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## **EDUCATION**

University of Western Australia	Perth, Australia	Marine Science	Ph.D., 1998
University of Western Australia	Perth, Australia	Marine Botany	MS, 1994
University of Western Australia	Perth, Australia	Honors in Botany	BS, 1990

## **RESEARCH INTERESTS**

Ecosystem approaches for building resilience, adaptive management, building cross agency consensus, science to support coastal policy development.

## **PROFESSIONAL EXPERIENCE**

The Water Institute	Director of Coastal Ecology	2014–Present
Secretariat of the Pacific Regional Environmental Programme (Samoa)	Coastal and Marine Advisor	2011–2014
University of Maryland Center for Environmental Science	Program Manager, Integration and Application Network	2009–2011
	Science Integrator, Integration, and Application Network	2003–2009
Smithsonian Tropical Research Institute	Mellon Post-Doctoral Fellow	2002–2003
University of Maryland Center for Environmental Science	Post-Doctoral Scholar, Integration and Application Network	2001–2002
University of Queensland	Post-Doctoral Research Fellow, Marine Botany	2000–2001

## **NOTABLE PROJECTS**

<b>PI/Gulf Restoration Program</b> <i>National Academy of Sciences</i> Codesign of SAV restoration for the Chandeleur Islands, coastal Louisiana	2021
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<b>PI/Task Order 80</b> <i>Coastal Protection and Restoration Authority</i> Guidance for maximizing benefits for bird nesting through coastal restoration.	2021
<b>PI/Task Order 50.3</b> <i>Coastal Protection and Restoration Authority</i> Development of the Louisiana Trustee Implementation Group Monitoring and Adaptive Management Strategy.	2020
<b>PI/Project</b> <i>International Climate Initiative, PI</i> Ecosystem-based adaptation for sustainability for Pacific Island Peoples, in Fiji, Vanuatu and Soloman Islands.	2013
<b>PI/Watershed Cost-Benefit Analysis of Climate Change Adaptation Options</b> <i>United Nations Environment Programme (UNEP), PI</i> Development of monitoring and evaluation assessment for adaptation effectiveness in Lami Town, Fiji.	2013

## **PUBLISHED WORKS**

For a full list of publications, see [Tim Carruthers' Google Scholar page](#).

### **Peer-Reviewed Publications**

- Windhoffer, E. D., Carruthers, T. J. B., Henkel, J., Gleason, J. S., & Wiebe, J. J. (2024). Leveraging co-production within ecosystem restoration to maximize benefits to coastal birds. *Journal of Environmental Management*, 360, 121093.
- Liu, B., Sevick, T., Jung, H., Kiskaddon, E., & Carruthers, T. (2023). Quantifying the potential contribution of submerged aquatic vegetation to coastal carbon capture in a delta system from field and Landsat 8/9-operational land imager (OLI) data with deep convolutional neural network. *Remote Sensing*, 15(15).
- Jung, H., Nuttle, W., Baustian, M., & Carruthers, T. (2013). Influence of increased freshwater inflow on nitrogen and phosphorus budgets in a dynamic subtropical estuary, Barataria Basin, Louisiana. *Water*, 15(11).
- Jung, H., Baustian, M., Meselhe, E., & Carruthers, T. (2022). *Developing nitrogen budgets using an integrated biophysical model to investigate current and future phytoplankton dynamics in a rapidly changing subtropical estuary, Barataria Basin (GC23H-1305)*. The Water Institute of the Gulf.
- Kiskaddon, E., Bienn, H., Hemmerling, S. A., Dalyander, S., Grismore, A., Parfait, J., Miner, M. D., Cameron, C., Hopkins, T. E., Allen, Y., Jones-Farrand, D., Martin, M., Tirpak, B. E., Green, M., Rhinehart, K., & Carruthers, T. JB. (2022). Supporting Habitat Restoration in the Northern Gulf of Mexico Through Synthesis of Data on Multiple and Interacting Benefits and Stressors. *Journal of Environmental Management*, 318, 115589.
- Carruthers, T. J. B., Kiskaddon, E. P., Baustian, M. M., Darnell, K. M., Moss, L. C., Perry, C. L., & Stagg, C. (2021). Tradeoffs in habitat value to maximize natural resource benefits from coastal restoration in a rapidly eroding wetland: Is monitoring land area sufficient? *Restoration Ecology*.
- Baustian, M. M., Stagg, C. L., Perry, C. L., Moss, L., & Carruthers, T. (2021). Long-term carbon sinks in marsh soils of the Mississippi River Deltaic Plain are at risk to wetland loss. *JGR-Biogeosciences*, 126(3).
- Dennison, W. C., Bracken, M. E. S., Brown, M., Bruno, J. F., Carlton, J. T., Carpenter, R. C., Carruthers, T. J. B., Dethier, M. N., Duarte, C. M., Fisher, T. R., Fourqurean, J. W., Grosberg, R. K., Hamdan, L. J., Heck, K. L., Howard, D. J., Hughes, A. R., Hughes, B. B., Kendrick, G. A., Kenworthy, W. J., ... Waycott, M. (2021). Susan Lynn Williams: The life of an exceptional scholar, leader, and friend (1951–2018). *Estuaries and Coasts*, 44(2), 304–311.

- Baustian, M. M., Stagg, C. L., Perry, C. L., Moss, L. C., Carruthers, T. J. B., & Allison, M. (2020). Correction to: “Relationships between salinity and short-term soil carbon accumulation rates from marsh types across a landscape in the Mississippi River Delta.” *Wetlands*, *40*(4), 917–923.
- Shakeri, L. M., Darnell, K. M., Carruthers, T. B., & Darnell, M. Z. (2020). Blue crab abundance, biomass, and survival in a fragmenting coastal marsh system. *Estuaries and Coasts*, *43*, 1545–1555.
- Moss, L. C., Carruthers, T. J. B., Bienn, H., Mcinnis, A., & Dausman, A. (2020). Gulf-wide data synthesis for restoration planning: Utility and limitations. *Shore & Beach*, *88*(1), 23–33.
- Carruthers, T. J. B., Raynie, R., Dausman, A., & Khalil, S. (2020). Strategies to improve implementation of adaptive management practices for restoration in coastal Louisiana. *Shore & Beach*, *88*(1), 83–91.
- Hemmerling, S. A., Carruthers, C., Tim J. B., Hijuelos, A. C., & Bienn, H. (2020). Double exposure and dynamic vulnerability: Assessing economic well-being, ecological change and the development of the oil and gas industry in coastal Louisiana. *Shore & Beach*, *88*(1), 72–82.
- Hijuelos, A. C., Dijkstra, J. T., Carruthers, T. J. B., Heynert, K., Reed, D. J., & van Wesenbeeck, B. K. (2019). Linking management planning for coastal wetlands to potential future wave attenuation under a range of relative sea-level rise scenarios. *PLoS ONE*, *14*(5), 1–19.
- Glaser, M., Breckwoldt, A., Carruthers, T. J. B., Forbes, D. L., Costanzo, S., Kelsey, H., Ramachandran, R., & Stead, S. (2018). Towards a framework to support coastal change governance in small islands. *Environmental Conservation*, *45*(3), 227–237.
- Stagg, C. L., Baustian, M. M., Perry, C. L., Carruthers, T. J. B., & Hall, C. T. (2018). Direct and indirect controls on organic matter decomposition in four coastal wetland communities along a landscape salinity gradient. *Journal of Ecology*, *106*(2), 655–670.
- Baustian, M. M., Stagg, C. L., Perry, C. L., Moss, L. C., Carruthers, T. J. B., & Allison, M. A. (2017). Relationships between salinity and short-term soil carbon accumulation rates from marsh types across a landscape in the Mississippi River Delta. *Wetlands*, *37*(2), 313–324.
- Jerabek, A., Darnell, K. M., Pellerin, C., & Carruthers, T. J. B. (2017). Use of marsh edge and submerged aquatic vegetation as habitat by fish and crustaceans in degrading southern Louisiana coastal marshes. *Southeastern Geographer*, *57*(3), 212–230.
- Darnell, K. M., Carruthers, T. J. B., Biber, P., Georgiou, I. Y., Michot, T. C., & Boustany, R. G. (2017). Spatial and temporal patterns in *Thalassia testudinum* leaf tissue nutrients at the Chandeleur Islands, Louisiana, USA. *Estuaries and Coasts*, *40*(5), 1288–1300.
- Jupiter, S. D., Jenkins, A. P., Long, W. J. L., Maxwell, S. L., Carruthers, T. J. B., Hodge, K. B., Govan, H., Tاملander, J., & Watson, J. E. (2014). Principles for integrated island management in the tropical Pacific. *Pacific Conservation Biology*, *20*(2), 193–205.
- Fertig, B., Carruthers, T. J. B., Dennison, W. C., Meyer, K. A., & Williams, M. R. (2014). Isotopic values in oysters indicate elemental sources constrained by multiple gradients. *Ecological Indicators*, *46*, 101–109.
- Hills, T., Carruthers, T. J. B., Chape, S., & Donohoe, P. (2013). A social and ecological imperative for ecosystem-based adaptation to climate change in the Pacific Islands. *Sustainability Science*, *8*(3), 455–467.
- Fertig, B., O’Neil, J. M., Beckert, K. A., Cain, C. J., Needham, D. M., Carruthers, T. J. B., & Dennison, W. C. (2013). Elucidating terrestrial nutrient sources to a coastal lagoon, Chincoteague Bay, Maryland, USA. *Estuarine, Coastal and Shelf Science*, *116*, 1–10.
- Fertig, B. M., Carruthers, T. J. B., & Dennison, W. C. (2013). Oyster deltaN-15 as a bioindicator of potential wastewater and poultry farming impacts and degraded water quality in a subestuary of Chesapeake Bay. *Journal of Coastal Research*, *30*(5), 881–892.
- Schupp, C. A., Winn, N. T., Pearl, T. L., Kumer, J. P., Carruthers, T. J. B., & Zimmerman, C. S. (2013). Restoration of overwash processes creates piping plover (*Charadrius melodus*) habitat on a barrier island (Assateague Island, Maryland). *Estuarine, Coastal and Shelf Science*, *116*, 11–20.
- Carruthers, T. J. B., Beckert, K., Schupp, C. A., Saxby, T., Kumer, J. P., Thomas, J., Sturgis, B., Dennison, W. C., Williams, M., Fisher, T., & Zimmerman, C. S. (2013). Improving management of a mid-Atlantic coastal barrier island through assessment of habitat condition: Supplementary information. *EMECs9 Special Issue: Science-Based for Managing for Results*, *116*, 74–86.
- Murray, L., Gurbisz, C., Gibson, D., Woerner, J., & Carruthers, T. J. B. (2012). Collaborative partnerships help bridge the gap between science and education. *EOS, Transactions, American Geophysical Union*, *93*(49), 510–511.
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- Newton, A., Carruthers, T. J. B., & Icely, J. (2012). The coastal syndromes and hotspots on the coast. *Estuarine, Coastal and Shelf Science*, 96, 39–47.
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- Nauman, E. (2010). *Integrating and applying science: A practical handbook for effective coastal ecosystem assessment* (B. J. Longstaff, T. J. B. Carruthers, W. C. Dennison, T. R. Lookingbill, J. M. Hawkey, E. C. Wicks, & J. Woerner, Eds.). IAN Press.
- Fertig, B., Carruthers, T. J. B., Dennison, W. C., Fertig, E. J., & Altabet, M. A. (2010). Eastern oyster (*Crassostrea virginica*)  $\delta^{15}\text{N}$  as a bioindicator of nitrogen sources: Observations and modeling. *Marine Pollution Bulletin*, 60(8), 1288–1298.

## Technical Reports

- Doyle, S., Jung, H., Sevick, T., Littman, A., & Carruthers, T. (2024). *Quantifying climate change mitigation potential of nature-based carbon sequestration and storage in U.S. Department of Defense (DoD) lands*. The Water Institute. Prepared for and funded by the U.S. Army Engineer Research and Development Center in support of the Engineering With Nature Initiative.
- Doyle, S., Jung, H., Liu, B., Kiskaddon, E., Wang, Y., & Carruthers, T. (2023). *Improving net carbon flux estimates for tidal wetlands: Integrating deep learning and ecosystem modeling to assess net carbon flux for marsh-mangrove tidal wetlands at Port Fourchon, LA, USA*. The Water Institute. Prepared for and funded by Chevron Technical Center, a division of Chevron USA, Inc., under Work Order No. PR002648.
- The Water Institute. (2023). *The Louisiana ecosystem restoration interactive lessons learned database: Scoping design plan*. The Water Institute. Prepared for the Coastal Protection and Restoration Authority. \*Main author
- Deepwater Horizon Louisiana Trustee Implementation Group. (2023). *Guidance for coastal ecosystem restoration and monitoring to create or improve bird-nesting habitat* (p. 152). \*Contributing author
- Fischbach, J. R., Dalyander, S., McHugh, C., DeJong, A., Littman, A., Haertling, A., Bond, C. A., & Carruthers, T. (2023). *Enhancing benefits evaluation for water resources projects: Towards a more comprehensive approach for nature-based solutions* (Enhancing Benefits Evaluation for Water Resources Projects: Towards a More Comprehensive Approach for Nature-Based Solutions, p. 241) [Case study analysis results and recommendations]. The Water Institute. Produced for and funded by the U.S. Army Corps of Engineers' Engineering with Nature Program.
- Louisiana Trustee Implementation Group. (2021). *Louisiana Trustee Implementation Group Monitoring and Adaptive Management Strategy* (p. 55). Deepwater Horizon Louisiana Trustee Implementation Group.
- Kiskaddon, E., Bienn, H., Hemmerling, S., Dalyander, S., Grismore, A., Parfait, J., & Carruthers, T. (2021). *Improving SECAS gulf-wide integration: Integrated data to support natural resource conservation and restoration in the northern Gulf of Mexico*. U.S. Fish and Wildlife Service.
- Kiskaddon, E., Green, M., Hemmerling, S. A., & Carruthers, T. J. B. (2021). *Application of the SECAS Gulf-wide data suite in restoration planning* (p. 49) [Case study]. The Water Institute of the Gulf for the U.S. Fish and Wildlife Service.
- Miner, M., Dalyander, S., DiLeonardo, D., Windhoffer, E., Georgiou, I., Dudeck, N., Carruthers, T., & Kiskaddon, E. (2021). *Advancement of the Southeast Conservation Adaptation Strategy (SECAS) for project scale planning: Chandeleur Islands (Breton National Wildlife Refuge) restoration* (p. 104). The Water Institute. Produced for and funded by U.S. Fish and Wildlife Service.
- Cameron, C., Kiskaddon, E., Parfait, J., Mcinnis, A., Courtois, A., & Carruthers, T. J. B. (2021). *Southeast Conservation Blueprint Mechanics* (p. 137). The Water Institute of the Gulf. Produced for the U.S. Fish and Wildlife Service.
- Liu, B., Jung, H., Kiskaddon, E., Baustian, M., Visser, J., & Carruthers, T. (2020). *Terrestrial habitat suitability index calculations for mid-Breton sediment diversion environmental impact statement* (CPRA TO78; p. 25). Coastal Protection and Restoration Authority.

- Carruthers, T. J. B., McInnis, A., Jung, H., Bregman, M., & Liu, B. (2021). *Aquatic and terrestrial habitat suitability index input/output summary for Mid-Breton environmental impact statement* (p. 42) [Technical Memorandum]. The Water Institute. Prepared for and Funded by the Louisiana Coastal Protection and Restoration Authority under Task Order 78.
- Liu, B., Jung, H., Kiskaddon, E., & Carruthers, T. J. B. (2021). *Aquatic habitat suitability index calculations for Mid-Breton Sediment Diversion Environmental Impact Statement* (p. 40) [Technical Memorandum, Task Order 78]. The Water Institute. Prepared for and funded by the Coastal Protection and Restoration Authority.
- Carruthers, T. J. B., Vu, H., Moss, L. C., Bienn, H., McInnis, A., Vingiello, M., Hemmerling, S. A., Baustian, M., Ramatchandirane, C., & Wold, A. (2019). *Science-based decision support for restoration and conservation planning in the Northern Gulf of Mexico* (p. 145). The Water Institute. Supported by U.S. Endowment for Forestry and Communities, RESTORE Council, and Texas Parks and Wildlife Foundation.
- Carruthers, T., Jung, H., McInnis, A., & Bregman, M. (2019). *Hysteresis – aquatic habitat suitability index calculations for Mid-Barataria* (CPRA TO64; p. 64). Coastal Protection and Restoration Authority.
- Carruthers, T., Jung, H., Sable, S., & McInnis, A. (2019). *Habitat suitability index calculations for Mid-Barataria scenarios* (CPRA TO64; p. 59). Coastal Protection and Restoration Authority.
- Carruthers, T., Jung, H., Bregman, M., & McInnis, A. (2019). *Hysteresis – detailed oyster habitat suitability index results for Mid-Barataria EIS* (CPRA TO 64; p. 179). Coastal Protection and Restoration Authority.
- Moss, L., Bienn, H., McInnis, A., Vingiello, M., Carruthers, T., & Dausman, A. (2019). *A gulf-wide synthesis; stressors, ecosystem services, and human well-being indicators* (CPRA TO62; p. 57). Coastal Protection and Restoration Authority.
- The Water Institute. (2020). *Louisiana adaptive management status and improvement report: Vision and recommendations* (Technical Document Task Order 50.2, Contract No. 2503-12-58; p. 202). The Water Institute. Prepared for the Coastal Protection and Restoration Authority (CPRA) and the Louisiana Trustee Implementation Group (LA TIG), funded by the LA TIG.
- Carruthers, T. J. B., Vu, H., Moss, L. C., Bienn, H., McInnis, A., Vingiello, M., Hemmerling, S. A., Baustian, M., Ramatchandirane, C., & Wold, A. (2019). *Science-based decision support for restoration and conservation planning in the Northern Gulf of Mexico* (p. 145). The Water Institute. Supported by U.S. Endowment for Forestry and Communities, RESTORE Council, and Texas Parks and Wildlife Foundation.
- Secretariat of Pacific Community. (2018). *Planning for ecosystem-based adaptation in Port Vila, Vanuatu. A synthesis report by the Secretariat of the Pacific Regional Environment Programme, Apia, Samoa* (p. 16). [Synthesis report]. Secretariat of the Pacific Regional Environment Programme.
- Secretariat of Pacific Community. (2018). *Planning for ecosystem-based adaptation in Taveuni, Fiji. A synthesis report by the Secretariat of the Pacific Regional Environment Programme, Apia, Samoa*. (p. 16) [Synthesis report]. Secretariat of the Pacific Regional Environment Programme.
- Secretariat of the Pacific Regional Environment Programme. (2017). *Planning for ecosystem-based adaptation in Honiara, Solomon Islands. A synthesis report by the Secretariat of the Pacific Regional Environment Programme, Apia, Samoa*. (p. 16) [Synthesis report]. Secretariat of the Pacific Community Regional Environmental Program.
- Carruthers, T. J. B., Hemmerling, S. A., Barra, M., Saxby, T. A., & Moss, L. C. (2017). “*This is your shield... this is your estuary.*” *Building community and coastal resilience to a changing Louisiana coastline through restoration of key ecosystem functions* (WISR-002-2017; Synthesis Report Series, p. 48). The Water Institute of the Gulf.
- Hemmerling, S. A., Carruthers, T. J. B., Hijuelos, A. C., Riley, & Bienn, H. C. (2016). *Trends in oil and gas infrastructure, ecosystem function, and socioeconomic wellbeing in coastal Louisiana* (WISR-001-2016; Synthesis Report Series, p. 20). The Water Institute.
- Iacovino, C., Donohoe, P., Carruthers, T., & Chape, S. (2013). *Ecosystem-based adaptation and climate change vulnerability for Choiseul Province, Solomon Islands* (p. 14) [Synthesis]. SPREP.
- Rao, N. S., Carruthers, T. J. B., Anderson, P., Sivo, L., Saxby, T. A., Durbin, T., Jungblut, V., Hills, T., & Chape, S. (2012). *A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji* (p. 28) [Technical report]. UNEP.
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- Thomas, J. E., Banasik, A., Campbell, J. P., Carruthers, T. J. B., Dennison, W. C., Lehman, M., & Nortrup, M. (2011). *Monocacy National Battlefield natural resource condition assessment* (p. 148). IAN Press.
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- Fertig, B., Carruthers, T. J., & Dennison, W. C. (2007). *Linking Monie Bay watershed land use to nitrogen stable isotopes in tissues of the native eastern oyster, Crassostrea virginica*. National Estuarine Research Reserve.