

Tim JB Carruthers PhD, MSc
Director of Ecology, The Water Institute of the Gulf

T: 225.228.2112
E: tcarruthers@thewaterinstitute.org

301 N. Main Street, Suite 2000
Baton Rouge, LA 70825

Education

PhD in Marine Science, 1998
University of Western Australia

MSc in Marine Botany, 1994
University of Western Australia

BSc Hons in Botany, 1990
University of Western Australia

Research Interests:

- Quantifying the ‘restoration footprint’ of ecosystem based restoration and adaptation approaches, including both primary and secondary benefits.
 - Assessing ecosystem conditions to enhance restoration or adaptation to coastal change, including development of ecosystem health indicators.
 - Developing and implementing approaches for preservation or restoration of natural ecosystems to increase resilience of vulnerable coastal communities.
 - Synthesizing knowledge for communication to broad audiences, including coastal citizens, policy-makers and scientific colleagues.
 - Linking ecosystem functions to community needs and uses of ecosystem services.
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Professional Experience:

The Water Institute of the Gulf <ul style="list-style-type: none">• <i>Director of Coastal Ecology</i>	2014-present
Secretariat of the Pacific Regional Environment Programme (Samoa) <ul style="list-style-type: none">• <i>Coastal and Marine Adviser</i>	2011-2014
University of Maryland Center for Environmental Science (MD, USA) <ul style="list-style-type: none">• <i>Program Manager, Integration and Application Network</i>	2009-2011
University of Maryland Center for Environmental Science (MD, USA) <ul style="list-style-type: none">• <i>Science Integrator, Integration and Application Network</i>	2003-2009
Smithsonian Tropical Research Institute (Bocas del Toro, Panama)	2002-2003

- *Mellon Post-doctoral Fellow*

University of Maryland Center for Environmental Science (MD, USA) **2001-2002**

- *Post-doctoral Scholar, Integration and Application Network*

University of Queensland – (Queensland, Australia) **2000-2001**

- *Post-doctoral Research Fellow, Marine Botany*

PREVIOUS PROJECTS (2011-2016):

- 2016.** National Fish and Wildlife Foundation. The natural classroom: Sustainable restoration and monitoring of Bayou Grosse Tete in Rosedale, through community participation and curricula engagement by the adjacent Starship Program. (US\$ 39,971).
- 2015.** Louisiana Seagrass – Synthesis project. Building community resilience through ecosystem based adaptation. (US\$ 49,780).
- 2015.** NOAA Saltonstall-Kennedy. Linking Blue Crab Abundance, Growth and Mortality to Marsh Fragmentation and Submerged Aquatic Vegetation Cover. (US\$ 283,578).
- 2015.** National Academy of Science – Gulf Research Program. Assessing long term linkages between development of oil and gas industry related coastal infrastructure, human wellbeing and ecosystem function in coastal Louisiana. (US\$ 129,000).
- 2013.** International Climate Initiative. Ecosystem based adaptation for sustainability of Pacific Island Peoples, in Fiji, Vanuatu and Solomon Islands. (Euros 5,000,000)
- 2013.** United Nations Environment Programme (UNEP). Watershed cost benefit analysis of climate change adaptation options, and development of monitoring and evaluation assessment for adaptation effectiveness in Lami Town, Fiji. (US\$100,000)
- 2013.** Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) Updating wetlands inventories for Pacific island nations. (AUS\$40,000)
- 2013.** DSEWPaC. Support to development of ‘State of Conservation in the Pacific’ report. (AUS\$50,000)
- 2013.** DSEWPaC. Assistance in organizing and facilitating the UN Regular Process for Global Marine Assessment in the southwest Pacific. (AUS\$15,000)
- 2012.** AusAID (ICCAI). Ecosystem based Adaptation to climate change, implementation, capacity building and knowledge transfer. (AUS\$375,000)
- 2012.** UNEP. Case study analysis of Ecosystem based Management in the Pacific. US (\$40,000)
- 2012.** European Union (BEST). Marine spatial planning for Pacific island nations. (Euros 500,000)
- 2011.** USAID. Ecosystem based Adaptation in the Choiseul Province, Solomon Islands. (US\$1,000,000)
- 2011.** UNEP. Cost benefit analysis of Adaptation options for Lami Town, Fiji. (US\$50,000)

Theses:

- **Carruthers, T.J.B. 1998.** [Ecology of *Ruppia megacarpa* Mason in Wilson Inlet: a perspective on survival in a highly variable aquatic environment.](#) PhD thesis. Marine Biology: University of Western Australia. 95 pp.
- **Carruthers, T.J.B. 1994.** Leaf production, canopy structure and light climate of a density manipulated *Amphibolis griffithii* meadow. MSc thesis. Marine Botany: University of Western Australia. 63 pp.
- **Carruthers, T.J.B. 1990.** *Phenotypic plasticity of the Chlorophyte macroalga *Caulerpa racemosa* Advisor.* Honours thesis. Botany Department: University of Western Australia. 148 pp.

Science newsletters and brochures and booklets (www.jan.umces.edu and www.sprep.org):

- 2012.** A vision for effective and streamlined reporting in the Pacific. SPREP brochure. 4pp.
- 2012.** Samoa 2012 Environmental Outlook: developing a vision for the next 50 years. Samoa MNRE brochure 4pp.
- 2011.** War in the Pacific National Historical Park. Connecting Guam's Natural Resources with its Culture and History. US NPS Natural Resources Park Brochure. 2pp
- 2010.** People and Oceans: managing marine areas for human well-being. Conservation International Marine Management Area Science Program. 4pp.
- 2010.** Living with the Sea: local efforts buffer effects of global change. Conservation International Marine Management Area Science Program. 4pp.
- 2010.** Groundwater resources at Kaloko-honokohau National Historical Park. National Park Service, Inventory and Monitoring, Pacific Island Network. 2pp.
- 2010.** National Park of American Samoa: a place of spectacular beauty on our doorstep. National Park Service, Inventory and Monitoring, Pacific Island Network. 2pp.
- 2010.** Bridging the gap between culture and conservation. Conservation International Marine Management Area Science Program. 4pp.
- 2010.** Economic incentives motivate human behavior change. Conservation International Marine Management Area Science Program. 4pp.
- 2010.** Adapting to climate change; maintaining ecosystem services for human well-being in the Verde Island Passage, Philippines. Conservation International. 12pp.
- 2010.** Conceptual diagrams: tools for science communication. Integration and Application Network. 4pp.
- 2009.** Hawai'i Volcanoes National Park: Kama'aina care about the land. Inventory and monitoring program, Pacific Island Network, National Park Service. 2pp.
- 2008.** South Caucasus region transboundary report card (English and Russian). USAID. 4pp.
- 2008.** Upstream land use effects water quality in Maryland's Coastal Bays. Maryland Coastal Bays Program. 4pp.
- 2007.** A cultural context for preserving Hawaii's diverse ecological landscape. Inventory and monitoring program, Pacific Island Network, National Park Service. 4pp.
- 2007.** Morro Bay: working together for a healthy ecosystem. Published in association with SLOCEA, California. 4pp.
- 2007.** Measuring the health of our national parks: Rock Creek Park. Published by National Park Service, Inventory and Monitoring, National Capital Region. 4pp.
- 2007.** Biological indicators enhance water quality monitoring in Maryland's Coastal Bays. March. Published by the Maryland Coastal Bays Program.

2007. [Restore vs retreat: securing ecosystem services provided by coastal Louisiana](#). Published by Coastal Louisiana Ecosystem Assessment & Restoration (CLEAR). 4pp.
2007. The role of benthic communities in the health of Maryland's Coastal Bays. February Published by University of Maryland Cooperative Extension, Wye Mills Research and Education Center. 4pp.
2006. [Enhancing landscape integrity in Coastal Louisiana: Water, sediment and ecosystems](#). July Published by Coastal Louisiana Ecosystem Assessment & Restoration (CLEAR). 4pp.
2005. Reducing flood damage in Coastal Louisiana: Communities, culture and commerce. November Published by Coastal Louisiana Ecosystem Assessment & Restoration (CLEAR). 4pp.
2005. Bay grass restoration in Chesapeake Bay. August Published by the Integration Application Network, Maryland Department of Natural Resources and the SAV restoration workgroup. 4pp.
2005. Creating a framework for reporting ecological conditions: National Capital Region of the National Park Service. August Published by Integration and Application Network and National Parks Service. 4pp.

PUBLICATION LIST

Refereed journal articles, books and book chapters:

1. Baustian, M.M., Stagg, C.L., Pery, C.L., Moss, L.C., Carruthers, T.J.B., and Allison, M. 2017. Relationships between salinity and short-term soil carbon accumulation rates from marsh types across a landscape in the Mississippi River Delta. *Wetlands* doi:10.1007/s13157-016-0871-3
2. Fertig, B., Carruthers, T.J.B., Dennison, W.C., Meyer, K.A., and Williams, M.R. 2014. Isotopic values in oysters indicate elemental sources constrained by multiple gradients. *Ecological Indicators* 46:101-109
3. Hills, T., Carruthers, T.J.B., Chape, S., and Donohoe, P. 2013. A social and ecological imperative for ecosystem-based adaptation to climate change in the Pacific islands. *Sustainability Science*. doi 10.1007/s11625-013-0217-5
4. Fertig BM, O'Neil JM, Beckert KA, Cain CJ, Needham DM, Carruthers TJB, Dennison WC 2013 Elucidating terrestrial nutrient sources to a coastal lagoon, Chincoteague Bay, Maryland, USA. *Estuarine Coastal and Shelf Science* 116:1-10
5. Fertig BM, Carruthers TJB, Dennison WC 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
6. Schupp CA, Winn NT, Pearl TL, Kumer JP, Carruthers TJB, Zimmerman CS. 2013. Restoration of overwash processes creates piping plover (*Charadrius melodus*) habitat on a barrier island (Assateague Island, Maryland). *Estuarine Coastal Shelf Science* 116:11-20
7. Carruthers TJB, Beckert K, Schupp CA, Saxby TA, Kumer JP, Thomas JES B., Dennison WC, Williams M, Fisher T, Zimmerman CS. 2013. Improving management of a mid-Atlantic coastal barrier island through assessment of habitat condition. *Estuar. Coast. Shelf Sci.* 116:74-86
8. Murray L, Gurbisz C, Gibson D, Woerner J, Carruthers T. 2012 Collaborative partnerships help bridge the gap between science and education. *EOS, Transactions American Geophysical Union*. Vol 93 (49) 510 doi:10.1029/2012EO490003
9. Carruthers TJB, Carter SL, Lookingbill TR, Florkowski LN, Hawkey JM, Dennison WC. 2012. A Habitat-Based Framework for Communicating Natural Resource Condition. *ISRN Ecology* 2012:13pp doi:10.5402/2012/38489

10. Kendrick GA, Waycott M, Carruthers TJB, Cambridge MLH R., Krauss SL, Lavery PS, Les DH, Lowe RJ, Mascaro i Vidal O, Ooi JLS, Orth RJ, Rivers DO, Ruiz-Montoya L, Sinclair EA, Statton J, van Dijk JK, Verduin JJ. 2012. The Central Role of Dispersal in the Maintenance and Persistence of Seagrass Populations. *Bioscience* 62(1):56–65
11. Newton A, Carruthers TJB, Icely J. 2012. The coastal syndromes and hotspots on the coast. *Estuarine Coastal Shelf Science* 96:39–47
12. Short FT, Polidoro B, Livingstone SR, Carpenter KE, Bandeira S, Bujang JS, Calumpong HP, Carruthers TJB, Coles RG, Dennison WC, Erfteimeijer PLA, Fortes MD, Freeman AS, Jagtap TG, Kamal AHM, Kendrick GA, Kenworthy WJ, La Nafie YA, Nasution IM, Orth RJ, Prathep A, Sanciangco JC, van Tussenbroek B, Vergara SG, Waycott M and Zieman JC. 2011. Extinction risk assessment of the worlds seagrass species. *Biological Conservation* 144(7):1961–1971
13. Longstaff, B.J., Carruthers, T.J.B., Dennison, W.C., Lookingbill, T.R., Hawkey, J.M., Thomas, J.E., Wicks, E.C. and Woerner, J.L. (eds). 2010. Integrating and applying science: a practical handbook for effective coastal ecosystem assessment. 244 pp. IANPress.
14. Fertig, B.M., Carruthers, T.J.B., Dennison, W.C., Fertig, E.J. and Altabet, M.A. 2010. Eastern oyster (*Crassostrea virginica*) δN^{15} as a bioindicator of nitrogen sources: observations and modeling. *Marine Pollution Bulletin* 60: 1288-1298
15. Orth, R.J., Williams, M.R., Marion, S.R., Wilcox, D.J., Carruthers, T.J.B, Moore, K.A., Kemp, W.M., Dennison, W.C., Rybicki, N., Bergstrom, P. and Batiuk, R.A. 2010. Long-term trends in submersed aquatic vegetation (SAV) in Chesapeake Bay, USA, related to water quality. *Estuaries and Coasts* 33: 1144-1163
16. Fertig, B.M., Carruthers, T.J.B., Dennison, W.C., Jones, A.B., Pantus, F. Longstaff, B. 2009. Oyster and macroalgae bioindicators detect elevated δN^{15} in Maryland's Coastal Bays. *Estuaries and Coasts* 32: 733-786
17. Dennison, W.C., Thomas, J.E., Cain, C.J., Carruthers, T.J.B., Hall, M.R., Jessien, R.V., Wazniak, C.E. and Wilson, D.E. (eds). 2009. Shifting Sands: environmental and cultural change in Maryland's Coastal Bays. 396pp.
18. Waycott, M., Duarte, C.M., Carruthers, T.J.B., Orth, R.J., Dennison, W.C., Olyarnike, S., Calladine, A., Fourqurean, J.W., Heck, K.L.Jr., Hughes, A.R., Kendrick, G.A., Kenworthy, W.J., Short, F.T. and Williams, S.L. 2009. Accelerating loss of seagrasses across the globe threatens coastal ecosystems. *Proceedings of the National Academy of Sciences* 106: 12377-12381
19. Ksiazek K, McGlathery K, Reynolds L, Schwartzchild A, Wilkerson C, Carruthers TJB, Gurbitsz C, Woerner JL, Murray L. 2009. Learning about Coastal Trends: what is the story with seagrasses... and how does it affect me? *Science Activities* 46(3):27–31
20. Duarte, C.M., Dennison, W.C., Orth, R.J. and Carruthers, T.J.B. 2008. The relative charisma of coastal ecosystems: coral reefs, mangrove forests, salt marshes and seagrass meadows. *Estuaries and Coasts* 31:233-238
21. Heck, K.L., Carruthers, T.J.B., Duarte, C.M., Hughes, A.R., Kendrick, G., Orth, R.J. and Williams, S.L. 2008. Trophic transfers from seagrass meadows subsidize diverse marine and terrestrial consumers. *Ecosystems* 11: 1198-1210
22. Carruthers, T.J.B., Dennison, W.C., Kendrick, G.A., Waycott, M., Walker, D.I. and Cambridge, M.L. 2007. Seagrasses of south-western Australia: a conceptual synthesis of the world's most diverse and extensive seagrass meadows. *Journal of Experimental Marine Biology and Ecology*: 350: 21-45
23. Carter, S.L., Mora-Bourgeois, G., Lookingbill, T.R., Carruthers, T.J.B. and Dennison, W.C. 2007. The Challenge of communicating monitoring results to effect change. *The George Wright Forum* 24: 48-58

24. Dennison, W.C., Lookingbill, T.R., Carruthers, T.J.B., Hawkey, J.M. and Carter, S.L. 2007. An eye opening approach to integrated environmental assessments. *Frontiers in Ecology* 5: 307-314
25. Grinham, A., Carruthers, T.J.B., Fisher, P., Udy, J. and Dennison, W.C. 2007. Accurately measuring the abundance of benthic microalgae (BMA) in spatially variable habitats. *Limnology and Oceanography methods* 5: 119-125
26. Short, F., Carruthers, T.J.B., Dennison, W.C. and Waycott, M. 2007. Global seagrass distribution and diversity: a bioregional model. *Journal of Experimental Marine Biology and Ecology* 350: 3-20
27. Wazniak, C.E., Hall, M.R., Carruthers, T.J.B. and Sturgis, B. 2007. Assessing eutrophication in a shallow lagoon: evaluating status and establishing trends in Maryland Coastal Bays. *Ecological Applications* 17: S64-S78
28. Orth, R.J., Carruthers, T.J.B., Dennison, W.C., Duarte, C.M., Fourqurean, J.W., Heck, K.L., Hughes, A.R., Kendrick, G.A., Kenworthy, W.J., Olyarnik, S., Short, F.T., Waycott, M. and Williams, S.L. 2006. A global contemporary crisis for seagrass ecosystems. *Bioscience* 56: 987-996
29. Thomas, J.E., Saxby, T.A., Jones, A.B., Carruthers, T.J.B., Abal, E.G. and Dennison, W.C. 2006. Communicating Science Effectively: A practical handbook for integrating visual elements. IWA Press, U.K. 136pp.
30. Carruthers, T.J.B., Barnes, P.A.G., Jacome, G.E. and Fourqurean, J.W. 2005. Lagoon scale processes in a coastally influenced Caribbean system: implications for the seagrass *Thalassia testudinum*. *Caribbean Journal of Science* 41(3), 441-455.
31. Carruthers, T.J.B., van Tussenbroek, B.I. and Dennison, W.C. 2005. Influence of submarine springs and wastewater on nutrient dynamics of Caribbean seagrass meadows. *Estuarine Coastal and Shelf Science* 64:191-199.
32. Smith, M., Carruthers, T. and Bunn, S. 2005. Aquatic Habitats. In: Abal, E.G., Bunn, S. and Dennison, W.C. (Eds). Healthy Waterways Healthy Catchments: Making the connection in South East Queensland, Australia. Moreton Bay and Catchments Partnership, Brisbane 240p.
33. Dennison, W.C., Carruthers, T.J.B., Thomas, J.E. & Glibert, P.M. 2004 A comparison of issues and management approaches in Moreton Bay, Australia and Chesapeake Bay, USA. In: *Developments in Ecosystems volume 1: Wetlands Ecosystems in Asia: Function and Management* (MH Wong, ed). pp. 3-25.
34. Carruthers T.J.B., Dennison W.C., Longstaff B.J., Waycott M., Abal E.G., McKenzie L.J., Long W.J.L. 2002. Seagrass habitats of north eastern Australia: models of key processes and controls. *Bulletin of Marine Science* 71(3): 1153–1169.
35. Mellors, J., Marsh, H.M., Carruthers, T.J.B. and Waycott, M. 2002. Do seagrasses influence nutrient and sediment structure in tropical intertidal environments? *Bulletin of Marine Science* 71(3):1215-1226.
36. Carruthers, T.J.B., Longstaff, B. J., Dennison, W.C., Abal, E.G., and Aioi, K. 2001. [Measurement of light penetration in relation to seagrass](#). In: Short, F and Coles, R (Eds) Global seagrass methods. Elsevier. Chapter 19. pp 369-392.
37. Carruthers T.J.B. 1999. Within canopy growth strategies of the two seagrass species *Amphibolis griffithii* (J. Black) den Hartog and *Amphibolis antarctica* (Labillardiere) Sonder & Ascherson ex Ascherson. *Proceedings of the 1996 Rottmest Island Marine Biological Workshop*.pp 41-50
38. Carruthers T.J.B. and D.I. Walker. 1999. Sensitivity of transects across a depth gradient for measuring changes in aerial coverage and abundance of *Ruppia megacarpa* Mason. *Aquatic Botany*.65:281-292
39. Carruthers T.J.B., Walker D.I. and G.A. Kendrick. 1999. Abundance of *Ruppia megacarpa* Mason in a seasonally variable estuary. *Estuarine Coastal and Shelf Science* 48: 497-509

40. Carruthers T.J.B. and D.I. Walker. 1997. Light climate and energy flow in the seagrass canopy of *Amphibolis griffithii* (J.M. Black) den Hartog. *Oecologia* 109:335-341
41. Walker D.I., T.J.B. Carruthers, P.F. Morrison and A.J. McComb. 1996. Experimental manipulation of canopy density in a temperate seagrass (*Amphibolis griffithii* [Black, Den hartog]) meadow: effect on sediment. *Seagrass Biology: proceedings of an international workshop, Rottnest Island, Western Australia 25-29 Jan 1996*. pp 117-122
42. Carruthers T.J.B., D.I. Walker and J.M. Huisman. 1993. An investigation of the taxonomy of two forms of *Caulerpa* from Perth, Western Australia, with a description of a new species. *Botanica Marina*: 36: 589-596

REPORTS:

- Hemmerling, S.A., Carruthers, T.J.B., Hijuelos, A.C., Riley, A.C., and Bienn, H.C. 2016. Trends in oils and gas infrastructure, ecosystem function, and socioeconomic wellbeing in coastal Louisiana. WISR-001-2016. The Water Institute of the Gulf. 20pp.
- Iacovino, C., Donohoe, P., Carruthers, T. and Chape, S. 2013. Ecosystem-based Adaptation and climate change vulnerability for Choiseul Province, Solomon Islands – a synthesis report. SPREP, Apia, Samoa, 14 pp.
- Rao NS, Carruthers TJB, Anderson P, Sivo L, Saxby TA, Durbin, T, Jungblut V, Hills T and Chape S. 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji. UNEP Technical Report, 28pp
- Lookingbill T, Bentsen CN, Carruthers TJB, Costanzo SD, Dennison WC, Doherty C, Lucier S, Madron J, Poppell E and Saxby TA. 2012. Colonial National Historical Park natural resource condition assessment. USNPS Technical Report, 156pp
- Thomas JE, Calzarette J, Campbell JP, Carruthers TJB, Cohen D, Dennison WC, Donaldson L, Landsman A, Lehman M, Nortrup M and Wenschhof E. 2011. Antietam National Battlefield Natural Resource Condition Assessment. USNPS Technical Report,, 160pp
- Thomas JE, Campbell JP, Carruthers TJB, Dennison WC, Gorsira B, Lehman M and Nortrup M. 2011. Manassas National Battlefield Park Natural Resource Condition Assessment. USNPS Technical Report,, 144pp
- Thomas JE, Banasik A, Campbell JP, Carruthers TJB, Dennison WC, Lehman M and Nortrup M. 2011. Monocacy National Battlefield Natural Resource Condition Assessment. IAN Press, Cambridge, MD, 148pp
- Carruthers TJB, Beckert KA, Dennison WC, Thomas JE, Saxby TA, Williams MR, Fisher T, Kumer J, Schupp C, Sturgis B, and Zimmerman C. 2011. Assateague Island National Seashore Natural Resource Condition Assessment. IAN Press, Cambridge, MD, 182pp
- Carruthers, T., Carter, S., Florkowski, L.N., Runde, J. and Dennison, B. 2009. Rock Creek Park Natural Resource Condition Assessment. National Park Service, Natural Resource Report NPS/NCRN/NRR-2009/109
- Beckert, K., Fertig, B., O'Neil, J., Carruthers, T.J., Wazniak, C., Sturgis, B., Hall, M., Jones, A.B. and Dennison, W.C. 2008. Fine scale pattern of water quality in three regions of Maryland's Coastal Bays: assessing nitrogen source in relation to land use. Report to Maryland Coastal Bays Program.
- Fertig, B., Carruthers, T.J. and Dennison, W.C. 2007. Linking Monie Bay watershed land use to nitrogen stable isotopes in tissues of the native eastern oyster, *Crassostrea virginica*. Report to National Estuarine Research Reserve.
- Banisak, A and 33 others. 2006. A conceptual basis for natural resource monitoring. Report to National Park Service, Inventory and Monitoring, National Capital Region Network.

- Fertig, B., Carruthers, T.J., Wazniak, C., Sturgess, B., Hall, M., Jones, A.B. and Dennison, W.C. 2006. Water quality in four regions of the Maryland Coastal Bays: assessing nitrogen source in relation to rainfall and brown tide. Report to Maryland Coastal Bays Program. 49pp.
- Wazniak, C., Hall, M., Cain, C., Wilson, D., Jesien, R., Thomas, J., Carruthers, T. and Dennison, W. 2004. [State of the Maryland Coastal Bays. \(public report\)](#). Maryland Department of Natural Resources, Maryland Coastal Bays Program and University of Maryland Center for Environmental Science.
- Carruthers, T. and Wazniak, C. 2004. Development of a water quality index for the Maryland Coastal Bays In: Wazniak, C. and Hall, M. (eds). Maryland's Coastal Bays: An Ecosystem Health Assessment (technical report), Maryland Department of Natural Resources, DNR-12-1202-0009. Chapter 4.4. pp 4.59-4.66.
- Wazniak, C., Karrh, L., Parham, T., Naylor, M., Hall, M., Carruthers, T. and Orth, R. 2004. [Seagrass abundance and habitat criteria in the Maryland Coastal Bays](#). In: Wazniak, C. and Hall, M. (eds). Maryland's Coastal Bays: An Ecosystem Health Assessment (technical report), Maryland Department of Natural Resources, DNR-12-1202-0009. Chapter 6.1. pp 6.2-6.18.
- Carruthers, T. and Wazniak, C. 2004. [Development of a seagrass habitat suitability index for the Maryland Coastal Bays](#). In: Wazniak, C. and Hall, M. (eds). Maryland's Coastal Bays: An Ecosystem Health Assessment (technical report), Maryland Department of Natural Resources, DNR-12-1202-0009. Chapter 6.2. pp 6.18-6.23.
- Carruthers, T., Dennison, W., Wazniak, C. and Hall, M. 2004. Coastal Bays ecosystem health index: bringing it all together. In: Wazniak, C. and Hall, M. (eds). Maryland's Coastal Bays: An Ecosystem Health Assessment (technical report), Maryland Department of Natural Resources, DNR-12-1202-0009. Chapter 9.1. pp 9.2-9.7.
- Jones, A.B., Carruthers, T.J.B., Pantus, F., Thomas, J., Saxby, T.A. and Dennison, W.C. 2004. [A water quality assessment of the Maryland Coastal Bays including nitrogen source identification using stable isotopes](#). Report to Maryland Coastal Bays Program. 59pp.
- Schlacker, T and Carruthers, T. 2002. [Maroochy River](#). In: Abal, E., Moore, K., Gibbes, B. and Denison, B. (Eds). State of South-east Queensland Waterways Report 2001. Chapter 3. Moreton Bay Waterways and Catchments Partnership. Brisbane. Pp 11-17.
- Schlacker, T and Carruthers, T. 2002. [Mooloolah River](#). In: Abal, E., Moore, K., Gibbes, B. and Denison, B. (Eds). State of South-east Queensland Waterways Report 2001. Chapter 4. Moreton Bay Waterways and Catchments Partnership. Brisbane. Pp 18-25.
- Pockock, J, Carruthers, T.J.B. and Schlacker, T. 2002. Final Report of Maroochy Mooloolah Loads and Impacts Study. WBM Oceanics, prepared for SEQRWMS
- Carruthers, T.J.B., Hewson, I. and Dennison, W.C. 2000. Maroochy/Mooloolah loads and impacts study: phase 2 interim data report. Submitted to WBM Oceanics Australia. 28pp
- Carruthers T.J.B., G. Bastyan and M. Robb. 1998. Monitoring plan for *Ruppia megacarpa* in Wilson Inlet. Prepared for Water and Rivers Commission, Western Australia
- Carruthers T.J.B. and D.I. Walker. 1998. Final monitoring program report to the WA Department of Transport, Batavia Coast Marina Development. Water quality, heavy metals, hydrocarbons and bacteria.
- Carruthers T.J.B., J. Wilshaw and D.I. Walker. 1997. Ecology of *Ruppia megacarpa* Mason and its epiphytes in Wilson Inlet - the influence of physical factors. A report to Water and Rivers Commission, Western Australia 123pp.
- Walker D.I. , Carruthers, T.J.B. and Kendrick, G.A. 1991. Geraldton Foreshore and Marina Development; Monitoring Program Report 1991; To the Department of Marine and Harbours; Water Quality, Heavy Metals and Biota.

