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DEPARTMENT OF BIOLOGICAL SCIENCES

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EDUCATION

| <u>Degree</u> | <u>Institution</u> | <u>Field</u> | <u>Dates</u> |
|---------------|-------------------------|--------------|--------------|
| PhD | Simon Fraser University | Biology | 1997-2001 |
| BA | Oberlin College | Biology | 1991-1995 |

EMPLOYMENT

| <u>Institution</u> | <u>Rank</u> | <u>Field</u> | <u>Dates</u> |
|----------------------------------|--|--------------|--------------|
| Florida International University | Director, School of Environment, Arts and Society | | 8/09-current |
| Florida International University | Director, Marine Sciences Program | | 1/08-8/09 |
| Florida International University | Associate Professor | Biology | 8/08-current |
| Florida International University | Assistant Professor | Biology | 8/03-8/08 |
| Mote Marine Laboratory | Staff Scientist | Biology | 4/02-8/03 |
| Mote Marine Laboratory | Postdoctoral Scientist | Biology | 4/01-4/02 |

PUBLICATIONS IN DISCIPLINE

BOOKS

1. Carrier, J. C., J. Musick, and M. R Heithaus (eds.). 2010. Sharks and Their Relatives II: Biodiversity, adaptive physiology, and conservation. CRC Press, Boca Raton
2. DeSalle, R. and **M. R. Heithaus**. 2008. Biology. Holt, Reinhart, and Winston. Austin, TX.
3. Carrier, J. C., J. Musick, and **M. R Heithaus** (eds). 2004. The biology of sharks and their relatives. CRC Press, Boca Raton.

PEER-REVIEWED JOURNAL PUBLICATIONS

65. Heithaus, E.R., P. A. Heithaus, **M. R. Heithaus**, D. Burkholder, and C. A. Layman. 2011. Trophic dynamics in a relatively pristine subtropical fringing mangrove community. Marine Ecology Progress Series 428: 49-61.
64. Rosenblatt, A. E. and **M. R. Heithaus**. 2011. Does variation in movement tactics and trophic interactions among American alligators create habitat linkages? Journal of Animal Ecology 80: 786-798.
63. Wirsing, A. J., **M. R. Heithaus**, and L.M. Dill. 2011. Predator-induced modifications to diving behavior vary with foraging mode. Oikos 120: 1005-1012.
62. Vaudo, J. J. and **M. R. Heithaus**. 2011. Dietary niche overlap in a nearshore elasmobranch mesopredator community. Marine Ecology Progress Series 425: 247-260

61. Lewis, J. S., D. Wartzok, and **M. R. Heithaus**. 2011. Highly dynamic fission-fusion species can exhibit leadership when traveling. *Behavioral Ecology Sociobiology*: in press
60. Matich, P., **M. R. Heithaus**, and C. A. Layman. 2011. Contrasting patterns of individual specialization and trophic coupling in two marine apex predators. *Journal of Animal Ecology* 80: 294-305.
59. Vaudo, J. J. P. Matich, **M. R. Heithaus**. 2010. Mother-offspring fractionation in two species of placental sharks. *Journal of Fish Biology* 77: 1724-1727.
58. Hammerschlag, N, **M. R. Heithaus**, and J. E. Serafy. 2010. Influence of predation risk and food supply on nocturnal fish foraging distributions along a subtropical mangrove-seagrass ecotone. *Marine Ecology Progress Series* 414: 223-235.
57. Ferretti, F., B. Worm, G. L. Britten, **M. R. Heithaus**, H. K. Lotze. 2010. Patterns and ecosystem consequences of shark declines in the ocean. *Ecology Letters* 13: 1055-1071.
56. Matich, P., **M. R. Heithaus**, and C. A. Layman. 2010. Size-based inter-tissue comparisons of stable carbon and nitrogen isotope signatures of bull and tiger sharks. *Canadian Journal of Fisheries and Aquatic Sciences* 67: 877-885.
55. Dunphy-Daly, M. M., **M. R. Heithaus**, A. J. Wirsing, J. S. F. Maradon, D. A. Burkholder. 2010. Predation risk influences the diving behavior of a marine mesopredator. *Open Journal of Ecology* 3: 8-15
54. Wirsing, A. J., K. Cameron, and **M. R. Heithaus**. 2010. Prey responses to predators vary with prey escape mode. *Animal Behavior* 79: 531-537.
53. Vaudo, J. J. and **M. R. Heithaus**. 2009. Spatiotemporal variability in a sandflat elasmobranch fauna in Shark Bay, Australia. *Marine Biology* 156: 2579-2590
52. Wirsing, A. J. and **M. R. Heithaus**. 2009. The measure of danger: olive-headed sea snakes (*Disteria major*) shift seagrass microhabitats to avoid predators. *Marine Ecology Progress Series* 387: 287-293.
51. **Heithaus, M. R.**, B. Delius, A. J. Wirsing, and M. M. Dunphy-Daly. 2009. Physical factors influencing the distribution of a top predator in a subtropical oligotrophic estuary. *Limnology and Oceanography* 54: 472-482.
50. **Heithaus, M. R.**, A. J. Wirsing, D. Burkholder, J. Thomson, and L. M. Dill. 2009. Towards a predictive framework for predator risk effects: the interaction of landscape features and prey escape tactics. *Journal of Animal Ecology* 78: 556-562
49. Thomson, J. A., D. Burkholder, **M. R. Heithaus**, and L. M. Dill. 2009. Validation of a rapid visual-assessment technique for categorizing the body condition of green sea turtles (*Chelonia mydas*) in the field. *Copeia* 2009: 251-255.
48. Mann, J. B. L. Sargeant, J. J. Watson-Capps, Q. A. Gibson, **M.R. Heithaus**, R. C. Connor, and E Patterson. 2008. Why do dolphins carry sponges? *PloS One* 3: e3868. Doi:10.1371/journal.pone.0003868
47. **Heithaus, M. R.**, A. Frid, A. J. Wirsing, and B. Worm. 2008. Predicting ecological consequences of marine top predator declines. *Trends in Ecology and Evolution* 23: 202-210
46. **Heithaus, M. R.**, A. J. Wirsing, J. Thompson, and D. Burkholder. 2008. A review of lethal and non-lethal effects of predators on adult marine turtles. *Journal of Experimental Marine Biology and Ecology* 356: 43-51.
45. Kerford, M., A. J. Wirsing, **M. R. Heithaus** and L. M. Dill. 2008. Danger on the rise: Habitat use by bar-bellied sea snakes in Shark Bay, Western Australia. *Marine Ecology Progress Series* 358: 289-294.

44. Wirsing, A. J., **M. R. Heithaus**, A. Frid, and L. M. Dill. 2008. Seascapes of fear: methods for evaluating sublethal predator effects experienced and generated by marine mammals. *MaMarine Mammal Science* 24: 1-15
43. Dunphy-Daly, M. M., **M. R. Heithaus**, and D. E. Claridge. 2008. Temporal variation in dwarf sperm whale (*Kogia sima*) habitat use and group size off Great Abaco Island, Bahamas. *Marine Mammal Science* 24: 171-182
42. Wirsing, A. J., **M. R. Heithaus**, and R. Abernathy. 2008. Differences in escape abilities do not explain sex differences in predator-inflicted injury rates of loggerhead turtles. *Journal of Herpetology* 42: 411-413
41. **Heithaus, M. R.**, A. J. Wirsing, A. Frid, and L. M. Dill. 2007. Species interactions and marine conservation: lessons from an undisturbed ecosystem. *Israel Journal of Ecology and Evolution* 53: 355-370
40. Marshall, G., M. Bakhtiari, M. Shepard, B. Jolliff, D. Rasch, K. Abernathy, J. Tweedy III, J. C. Carrier, and **M. R. Heithaus**. 2007. An advanced solid-state animal-borne video and environmental data-logging device ("Cittercam") for marine research. *MTS Journal* 41: 31-38.
39. **Heithaus, M. R.**, D. Burkholder, R. E. Hueter, L. I. Heithaus, H. W. Pratt Jr, and J. C. Carrier. 2007. Spatial and temporal variation in shark communities of the lower Florida Keys and evidence for historical population declines. *Canadian Journal of Fisheries and Aquatic Sciences* 64: 1302-1313.
38. Wirsing, A. J., **M. R. Heithaus**, and L. M. Dill. 2007. Fear factor: Do dugongs (*Dugong dugon*) trade food for safety from tiger sharks (*Galeocerdo cuvier*)? *Oecologia* 153: 1031-1040.
37. Wirsing, A. J., **M. R. Heithaus**, and L. M. Dill. 2007. Can measures of prey availability improve our ability to predict the abundance of large marine predators? *Oecologia* 153: 563-568.
36. **Heithaus, M. R.**, A. Frid, A. J. Wirsing, L. M. Dill, J. Fourqurean, D. Burkholder, J. Thomson, and L. Bejder. 2007. State-dependent risk-taking by green sea turtles mediates top-down effects of tiger shark intimidation in a marine ecosystem. *Journal of Animal Ecology* 76: 837-844.
35. Wirsing, A. J., **M. R. Heithaus**, and L. M. Dill. 2007. Can you dig it? Use of excavation, a risky foraging tactic, by dugongs is sensitive to predation danger. *Animal Behavior* 74: 1085-1091
34. Wirsing, A. J., **M. R. Heithaus**, and L. M. Dill. 2007. Living on the edge: dugongs prefer foraging microhabitats that allow escape rather than avoidance of predators. *Animal Behaviour* 74: 93-101.
33. **Heithaus, M. R.**, A. J. Wirsing, and L. M. Dill. 2007. Long-term movements of tiger sharks satellite-tagged in Shark Bay, Western Australia. *Marine Biology* 151: 1455-1461.
32. Frid, A., **M. R. Heithaus**, and L. M. Dill. 2007. Dangerous dive cycles and the proverbial ostrich. *Oikos* 116: 893-902.
31. Sergeant, B. L., A. J. Wirsing, **M. R. Heithaus**, and J. Mann. 2007. Does environmental heterogeneity drive foraging variation in wild dolphins (*Tursiops* sp.)? *Behavioral Ecology and Sociobiology* 61: 679-688.
30. Bejder, L., H. Whitehead, A. Samuels, J. Mann, R. Connor, N Gales, **M. Heithaus**, J. Watson-Capps, C. Flaherty, and M. Krutzen. 2006. Decline in relative abundance of bottlenose dolphins exposed to long-term disturbance. *Conservation Biology* 20: 1791-

1798.

29. **Heithaus, M. R.**, I. M. Hamilton, A. J. Wirsing, and L. M. Dill. 2006. Validation of a randomization procedure to assess animal habitat preferences: microhabitat use of tiger sharks in a seagrass ecosystem. *Journal of Animal Ecology* 75: 666-676.
28. **Heithaus, M. R.** and L. M. Dill. 2006. Does tiger shark predation risk influence foraging habitat use by bottlenose dolphins at multiple spatial scales? *Oikos* 114:257-264.
27. Torres, L. G., **M. R. Heithaus** and B. K. Delius. 2006. Influence of teleost abundance on the distribution and abundance of sharks in Florida Bay, USA. *Hydrobiologia* 569: 449-455.
26. Wirsing, A. J., **M. R. Heithaus**, and L. M. Dill. 2006. Tiger shark (*Galeocerdo cuvier*) abundance and growth rates in a subtropical embayment: evidence from seven years of standardized fishing effort. *Marine Biology* 4: 961-968.
25. Krützen, M, J. Mann, **M. R. Heithaus**, R. C. Connor, L. Bejder, and W. B. Sherwin. 2005. Cultural transmission of tool use in bottlenose dolphins. *Proceedings of the National Academy of Sciences* 102: 8939-8943.
24. **Heithaus, M. R.** 2005. Habitat use and group size of pied cormorants (*Phalacrocorax varius*) in a seagrass ecosystem: possible effects of food abundance and predation risk. *Marine Biology* 147: 27-35.
23. **Heithaus, M. R.**, A. Frid, A. Wirsing, L. Bejder, and L. M. Dill. 2005. The biology of green and loggerhead turtles under risk from tiger sharks at a foraging ground. *Marine Ecology Progress Series* 288: 285-294.
22. Parrish, F. A., G. J. Marshall, C. L. Littnan, **M. R. Heithaus**, S. Canja, B. Becker, R. Braun, and G. A. Antonelis. 2005. Foraging of juvenile monk seals at French Frigate Shoals, Hawaii. *Marine Mammal Science* 21: 93-107.
21. **Heithaus, M. R.** 2004. Fish communities of seagrass meadows and associated habitats in Shark Bay, Western Australia. *Bulletin of Marine Science* 75: 79-99.
20. **Heithaus, M. R.** and A. Frid. 2003. Optimal diving under the risk of predation. *Journal of Theoretical Biology* 223: 79-93.
19. Dill, L. M., **M. R. Heithaus**, and C. J. Walters. 2003. Behaviorally-mediated indirect interactions in marine communities and their conservation and implications. *Ecology* 84: 1151-1157.
18. **Heithaus, M. R.** and L. M. Dill. 2002. Food availability and tiger shark predation risk influence bottlenose dolphin habitat use. *Ecology* 83: 480-491.
17. **Heithaus, M. R.**, L. M. Dill, G. J. Marshall, and B. Buhleier. 2002. Habitat use and foraging behavior of tiger sharks (*Galeocerdo cuvier*) in a seagrass ecosystem. *Marine Biology* 140: 237-248.
16. **Heithaus, M. R.**, A. Frid, and L. M. Dill. 2002. Species and sex-class differences in shark-inflicted injury frequencies, escape ability, and habitat use of green and loggerhead turtles. *Marine Biology* 140: 229-236.
15. **Heithaus, M. R.**, J. M. McLash, A. Frid, L. M. Dill, and G. J. Marshall. 2002. Novel insights into the behavior of sea turtles from animal-borne cameras. *Journal of the Marine Biological Association UK* 82: 1049-1050.
14. Krützen, M., L. M. Barre, L. M. Moller, **M. R. Heithaus**, C. Simms, and W. B. Sherwin. 2002. A biopsy system for small cetaceans: darting success and wound healing in *Tursiops* spp. *Marine Mammal Science* 18: 863-878.
13. **Heithaus, M. R.** 2001. Habitat selection by predators and prey in communities with

- asymmetrical intraguild predation. *Oikos* 92: 542-554.
12. **Heithaus, M. R.** 2001. Shark attacks on bottlenose dolphins (*Tursiops aduncus*) in Shark Bay, Western Australia: attack rate, bite scar frequencies, and attack seasonality. *Marine Mammal Science* 17: 526-539.
 11. **Heithaus, M. R.** 2001. The biology of tiger sharks (*Galeocerdo cuvier*) in Shark Bay, Western Australia: sex ratio, size distribution, diet, and seasonal changes in catch rates. *Environmental Biology of Fishes* 61: 25-36.
 10. **Heithaus, M. R.** 2001. Predator-prey and competitive interactions between sharks (order Selachii) and dolphins (suborder Odontoceti): a review. *Journal of Zoology (London)* 253:53-68.
 9. **Heithaus, M. R.**, G. J. Marshall, B. M. Buhleier, and L. M. Dill. 2001. Employing Crittercam to study habitat use and behavior of large sharks. *Marine Ecology Progress Series* 209: 307-310.
 8. Hamilton, I. M. and **M. R. Heithaus**. 2001. The effect of temporal variation in predation risk on anti-predator behaviour: an empirical test with marine snails. *Proceedings of the Royal Society of London B* 268:2585-2588.
 7. Connor, R. C., **M. R. Heithaus**, and L. M. Barre. 2001. Complex social structure, alliance stability, and mating access in a bottlenose dolphin 'super-alliance.' *Proceedings of the Royal Society of London B* 268:263-267.
 6. Connor, R. C., **M. R. Heithaus**, P. Berggren, and J. L. Miksis. 2000. "Kerplunking": surface fluke-slaps during shallow water foraging by bottlenose dolphins. *Marine Mammal Science* 16: 646-653.
 5. Mann, J., R. C. Connor, L. M. Barre, and **M. R. Heithaus**. 2000. Female reproductive success in bottlenose dolphins (*Tursiops* sp.): life history, habitat, provisioning, and group-size effects. *Behavioral Ecology* 11: 210-219.
 4. Connor, R. C., **M. R. Heithaus**, and L. M. Barre. 1999. Superalliance of bottlenose dolphins. *Nature* 397: 571-572.
 3. **Heithaus, M. R.** and C. Gramme. 1998. Fish communities of the Vermilion River: differentiation between tributaries and the main channel. *Ohio Journal of Science* 98: 98-102. *Finalist for paper of the year, Ohio Academy of Science*
 2. **Heithaus, M. R.** and R. H. Laushman. 1997. Genetic variation and conservation of stream fishes: influence of ecology, life history, and water quality. *Canadian Journal of Fisheries and Aquatic Sciences* 54: 1822-1836.
 1. Connor, R. C. and **M. R. Heithaus**. 1996. Great white shark approach elicits flight response in bottlenose dolphins. *Marine Mammal Science* 12: 602-606.

CHAPTERS IN BOOKS

8. **Heithaus, M. R.** and J. J. Vaudo. In press. Predator-prey interactions of sharks and their relatives. In Carrier, J. C., J. Musick, M. R. Heithaus (eds.) *The Biology of Sharks and Their Relatives*, Second Edition. CRC Press.
7. Vaudo, J. J. and **M. R. Heithaus**. in press. High trophic level consumers: elasmobranchs. In Wolanski E, McLusky D (Eds), *Treatise on Estuarine and Coastal Science: Trophic Structure of Estuaries and Coasts*. Elsevier Inc.

6. Frid, A. and **M. R. Heithaus**. 2010. Conservation and Anti-Predator Behavior. Pages 366-376 *In* Breed, M. D. and J. Moore (eds) Encyclopedia of Animal Behavior. Elsevier.
5. **Heithaus, M. R.**, A. Frid, J. Vaudo, B. Worm, and A. J. Wirsing. 2010. Unraveling the ecological importance of elasmobranchs. *In* Carrier, J. C., J. Musick, M. R Heithaus (eds.) Sharks and Their Relatives II: Biodiversity, adaptive physiology, and conservation. CRC Press pp 611-637
4. **Heithaus, M. R.** and L. M. Dill. 2009. Feeding Tactics and Strategies. *In* Perrin, W. F., B. Würsig, and H. G. M. Thewissen (eds.). The Encyclopedia of Marine Mammals, Second Edition. Academic Press. pp 414-423
3. **Heithaus, M. R.** 2007. Nursery areas as essential shark habitat: a theoretical perspective. *In* McCandless, C. T., N. E. Kohler, H. L. Pratt Jr. (eds.) Shark Nursery Grounds of the Gulf of Mexico and the East Coast Waters of the United States. American Fisheries Society Symposium 50: 3-13.
2. **Heithaus, M. R.** 2004. Predator-prey interactions. Pages 487-521 *In* Carrier, J. C., J. Musick, M. R Heithaus (eds.) The Biology of Sharks and Their Relatives. CRC Press.
1. **Heithaus, M. R.** and L. M. Dill. 2002. Feeding Tactics and Strategies. Pages 412-422 *in* Perrin, W. F., B. Würsig, and H. G. M. Thewissen (eds.). The Encyclopedia of Marine Mammals. Academic Press.

GOVERNMENT REPORTS

1. Baird, R. W., M. B. Hansen, E. E. Ashe, **M. R. Heithaus**, and G. J. Marshall. 2003. Studies of foraging in “southern resident” killer whales during July 2002: dive depths, bursts in speed, and the use of a “Cittercam” system for examining sub-surface behavior. Report prepared under Order Number AB 133F-02-SE-1744 for the National Marine Mammal Laboratory, National Marine Fisheries Service, Seattle, WA.

BOOK REVIEWS

1. Heithaus, M. R. 2007. Review of Understanding sharks. Quarterly Review of Biology 82: 290.

MAJOR RESEARCH FUNDING

GRANTS AS PRINCIPLE INVESTIGATOR

5. Assessing impacts of oil exposure to deep sea ecosystems of the Gulf of Mexico using sharks and scavengers as integrative models. Florida Institute of Oceanography
4. Communicating research to public audiences: Predators of Shark River. National Science Foundation
3. CAREER: Does predator intimidation influence a pristine seagrass community through multiple indirect pathways? National Science Foundation.
2. Behaviorally mediated species interactions in a subtropical seagrass community. National Science Foundation.
1. Development of an advanced animal-borne video telemetry system. SeaGrant.

GRANTS AS CO-PRINCIPLE INVESTIGATOR

1. FCE LTER II: Coastal Oligotrophic Ecosystems Research with D Childers (PI), E. Gaiser (coPI), **M Heithaus (coPI)**, R Jaffe (coPI), R Price (coPI). National Science Foundation. November 2006-November 2012. \$4,920,000. *I am the coPI responsible for the Consumer Dynamics Group within the LTER. This subgroup directly will receive a total of \$398,700.*

PROFESSIONAL HONORS, PRIZES, FELLOWSHIPS

UNIVERSITY

1. Faculty Award for Excellence in Research, 2007
2. FIU Top Scholar 2008
3. FIU Top Scholar 2010

OTHER

3. American Library Association *Choice* Magazine Outstanding Academic Title for “Biology of sharks and their relatives” 2004
2. Gruber Award for the best student presentation at the American Elasmobranch Society Meeting. 2000
1. NSF Graduate Research Fellowship. 1998-2001

OFFICES HELD IN PROFESSIONAL SOCIETIES

- 2007 Grants Committee, American Elasmobranch Society
2006 Chair, Nominating Committee, American Elasmobranch Society