Vicksburg, MS. Co-lead, Integrated Ecological Modeling for US Army ERDC Environmental Resource Management focus area lead for Dredging Operations and Research (DOER) Program (manage over \$2.5M annually) 		
Sept. 2013-pres	Program Faculty, Department of Biology, Texas State University at San Marcos.		
Jun. 2010- Aug. 2016	 Research Biologist (DBIV), Wetlands and Coastal Ecology Branch, Environmental Laboratory, U.S. Army Engineer Research and Development Center, Vicksburg, MS. Integrated Ecological Modeling Team Lead (generate over \$1.5M annually for research program focused on ecosystem modeling) Environmental Resource Management focus area lead for Dredging Operations and Research (DOER) Program (manage over \$1.5M annually for DOER). 		
2009-2010	Visiting Scientist, Veterinary Pathobiology, College of Veterinary Medicine, Texas A&M University, College Station, Texas (Collaborators: Drs. Jim Derr and Natalie Halbert).		

2009-2010	Lecturer, Department of Wildlife and Fisheries Sciences, Texas A&M University College Station, Texas (Supervisor: Dr. Thomas E. Lacher, Jr.).
Jan. 2008-2013	Adjunct Graduate Faculty, Department of Biology, Texas State University at San Marcos. San Marcos, Texas.
2007-2009	Post-doctoral Research Associate, Department of Wildlife and Fisheries Sciences, Texas A&M University (Supervisors: Drs. Doug Slack, Bill Grant and Steve Davis).
2004-2007	Teaching Assistant, Texas A&M University, College Station, Texas (Supervisor: Dr. Bill Grant).
Summer 2005	Research Associate: National Park Service, Southern Plains Network, Johnson City, Texas. (Supervisor: Dr. Dusty Perkins).
2001-2004	Project Manager/Grant Specialist: Ecology and conservation of the endangered Houston toad (<i>Bufo houstonensis</i>), Griffith League Ranch, Bastrop Co., Texas (Supervisor: Dr. Michael R. J. Forstner).
Summer 1999	Researcher: Wetlands Restoration project, Department of Biology, Texas State University, San Marcos, Texas (Supervisor: Dr. Francis L. Rose).

TEACHING EXPERIENCE

Graduate-level:

Ecology for Gamers: teaching millennials how to model using game theory (Seminar) Wetland Ecology Ecological Modeling Systems Analysis and Simulation in Ecology and Natural Resource Management Critical Thinking and Technical Writing (Directed studies, 3 hours)

Undergraduate-level:

Wetland Ecosystem Management Introduction to Research (Directed studies, 3 hours),

Continuing Education

Fundamentals of Wetland Ecology (Lead instructor, USACE-PROSPECT Series, 36 hours) Fundamentals of Environmental Modeling (Lead instructor, USACE-CE courses, 16 hours)

PROJECTS

2021-2024	Continued improvement of USACE ecological modeling practices (T. Swannack & S. K. Mckay)
2020-21	Development of next-generation ecological models to better predict ecological futures (T. Swannack)
2018-2020	Using gravity models to simulate invasive species dispersal over large spatial scale. Project for US Bureau of Reclamation (T. Swannack , C. C. Carrillo, S. Altman)
2018-2020	Informing model selection for ecosystem restoration (T. Swannack)

2017-2020	Improving Ecological Modeling Practices for the US Army Corps of Engineers (T. Swannack and K. McKay)
2016-2017	<i>Rapid risk assessment modeling for invasive species</i> (T. Swannack and Denise Hosler (USBR)).
2016-2018	Engineering and ecological design guidance for incorporating natural and nature-based features into engineered structures. (T. Swannack and C. Piercy)
2016-2019	Development of community based models for imperiled freshwater mussels (T. Swannack , M. Reif, and C. Piercy, M. Kjelland). US Army Ecosystem Restoration and Research Program)
2013-2016	<i>Bio-inspired multi-sensor autonomous logic model to provide dynamic survivability strategies from cues in theatre.</i> (K. Gust, A. Kennedy, and T. Swannack. US Army Basic Research (6.1) Program).
2013-2016	Assessing risk of barrier islands to over-wash and storm surge. (C. Piercy, J. McNinch, and T. Swannack. US Army Ecosystem Restoration and Research Program).
2013-2016	Development of rapid assessment models for critical species for ecosystem restoration (T. Swannack & M. Reif. US Army Ecosystem Restoration and Research Program)
2013-2017	Development of predictive ecological models for San Marcos and Comal River systems. Total project funds exceed \$1M from Edwards Aquifer Authority; (Co-PI: G. Ward, T. Swannack , W. Grant, T. Bonner, T. Hardy, R. Doyle)
2012-2016	<i>Enhanced modeling tools for environmental window applications</i> . (T. Lackey, T. Swannack and D. Smith, US Army Dredging Operations and Environmental Research).
2012-2015	<i>Landscape change for process-driven ecological modeling.</i> (M. Reif and T. Swannack, U.S. Army Navigation Systems Program).
2012-2015	Predicting ecological invasion and assessing risks: integrating statistical, analytical, and empirical approaches with risk assessment via spatially- explicit simulation. (T. Swannack, B. Suedel, C. Piercy and M. Kjelland, US Army Aquatic Nuisance Species Research Program).
2012-2014	<i>Ecological habitat model for the introduced seagrass</i> Zostera japonica <i>on the Pacific Coast of North America.</i> (D. Shafer and T. Swannack , U.S. Army Aquatic Plant Control Research Program)
2012	Role of population modeling in army population goals and conservation approaches. (R. Fischer and T. Swannack . Received from US Army Environmental Division)
2011-2012	Determining the benefits of oyster sanctuaries in the Great Wicomico and Rappahannock Rivers, Chesapeake Bay. (T. Swannack & C. Piercy. Received from Norfolk District, U.S. Army Corps of Engineers)
2011-2013	Modeling oyster restoration efforts across scales. (T. Swannack and M. Reif. Received from US Army Ecosystem Management and Restoration Research Program)

2011-2012	Development of ecological modeling guide for USACE community. (sole-PI. Received from Ecosystem Management and Restoration Research Program, U.S. Army Corps of Engineers)
2010-2011	<i>Identifications of installations and methods that promote oyster restoration.</i> (T. Swannack and M. Reif. Received from Office of the Assistant Chief of Staff for Installation Management, Department of Defense)
2010-2013	<i>The next generation ecological modeling system.</i> (T. Swannack , J. Westervelt., and J. Hensley Received from Center Directed Research Program, Department of Defense)
2010	Modeling hydrologic connectivity in salt marsh ecosystems. (sole-PI, Capital Improvement Project, Environmental Laboratory, Engineer Research and Development Center).
2009-2010	Modeling population genetics of bison at Wind Cave National Park. (National Parks Service through Veterinary Pathobiology, Texas A&M University).
2009	<i>Systems approach to socio-economic modeling</i> . (lead PI, National Parks Service, received with W. E. Grant & D. M. Hall).
2008	<i>NSF Pan American Advanced Study Institute participant funding</i> (through University of Idaho).
2006	Student Travel Grant. (Department of Wildlife and Fisheries Sciences, Texas A&M).
2004	Texas Academy of Science Student Research Award.

AWARDS

2021	US Army ERDC	Innovation in Research and Development
2021	US Army ERDC	Achievement in Technology Transfer to Federal Agencies
2021	US Army ERDC	Research and Development Achievement
2020	US Army Corps of Engineers	Innovation of the Year (ERDC-SEIR)
2019	US Army ERDC	Outstanding Team Effort
2014	US Army ERDC	Outstanding Team Effort
2014	US Army ERDC	Research and Development Achievement
2013	Ecological Modelling, Elsevier	Certificate of Reviewing Excellence
2011	Dept. of Army	Achievement Medal for Civilian Service,
2010	Ecological Modelling, Elsevier	Outstanding reviewer of the year

PUBLICATIONS

94 total (1 book, 1 edited book (section editor), 39 peer-reviewed articles, 11 book sections, 42 technical reports). Underline indicates student author.

Book

- (2) Encyclopedia of Ecology, 2nd ed. 2018. Section Editor: Ecological Data Analysis and Modeling, B. Fath, Editor-in-Chief, Oxford. Elsevier
- (1) Grant, W. E. and **T. M. Swannack**. 2008. *Ecological Modeling: a commonsense approach to theory and practice*. Blackwell Publishing. Oxford. 155 pp.

Peer-reviewed Manuscripts (39)

- (39) Charbonneau, B. R., A. Duarte, B. Johnson, T. M. Swannack, and C. D. Piercy. 2022. DOONIES: A process-based ecogeomorphological functional community model for coastal dune vegetation and landscape dynamics. *Geomorphology* 398:108037. <u>https://doi.org/10.1016/j.geomorph.2021.108037</u>
- (38) Rowland, M. A., T. M. Swannack, M. L. Mayo, M. Parno, M. Farthing, I. Dettwiller, G. George, W. England, M. Reif, J. Cegan, B. Trump, I. Linkov, B. Lafferty, and T. Bridges. 2021. COVID-19 infection data encode a dynamic reproduction number in response to policy decisions with secondary wave implications. *Scientific Reports* 11:10875. <u>https://doi.org/10.1038/s41598-021-90227-1</u>
- (37) Robertson, J., T. M. Swannack, M. McGarrity, and A. Schwalb. 2020. Zebra mussel invasion of Texas lakes: estimating dispersal potential via boats. Biological Invasions. <u>https://doi.org/10.1007/s10530-020-02333-2</u>
- (36) Krause, K.P., Chien, H., Ficklin, D.L., Hall, D.M., Schuster, G.A., Swannack, T.M., Taylor, C.A. and Knouft, J.H., 2019. Streamflow regimes and geologic conditions are more important than water temperature when projecting future crayfish distributions. *Climatic Change*, 154(1-2), pp.107-123. <u>https://doi.org/10.1007/s10584-019-02435-4</u>
- (35) Gust, K.A., A. J. Kennedy, J.G. Laird, M.S. Wilbanks, N.D. Barker, X. Guan, N. L. Melby, L. D. Burgoon, M. E. Kjelland and T. M. Swannack. 2019. Different as night and day: behavioral and life history responses to varied photoperiods in daphnia magna. *Molecular Ecology* 00: 1-17 <u>https://doi.org/10.1111/mec.15230</u>
- (34) Herman, B., S. K. McKay, S. Altman, N. Richards, M. Reif, C. Piercy and T. M. Swannack. 2019. Unpacking the black box: demystifying ecological models through interactive workshops and hands-on learning. *Frontiers in Environmental Science*. 7 <u>https://doi.org/10.3389/fenvs.2019.00122</u>
- (33) Kjelland, M. E., R. B. Cathcart and T. M. Swannack. 2019. In silico macro-imagineering of Salton Sea alternative futures under climate uncertainty and water transfer considerations. Environment Systems and Decisions. <u>https://doi.org/10.1007/s10669-019-09719-1</u>
- (32) Swannack, T. M., W.E. Grant, J. Wozniak and S. E. Davis III. 2019. A tool for rapid assessment of hydrological connectivity patterns in Texas coastal wetlands: linkages between tidal creeks and coastal ponds. *Texas Water Journal* 10 (1): 46-59. <u>https://doi.org/10.21423/twj.v10i1.7073</u>
- (31) <u>Olson, J., J. J. Roberston</u>, T. M. Swannack, R. F. McMahon, W. H. Nowlin, and A. N. Schwalb. 2018. Dispersal of Zebra Mussels (*Dreissena polymorpha*) downstream of an invaded reservoir. *Aquatic Invasions*. <u>http://dx.doi.org/10.3391/ai.2018.13.2.02</u>

- (30) Kozarek, J. L., M. Honzo, M. E. Kjelland, C. D. Piercy, and T. M. Swannack. 2018. Effects of turbulence exposure on zebra mussel (*Dreissena polymorpha*) larval survival. Aquatic Sciences (2018) 80:12. <u>https://doi.org/10.1007/s00027-017-0563-y</u>
- (29) Srinivasan, M., T. M. Swannack, W. E. Grant, B. Wursig, and J. Rajan. 2018. To feed or not to feed? Bioenergetic impacts of fear-driven behaviours in lactating dolphins. *Ecology and Evolution*. Ecology and Evolution. 2018 (8):1384–1398. <u>https://doi.org/10.1002/ece3.3732</u>
- (28) Kjelland, M.E. and T. M. Swannack. 2018. Salton Sea days of future past: Modeling impacts of alternative water transfer scenarios on fish and bird population dynamics. *Ecological Informatics* 43: 124-145. <u>https://doi.org/10.1016/j.ecoinf.2017.06.001</u>
- (27) Kjelland, M.E., C. D. Piercy, and T. M. Swannack. 2017. Beyond graphs and tables: enhancing explanatory power of complex environmental simulations through 3D printed model output. *Ecological Modelling* 360: 244-251. <u>https://doi.org/10.1016/j.ecolmodel.2017.07.005</u>
- (26) Dunkin, L., M. Reif, S. Altman, and T. Swannack. 2016. A spatially explicit, multi-criteria decision support model for loggerhead sea turtle nesting habitat suitability: A remote sensing-based approach. *Remote Sensing* 8: 573. <u>https://doi.org/10.3390/rs8070573</u>
- (25) Duarte, A., J. S. Hatfield, T. M. Swannack, M. R. J. Forstner, M. C. Green, and F. W. Weckerly. 2016. Simulating range-wide population and breeding habitat dynamics for an endangered woodland warbler in the face of uncertainty. *Ecological Modelling* 320: 52-61. <u>https://doi.org/10.1016/j.ecolmodel.2015.09.018</u>
- (24) Shafer, D., T. M. Swannack, C. Saltus, J. E. Kaldy, and A. Davis. 2016. Development and validation of a habitat suitability model for the non-indigenous seagrass *Zostera japonica* in North America. *Management of Biological Invasions:* 7(2):141-155. <u>http://dx.doi.org/10.3391/mbi.2016.7.2.02</u>
- (23) Kjelland, M. E., C. Woodley, T. M. Swannack, D. Smith. 2015. A review of the potential effects of suspended sediment on fishes: potential dredging-related physiological, behavioral, and transgenerational implications. *Environment, Systems and Decisions* 35: 334-350. <u>https://doi.org/10.1007/s10669-015-9557-2</u>
- (22) Hall, D. M., T. M. Swannack, E. D. Lazarus, M. J. Peterson, S. J. Gilbertz, C. C. Horton, and T. R. Peterson. 2015. Integrating social power and political influence into models of social–ecological systems. *European Journal of Sustainable Development* 4(2): 61-76. <u>https://doi.org/10.14207/ejsd.2015.v4n2p61</u>
- (21) Brown, D., T. M. Swannack, and M. R. J. Forstner. 2015. Using calling activity to predict calling activity: a case study with the endangered Houston toad (*Bufo [Anaxyrus] houstonensis*). *The Journal of North American Herpetology* 2015 (1): 12-16. https://doi.org/10.17161/jnah.vi1.11901
- (20) Kjelland, M. E., C. D. Piercy, T. Lackey, and T. M. Swannack. 2015. An integrated modeling approach for elucidating the effects of different management strategies on Chesapeake Bay oyster metapopulation dynamics. *Ecological Modelling* 308: 45-62. <u>https://doi.org/10.1016/j.ecolmodel.2015.03.012</u>
- (19) Swannack, T. M., M. K. Reif, and T. M. Soniat. 2014. A robust, spatially-explicit model for identifying oyster restoration sites: case studies on the Atlantic and Gulf Coasts. *Journal of Shellfish Research* 33(2):395-408. <u>https://doi.org/10.2983/035.033.0208</u>
- (18) Kjelland, M. E., T. M. Swannack, and W. E. Grant. 2014. A system dynamics approach to modeling future climate scenarios: quantifying and projecting patterns of evapotranspiration and precipitation in the Salton Sea Watershed. *Advances in Meteorology*, article ID 135012 <u>http://dx.doi.org/10.1155/2014/135012</u>

- (17) Hall, D. M., E. D. Lazarus, and T. M. Swannack. 2014. Strategies for communicating systems models. *Environmental Modeling and Software* 55: 70-76. <u>https://doi.org/10.1016/j.envsoft.2014.01.007</u>
- (16) <u>Vandewege, M. W.</u>, T. M. Swannack, K. L. Greuter, D. Brown, M. R. J. Forstner. 2013. Breeding site fidelity and terrestrial movement of an endangered amphibian, the Houston toad (*Bufo houstonensis*). *Herpetological Conservation and Biology* 8(2): 435-446.
- (15) <u>Brown, D.</u>, T. M. Swannack, and M. R. J. Forstner. 2013. Predictive models for calling and movement activity of the endangered Houston toad (*Bufo houstonensis*). *American Midland Naturalist* (169): 303–321. <u>https://doi.org/10.1674/0003-0031-169.2.303</u>
- (14) Wozniak, J. R., T. M. Swannack, R. Butzler, <u>C. Llewellyn</u> and S. E. Davis, III. 2012. River inflow, estuarine salinity, and Carolina Wolfberry fruit abundance: linking abiotic drivers to Whooping Crane food. *Journal of Coastal Conservation* 16(3): 345-354. <u>https://doi.org/10.1007/s11852-012-0205-4</u>
- (13) Wang, H.-H., W. E. Grant, J. Gan, W. E. Rogers, T. M. Swannack, T. E. Koralewski, J. H. Miller and J. W. Taylor. 2012. Integrating spread dynamics and economics of timber production to manage Chinese Tallow invasions in southern U.S. forestlands. *PLoS ONE*, 7:e33877. https://doi.org/10.1371/journal.pone.0033877
- (12) <u>Brown, D. J.</u>, **T. M. Swannack**, J. R. Dixon, and M. R. J. Forstner. 2011^{*}. Herpetofaunal survey of the Griffith League Ranch in the Lost Pines ecoregion of Texas. *Texas Journal of Science*. 63(2): 101-112. *Published August 2014.
- (11) Wang, H. H., W. E. Grant, T. M. Swannack, W. E. Rogers, T. E. Koralewski, J. H. Miller, and J. W. Taylor, Jr. 2011. Predicted range expansion of Chinese tallow tree (*Triadica sebifera*) in forestlands of the southern United States. *Diversity and Distributions* 17: 552-565. https://doi.org/10.1111/j.1472-4642.2011.00760.x
- (10) Lenz, R. W., M. E. Kjelland, K. VonderHaar, T. M. Swannack, and J. Moreno. 2011. Comparison of bovine seminal quality assessments using different viewing chambers with a computer-assisted semen analyzer (CASA). *Journal of Animal Science* 89: 383-388. <u>https://doi.org/10.2527/jas.2010-3056</u>
- (9) <u>Srinivasan, M., W. E. Grant, T. M. Swannack and J. Rajan. 2010. Behavioral games between a clever predator and clever prey: an individual based model of killer whales and dusky dolphins. *Ecological Modelling* 210: 2687-2698. <u>https://doi.org/10.1016/j.ecolmodel.2010.07.010</u></u>
- (8) <u>Schmidt, P. M.</u>, T. M. Swannack, R. R. Lopez and M. R. Slater. 2009. Evaluation of euthanasia and trap/neuter/release (TNR) programs in managing free-roaming cat populations. *Wildlife Research* 36: 117-125. <u>https://doi.org/10.1071/WR08018</u>
- (7) Swannack, T. M., W. E. Grant, and M. R. J. Forstner. 2009. Projecting population trends of endangered amphibian populations in the face of parametric uncertainty: a pattern-oriented approach. *Ecological Modelling* 220: 148-159. <u>https://doi.org/10.1016/j.ecolmodel.2008.09.006</u>
- (6) Swannack, T. M., W. E. Grant and B. D. Fath. 2008. On the use of multi-species NK models to explore ecosystem development. *Ecological Modelling* 218: 367-374. <u>https://doi.org/10.1016/j.ecolmodel.2008.07.022</u>
- (5) Swannack, T. M. and M. R. J. Forstner. 2007. A possible cause for the disparity in the sex ratio of the endangered Houston toad. *Southwestern Naturalist* 52(3): 386-392. <u>https://doi.org/10.1894/0038-4909(2007)52[386:PCFTSD]2.0.CO;2</u>

- (4) <u>Jackson, J. T</u>., F. W. Weckerly, T. M. Swannack, and M. R. J. Forstner. 2006. Inferring absence of Houston toads given imperfect detection probabilities. *Journal of Wildlife Management* 70(5):1461-1463. <u>https://doi.org/10.2193/0022-541X(2006)70[1461:IAOHTG]2.0.CO;2</u>
- (3) Swannack, T. M., Jackson, J. T., and M. R. J. Forstner. 2006. Natural History Note. *Bufo houstonensis* Juvenile Dispersal. *Herpetological Review* 37(2): 199-200.
- (2) Swannack, T. M. and M. R. J. Forstner. 2003. Natural History Note. *Micrurus fulvius*. Diet. *Herpetological Review* 34(4): 376.
- Swannack, T. M. and F. L. Rose. 2003. Seasonal and ontogenetic changes in the sex ratio of a population of stinkpots (Kinosternidae: *Sternotherus odoratus*). *Southwestern Naturalist* 48(4): 543-549. <u>https://doi.org/10.1894/0038-4909(2003)048<0543:SAOCIT>2.0.CO;2</u>

Manuscripts in review

Book sections (11)

- (11) van Zanten, B., K. Arkema, T. Swannack, R. Griffin, S. Narayan, K. Penn, B. G. Reguero, G. Samonte, S. Scyphers, E. Codner-Smith, S. IJff, M. Kress, and M. Lemay. 2021. "Chapter 6: Benefits and Costs of NNBF." In International Guidelines on Natural and Nature-Based Features for Flood Risk Management. Edited by T. S. Bridges, J. K. King, J. D. Simm, M. W. Beck, G. Collins, Q. Lodder, and R. K. Mohan. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- (10) **Swannack, T. M.** 2018. Systems Ecology, *In: Encyclopedia of Ecology*, 2nd. Ed. B.D. Fath, Editor-in-Chief, Oxford, Elsevier
- (9) **Swannack, T. M.** 2018. Growth Models *In: Encyclopedia of Ecology*, 2nd. Ed. B.D. Fath, Editorin-Chief, Oxford, Elsevier
- (8) Jørgensen, S. and T.M. Swannack. 2018. Model Types: Overview, In: Encyclopedia of Ecology, 2nd. Ed. B.D. Fath, Editor-in-Chief, Oxford, Elsevier
- (7) Swannack, T. M. 2008. Growth Models. *In*: Sven Erik Jørgensen and Brian D. Fath (Editor-in-Chief), Population Dynamics. Vol. [3] of Encyclopedia of Ecology, 5 vols. pp. 1799-1805. Oxford: Elsevier.
- (6) Swannack, T. M. and W. E. Grant. 2008. Systems Ecology. *In*: Sven Erik Jørgensen and Brian D. Fath (Editor-in-Chief), Systems Ecology. Vol. [4] of Encyclopedia of Ecology, 5 vols. pp. 3477-3481. Oxford: Elsevier.
- (5) **Swannack, T. M.** 2008. Why it matters feature: Biology in the Wild. *In: Holt Biology* ©2008 by Robert DeSalle and Michael Heithaus. Holt, Reinhart, and Winston. p. 18.
- (4) **Swannack, T. M.** 2008. Why it matters feature: Girls, Girls, Girls [Parthenogenesis]. *In: Holt Biology* ©2008 by Robert DeSalle and Michael Heithaus. Holt, Reinhart, and Winston. p. 255.
- (3) **Swannack, T. M.** 2008. Why it matters feature: Supercroc. *In: Holt Biology* ©2008 by Robert DeSalle and Michael Heithaus. Holt, Reinhart, and Winston. p. 645.
- (2) **Swannack, T. M.** 2008. Why it matters feature: A New Species[Hobbit people] . *In: Holt Biology* ©2008 by Robert DeSalle and Michael Heithaus. Holt, Reinhart, and Winston. p. 803.
- (1) **Swannack, T. M.** 2008. Why it matters feature: Seeing Double [Twins]. *In: Holt Biology* ©2008 by Robert DeSalle and Michael Heithaus. Holt, Reinhart, and Winston. p. 1008.

Technical Reports and other publications (42)

- (42) Saltus, C., S. K. Mckay, and T. M. Swannack. 2021. Geospatial suitability indices toolbox (GSI Toolbox): User's guide. <u>http://dx.doi.org/10.21079/11681/41881</u>
- (41) Piercy, C. D., S. Altman, T. M. Swannack, C. C. Carrillo, E. Russ and J. Winkleman. 2021. Expert elicitation workshop for planning wetland and reef natural and nature-based features (NNBF) futures. ERDC SR-21-4. <u>http://dx.doi.org/10.21079/11681/41665</u>
- (40) Herman, B., T. Slack and T.M. Swannack. 2021. Developing conceptual models for assessing benefits and impacts of USACE activities on freshwater mussel communities. ERDC/TN EMRRP-EBA-25 <u>http://dx.doi.org/10.21079/11681/42161</u>
- Berkowitz, J. F., S. Altman, K. Reine, T. Gerald, C. D. Piercy, T. M. Swannack, W. T. Slack, K. D. Philley, N. R. Beane, C. L. Saltus, M. T. Balazik, M. E. Kjelland, T. A. Keys, K. J. Kilgore., S. C. Kim, D. Wilbur, and C. J. Trahan. 2020. Evaluation of the Potential Impacts of the Proposed Mobile Harbor Navigation Channel Expansion on the Aquatic Resources of Mobile Bay, Alabama. ERDC-TR-20-3. <u>http://dx.doi.org/10.21079/11681/36035</u>
- (38) Herman, B. D., T. M. Swannack, N. S. Richards, N. C. Gleason, and S. Altman. 2020. Development of a general anadromous fish habitat model, Phase two: initial model quantification. ERDC/EL TR 20-5. <u>http://dx.doi.org/10.21079/11681/38249</u>
- (37) Carrillo, C. C., S. Altman, T.M. Swannack, J. Keele, S. Pucherrelli, Y. J. Passamaneck and A. C. Murphy. 2020. Using constrained gravity models at large spatial scale to simulate invasive species colonization. US Bureau of Reclamation Report. ST-2020-8110-01
- (36) Hernández-Abrams, D., C. C. Carrillo and **T.M. Swannack.** 2020. In FINAL Management Review Scenario analyses in ecological modeling and ecosystem management. EMRRP TN
- (35) Carrillo, C. C., S. K Mckay and T. M. Swannack. 2020. Interactive toolkit for applied modeling. In FINAL Management Review. EMRRP TN
- (34) Altman, S. D. Harris, S.K. Mckay, M. E. Kjelland and **T. M. Swannack**. *In management review*. Ecological benefits and costs of oyster reef connectivity. EMRRP.
- (33) Mckay, S. K., N. Richards, and T. M. Swannack. *In management review*: Ecological model development: Evaluation of system quality. EMRRP.
- (32) McKay, S. K., N. Richards and T. M. Swannack. 2019. Aligning ecological model development with restoration project planning. ERDC EMRRP-SR-89
- (31) Carrillo, C. Herman, B., M. Reif, N. Richards, and **T.M. Swannack** 2019. Interactive toolkit for applied modeling. Submitted for ELMRS review.
- (30) Herman, B., J. Zylka and T. M. Swannack. 2019. Review of Threatened and Endangered plant species of importance to the US Army Corps of Engineers. Submitted for ELRMS review.
- (29) Sperry, J. W. Wall, and T. M. Swannack. 2015. Evaluation of Suitable Population and Habitat Suitability Models for Endangered Avian Species Populations on Fort Hood, Texas. ERDC/CERL SR-15-3 (Limited distribution)
- (28) Dunkin, L. M., M. K. Reif, T. M. Swannack, and J. M. Gerhardt-Smith. 2015. Conceptual Model Development for Sea Turtle Nesting Habitat: Support for USACE Navigation Projects. ERDC-DOER-TN-R23.
- (27) Swannack, T., J. Westervelt, J. Hensley, R. Kennedy. 2014. Ecological Modeling System: Conceptual Development and Design Specification. Center Directed Research Program, US Army Engineer Research and Development Center, Vicksburg, MS, USA. ERDC TR-14-11.

- (26) Altman, S., Reif, M. K., and T. M. Swannack. 2014. Linking critical ecological processes to landscape pattern: Implications for USACE planning and operations. Coastal and Hydraulics Engineering Technical Note ERDC/CHL CHETN-V-23. <u>http://hdl.handle.net/11681/2037</u>
- (25) Reif, M. K. and T. M. Swannack. 2014. Development of Landscape Metrics to Support Process-Driven Ecological Modeling. ERDC Environmental Laboratory Technical Report. ERDC-EL TR14-6. Vicksburg, MS. <u>http://acwc.sdp.sirsi.net/client/search/asset/1034186</u>
- (24) Swannack, T. M., J. C. Fischenich and D. J. Tazik. 2012. Ecological modeling guide for ecosystem restoration and management. US Army Engineer Research and Development Center. EL TR-12-18. <u>http://hdl.handle.net/11681/7222</u>
- (23) Swannack, T. M., M. K. Reif, D. M. Schulte, S. Bourne and A. F. Casper. 2012. Recommendations for Army lands management contribution to oyster restoration in Chesapeake Bay. US Army Engineer Research and Development Center Technical Report. TR 10-10-07.
- (22) Derr, J., N. Halbert, and **T. Swannack**. 2011. Development of a genetic based conservation management program for the Wind Cave National Park bison herd. Final report submitted to Wind Cave National Park, Hot Springs, South Dakota.
- (21) Klimas, C., B. Yuill, T. Swannack, and J. Dunbar. 2011. Skokomish River ecosystem restoration project: proposed method for environmental benefits analysis. Draft Report to the U.S. Army Corps of Engineers - Seattle District. Vicksburg, MS: US Army Engineer Research and Development Center, Environmental Laboratory.
- (20) Wilder, T. C., T. M. Swannack, C. D. Piercy. 2011. An estimate of future conditions of the Lower Roanoke River floodplain ecology. Draft Report to the U.S. Army Corps of Engineers -Wilmington District. Vicksburg, MS: US Army Engineer Research and Development Center, Environmental Laboratory.
- (19) Wilder, T. C., C. D. Piercy, and T. M. Swannack. 2011. Review of impacts to the Lower Roanoke River Basin floodplain due to flow regulation at John H. Kerr Reservoir. Draft Report to the U.S. Army Corps of Engineers - Wilmington District. Vicksburg, MS: US Army Engineer Research and Development Center, Environmental Laboratory.
- (18) Swannack, T. M., <u>D. M. Hall</u> and W. E. Grant. 2009. Report on National Parks Service socioeconomic modeling workshop. Report to J. Gramann, Visiting Chief Social Scientist, National Parks Service.
- (17) Slack, R. D., W. E. Grant, S. E. Davis, T. M. Swannack, J. Wozniak, <u>D. Greer</u> and A. Snelgrove. 2009. Linking freshwater inflows and marsh community dynamics in San Antonio Bay to Whooping Cranes. Submitted to Guadalupe-Blanco River Authority and San Antonio River Authority.
- (16) Swannack, T. M. 2007. Modeling aspects of the ecological and evolutionary dynamics of the endangered Houston toad. Ph.D. Dissertation. Texas A&M University, College Station, Texas, USA
- (15) Forstner, M. R. J., D. J. McHenry, <u>M. Gaston, L. Villalobos</u>, P. Crump, <u>S. McCracken</u>, <u>J. Jackson</u>, **T. M. Swannack**, <u>J. Bell</u>, <u>J. Gaertner</u>, S. Mays, D. Hahn, and J. Dixon. 2007. The Houston toad 2007: annual summary of research and monitoring. Submitted to TPWD/USFWS. 20 pp.
- (14) Swannack, T.M. and D.W. Perkins. 2005. Landscape level issues facing the SOPN conceptual models. Pgs A398–A413. *In*: Perkins, D.W., H. Sosinski, K. Cherwin, and T. Zettner. Southern Plains Network Vital Signs Monitoring Plan: Phase I. National park service, Southern Plains Network, Johnson City, TX. 79 pp. plus appendices.

- (13) Forstner, M.R.J. and **T. M. Swannack**, editors. 2004. The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (12) Forstner, M.R.J. and T. M. Swannack. 2004. Final Technical Report. Final Report of the Long Property, Bastrop County, TX Houston Toad Survey 2004. Submitted to Bob Long and Environmental Defense. 5 pp.
- (11) Forstner, M.R.J. and T. M. Swannack. 2004. Final Technical Report. Final Report of the Small Property, Bastrop County, TX Houston Toad Survey 2004. Submitted to Jim Small and Environmental Defense. 6 pp.
- (10) Swannack, T.M. and M.R.J. Forstner. 2004. Final Technical Report. Spatial distribution and habitat associations of adult Houston toads. Pgs 1:22-31. *In*: Forstner, M.R.J. and T. Swannack. (eds.) The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (9) Swannack, T.M. and M.R.J. Forstner. 2004. Final Technical Report. Population dynamics of adult Houston toads. Pgs 1:31-37. *In*: Forstner, M.R.J. and T. M. Swannack. (eds.) The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (8) Swannack, T. M. and M.R.J. Forstner. 2004. Final Technical Report. A possible cause for the disparity in the sex ratio of the explosively breeding Houston toad. Pgs 1:37-48. *In*: Forstner, M.R.J. and T. Swannack. (eds.) The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (7) Swannack, T. M. and M.R.J. Forstner. 2004. Final Technical Report. Juvenile spatial distribution based on fluorescent tracking. Pgs 2:81-83. *In*: Forstner, M.R.J. and T. M. Swannack. (eds.) The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (6) Swannack, T. M., S.R. Morris, J.T. Jackson, A.D. Rainer and M.R.J. Forstner. 2004. Final Technical Report. Activity patterns of the dominant herpetofauna of the Griffith League Ranch with emphasis on the Houston toad. Pgs 1:1-22. *In*: Forstner, M.R.J. and T. M. Swannack. (eds.) The Houston toad in Context. Final Project report submitted to TPWD/USFWS. 746 pp.
- (5) Forstner, M.R.J. and **T. M. Swannack**. 2003. Final report of the Long Property, Bastrop County, TX, Houston toad survey. Environmental Defense. 5 pp.
- (4) Forstner, M.R.J., **T. M. Swannack**, K.L. Greuter, and S.R. Morris. 2003. Houston toad research and surveys: 2003 data and final report for the CAC-Griffith League Ranch, Bastrop County, TX. Texas Parks and Wildlife and United State Fish and Wildlife Service. 18 pp.
- (3) **Swannack, T. M.** and M.R.J. Forstner. 2002. Houston Toad (*Bufo houstonensis*) Habitat Assessment off system bridge replacement FWHA CR 525 (Milam CR 364) at Little River, Milam County, TX. Final Technical Report. Texas Department of Transportation. 5 pp.
- (2) Gaston, M, **T. Swannack**, L. Ahlbrandt and M. R.J. Forstner. 2001. Geographic distribution. *Ambystoma tigrinum*. Herpetological Review. 32(3):188.
- (1) **Swannack, T. M.** 2000. Seasonal and ontogenetic changes in the sex ratio of the stinkpot, *Sternotherus odoratus*. MS Thesis. Texas State University, San Marcos. Texas, USA

PATENTS

- (2) *Pending*. Method for creating multivariate predictive models of oyster populations. M. E. Kjelland, **T. M. Swannack** and C. D. Piercy. US Patent App 15/479, 080
- *Pending*. Computer architecture for creating multivariate predictive models of oyster populations.
 M. E. Kjelland, T. M. Swannack and C. D. Piercy. US Patent App 15/479, 132

INVITED PRESENTATIONS

May 2016	Can models be simple? Inference gained from a decade of modeling complex systems. Oregon State University, Corvallis OR.
Dec. 2014	Integrated modeling approaches for studying population dynamics in complex environments. Department of Biology Seminar Series, Texas State University, San Marcos, TX.
Dec. 2012	Thinking like a critter: How agent-based modeling generates understanding of complex environmental systems. Department of Biology Seminar Series, Sam Houston State University, Huntsville, TX.
Oct. 2010	A holistic approach for linking pattern and process in complex ecological systems. Department of Biology Seminar Series, Texas State University, San Marcos, TX.
Dec. 2009	Systems approach to modeling wetland dynamics. Engineer Research and Development Center. Vicksburg, Mississippi.
Oct. 2008	Guest Lecturer (2 lectures), Animal Ecology: 1) Predator-prey models, 2) Evolution of predator-prey systems. Department of Wildlife and Fisheries Sciences. Texas A&M University
Jun. 2008	Modeling complex ecological systems in the face of uncertainty. Lawrence Livermore National Laboratory, Livermore, CA.
Nov. 2007	A systems approach to conservation: modeling the dynamics of the endangered Houston toad. Biology Seminar Series. Southwestern University, Georgetown, TX.
Sept. 2007	Guest Lecturer (2 lectures), Animal Ecology: 1) Demographic techniques, 2) Modeling population growth. Department of Wildlife and Fisheries Sciences. Texas A&M University.
Aug. 2005	Landscape level issues facing the Southern Plains Network. SOPN Aquatic and Landscape Workshop, Las Vegas, New Mexico (co-author: D. W. Perkins).
Oct. 2004	Population dynamics of the Houston toad based on multiple sampling techniques. Texas Herpetological Society Symposium on Amphibian Decline: (co-authors: K. L. Greuter and M. R. J. Forstner).
Sept. 2004	How a Toad Saved Texas. Lockhart Chapter of the Daughters of the Republic of Texas. Lockhart, Texas.
Jun. 2004	(2 presentations): 1) Amphibians of Boggy Slough, 2) Lessons Learned from the Houston toad: implications for forestry management. Temple Inland Herptile Awareness Workshop.
PRESENTA	TIONS AT SCIENTIFIC MEETINGS (lead author/presenter only)
June 2018	Swannack, T. M. and C. D. Piercy. Untangling the multiscale bank of assumptions in integrated ecohydraulic modeling. International Society for Ecohydraulics. Notre Dame University, South Bend IN
May 2016	Kielland M. Swannack T. Laird I. Kennedy A. and Gust K. Pattern oriented

- May 2016 Kjelland, M., **Swannack**, T., Laird, J., Kennedy, A., and Gust, K. Pattern-oriented modeling of Daphnia magna sensory-responses: Deriving bio-inspired, multi-sensor, autonomous, logic model algorithms. The 20th biennial International Society for Ecological Modellers Conference. Towson, MD
- May 2016 Swannack, T. M., Kjelland, M., and C. D. Piercy. An integrated modeling approach to predict the expansion of invasive Zebra Mussels at Northern Latitudes. The 20th biennial International Society for Ecological Modellers Conference. Towson, MD.

- Oct. 2013 Swannack, T. M., D. M. Hall, and E. D. Lazarus. Designing explanations for systems models for diverse audiences. The 19th biennial International Society for Ecological Modellers Conference. Toulouse, France.
- Oct. 2013 Swannack, T. M., C. D. Piercy, M. E. Kjelland, and T. Lackey. An integrated hydrodynamic-ecological modeling approach to understand how to manage and sustain the oyster fishery in Chesapeake Bay. The 19th biennial International Society for Ecological Modellers Conference. Toulouse, France.
- May 2012 **Swannack, T. M.**, C. D. Piercy, and P. S. O'Brien. Dynamically coupled food-web and hydrodynamic modeling with ADH-CASM for sessile benthic invertebrates: a case study from the Chesapeake Bay. Lower Columbia River Estuary Partnership Conference. Astoria, Oregon.
- Nov. 2011 **Swannack, T. M.**, C. D. Piercy, M. Reif. Modeling USACE oyster restoration across scales. 5th National Partnership Conference. Memphis, Tennessee. (Poster)
- Sept. 2011 Swannack, T. M., W. E. Grant, J. R. Wozniak, S. E. Davis III, and R. D. Slack. Modeling landscape-level hydrological connectivity patterns in salt marsh ecosystems. International Society of Ecological Modelers. Beijing, China.
- Oct. 2006 Swannack, T.M., K.L. Greuter, and M.R.J. Forstner. Estimating survival parameters for an endangered species with a complex life history. Texas Herpetological Society. San Marcos, Texas.
- Jul. 2006 Swannack, T.M., K.L. Greuter, and M.R.J. Forstner. Survivorship estimates of three life stages of the Houston toad (*Bufo houstonensis*). Joint Meeting of Ichthyologists and Herpetologists. New Orleans, LA.
- Mar. 2006 Swannack, T.M. and M.R.J. Forstner. Impacts of the difference at age at first reproduction on a population of endangered Houston toads (*Bufo houstonensis*). Ecological Integration Symposium (student talk). Texas A&M University, College Station, TX.
- Mar. 2005 Swannack, T.M., K.L. Greuter, and M.R.J. Forstner. Population dynamics and survivorship estimates of the Houston toad. Texas Academy of Sciences. Edinburgh, TX.
- Apr. 2004 **Swannack, T.M**. and M.R.J. Forstner. A possible cause of the disparity in the sex ratio of adult Houston toads. Southwestern Association of Naturalists. San Antonio, TX.
- Mar. 2004 Swannack, T.M. and M.R.J. Forstner. A possible cause of the disparity in the sex ratio of adult Houston toads. Texas Academy of Science. Kerrville, TX.
- Oct. 2003 Swannack, T.M. and M.R.J. Forstner. A possible cause of the disparity in the sex ratio of adult Houston toads. Texas Herpetological Society, San Marcos, TX.
- Feb. 2003 Swannack, T. and M.R.J. Forstner. Distribution of Houston toads (*Bufo houstonensis*) in heterogeneous habitats. Texas Academy of Sciences, Nacogdoches, TX.
- Apr. 2000 **Swannack, T. M.** and F. L. Rose. Seasonal sex ratio differences in a population of stinkpots (*Sternotherus odoratus*). Southwestern Association of Naturalists, Denton, TX.

WORKSHOPS

- 2020 Ecological Modeling for USACE planning. USACE-MVR
- 2019 Ecological Modeling for USACE planning. USACE-SPN
- 2018 Ecological Modeling for USACE planning. USACE-SWF
- 2017 Advanced Ecological Modeling for USACE planning. USACE- SPL

- 2016 Ecological Modeling for USACE planning. USACE-SPL
- 2016 Ecological Modeling for USACE planning. USACE-MVS
- 2015 Ecological Modeling for USACE planning. USACE-NAE
- 2014 Conceptual modeling of impacts of ecosystem restoration on salmonid species in the Pacific Northwest (Co-facilitated with Candice Piercy)
- 2012 Mediated Modeling of oyster management in the Great Wicomico River. US Army Corps of Engineers Norfolk District (Co-facilitated with Candice Piercy)
- 2009 Systems approach to socio-economic modeling. 23-27 March, Tucson, Arizona. (Co-facilitated with W. E. Grant and D. M. Hall for National Parks Service)

INTERNATIONAL EXPERIENCE

- 2008 NSF Pan American Advanced Study Institute. Human, Physical, and Natural Capital Investment in Patagonia: A Predictive Approach under the Sustainability Criterion. Concepción, Chile. 10-22 August (invited participant).
- 2010 International Summit on Integrated Environmental Modeling. 7-9 December, USGS Headquarters, Reston, VA (invited participant).

STUDENTS SUPERVISED

M.S.	Texas State	Committee member	Exp. Grad 2022
M.S.	Texas State	Committee member	Grad 2021
Ph.D.	Texas State	Committee member	Grad 2021
M.S.	Texas State	Committee member	Grad 2020
Ph.D.	Texas State	Committee member	Grad 2020
Ph.D.	Texas State	Committee member	Grad 2019
M.S.	Texas State	Committee member	Grad 2019
M.S.	Texas State	Committee member	Grad 2019
M.S.	Texas State	Committee member	Grad 2018
M.S.	Texas State	Committee member	Grad 2017
M.S.	Texas State	Committee member	Grad 2017
M.S.	Texas State	Committee member	Grad 2017
M.S.	Texas State	Independent Research	Grad 2016
Ph.D.	U. Mass	Committee member	Grad 2016
Ph.D.	Texas State	Committee member	Grad 2015
Ph.D.	Texas State	Committee member	Grad 2013
M.S.	Texas State	Committee member	Grad 2010
M.S.	Texas A&M	Committee member	Grad 2010
M.S.	Texas A&M	Research supervisor	Grad 2008
B.S.	Texas A&M	Undergrad. research supervisor	Grad 2007
	M.S. M.S. Ph.D. Ph.D. Ph.D. M.S. M.S. M.S. M.S. M.S. M.S. Ph.D. Ph.D. Ph.D. Ph.D. Ph.D. M.S. M.S. M.S. M.S. M.S. M.S.	 M.S. Texas State M.S. Texas State Ph.D. Texas State M.S. Texas State Ph.D. Texas State M.S. Texas A&M M.S. Texas A&M B.S. Texas A&M 	M.S.Texas StateCommittee memberM.S.Texas StateCommittee memberPh.D.Texas StateCommittee memberM.S.Texas StateCommittee memberPh.D.Texas StateCommittee memberPh.D.Texas StateCommittee memberM.S.Texas StateCommittee memberPh.D.Texas StateCommittee memberM.S.Texas A&MCommittee memberM.S.Texas A&MResearch supervisorB.S.Texas A&MUndergrad. research supervisor

PROFESSIONAL SERVICE

Reviewer: Ecological Modelling, Environmental Toxicology and Chemistry, Journal of Wildlife Management, PLoS ONE, Land Use Policy, Marine Policy, Ecohydrology, Marine Policy, Environmental Modeling and Software, Revista Ambiente y Agua, Environmental Systems and Management

2015 – pres: Subject Editor, *Ecological Modelling* (Conservation and population models)

2014 – 2018: Tenure advisory committee for A. Schwalb at Texas State 2010 – pres: Editorial Advisory Board, *Ecological Modelling*

Memberships

International Society for Ecological Modelling: since 2004 Society for the Study of Amphibians and Reptiles: 2004-2007 Southwestern Association of Naturalists: 2004-2007 Texas Academy of Science: 2003-2007