

# Andrea Denise Marshall

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Marine Megafauna Foundation  
Manta Ray & Whale Shark Research Centre  
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**Date of Birth:** 21<sup>st</sup> April 1979  
**Nationality:** United States Citizen



## **ACADEMIC DEGREES**

**Doctor of Philosophy (2004-2008)**  
School of Biomedical Sciences  
University of Queensland, Australia  
Thesis: Biology & Ecology of *Manta birostris* in southern Mozambique

**Postgraduate Diploma in Research (Honors Class 1) (2002)**  
School of Biomedical Sciences  
University of Queensland, Australia  
Thesis Title: Comparative Dietary Analysis of Two Sympatric species of Stingarees from S.E. Queensland Waters.

**Undergraduate Degree in Biology (BA) (Honors) (2001)**  
College of Creative Studies  
University of California, Santa Barbara  
Regions of specialization: Marine Sciences, Zoology, and Ecology

## CURRENT POSITIONS

- 2012 – Present:**                    **Co-Founder & President**  
Marine Megafauna Foundation  
California, USA
- 2008 – Present:**                    **President**  
Marine Megafauna Association  
Tofo Beach, Mozambique
- 2008 – Present:**                    **Principal Scientist**  
Global Manta Ray Research Program  
Marine Megafauna Foundation
- 2011 – Present:**                    **Science Coordinator**  
Manta Matcher' Automated Global Manta Ray Database  
WildMe USA
- 2012 – Present:**                    **Owner & Tour Leader**  
Ray of Hope Expeditions  
California, USA
- 2009 – Present:**                    **Owner**  
Andrea Marshall Marine Photographic and Consulting  
Vilanculos, Mozambique

## SCIENTIFIC PUBLICATIONS

### Peer-Reviewed Articles

Stephanie Venables, Daniel Van Duinkerken, Christopher Rohner, **Andrea Marshall** (2020) Habitat use and movements patterns of reef manta rays *Mobula alfredi* in southern Mozambique. *Marine Ecology Progress Series* 634: 99-114 <https://doi.org/10.3354/meps13178>

Elitza Gemanov, **Andrea Marshall**, I. Gede Hendrawan, Ryan Admiraal, Christoph Rohner, Janis Argeswara, Raka Wulandari, Mahardika Himawan, Neil Loneragan (2019) Microplastics on the Menu: Plastics Pollute Indonesian Manta Ray and Whale Shark Feeding Grounds. *Frontiers in Marine Science* 6:679 <https://doi.org/10.3389/fmars.2019.00679>

Stephanie Venables, **Andrea Marshall**, Elitza Gemanov, Robert Perryman, Ricardo Tapilatu, Gede Hendrawan, Anna Flam, Mike van Keulen, Joseph Tomkins, Jason Kennington (2019) It is not all black and white: investigating colour polymorphism in manta rays across Indo-Pacific populations. *Proceedings of the Royal Society B* 286: 20191879 <https://doi.org/10.1098/rspb.2019.1879>

Robert Perryman, Stephanie Venables, Ricardo Tapilatu, **Andrea Marshall**, Culum Brown, Daniel Franks (2019) Social preferences and network structure in a population of reef manta rays. *Behavioural Ecology and Sociobiology* <https://doi.org/10.1007/s00265-019-2771-x>

Atlantine Boggio- Pasqua, Anna Flam, **Andrea Marshall** (2019) Spotting the ‘small eyes’: using photo-ID methodology to study a wild population of smalleye stingray (*Megatrygon microps*) in southern Mozambique. *Peer J* <https://peerj.com/articles/7110/>

Elitza Gemanov, Lars Bejder, Delphine B.H. Chabanne, Dharmadi Dharmadi, I. Gede Hendrawan, **Andrea D. Marshall**, Simon J. Pierce, Mike van Keulen, Neil Loneragan (2019) Contrasting Habitats Use and Population Dynamics of Reef Manta Rays Within the Nusa Penida Marine Protected Area, Indonesia *Frontiers in Marine Science* <https://doi.org/10.3389/fmars.2019.00215>

Randall Arauz, Elpis J. Chavez, E. Mauricio Hoyos-Padilla, **Andrea Marshall** (2019) First record of the reef manta ray, *Mobula alfredi*, from the eastern Pacific. *Marine Biodiversity Records* [doi.org/10.1186/s41200-019-0162-9](https://doi.org/10.1186/s41200-019-0162-9)

Josh Stewart, Fabrice Jaine, Amelia Armstrong, Asia Armstrong, Michael Bennett, Katherine Burgess, Lydie Couturier, Donald Croll, Melissa Cronin, Mark Deakos, Christine Dudgeon, Daniel Fernando, Niv Froman, Elitza Germanov, Martin Hall, Silvia Hinojosa-Alvarez, Jane Hosegood, Tom Kashiwagi, Betty Laglbauer, Nerea Lezama-Ochoa, **Andrea Marshall**, Frazer McGregor, Giuseppe Notobartolo di Sciara, Marta Palacios, Lauren Peel Anthony Richardson, Robert Rubin, Kathy Townsend, Stephanie Venables, Guy Stevens (2018) Research priorities to support effective manta and devil ray conservation. *Frontiers in Marine Science* DOI 10.3389/fmars.2018.00314

Simon Pierce, Jason Holmberg, Alison Kock, **Andrea Marshall** (2018) Photographic identification of sharks. In: Shark research: emerging technologies and applications for the field and laboratory. Carrier JC, Heithaus MR, Simpfendorfer CA (eds.). CRC Press, Boca Raton. pp 219-234

Elitza Gemanov, **Andrea Marshall**, Lars Bejder, Marina Cristina Fossi, Neil Loneragan (2018) Microplastics: No Small Problem for Filter-Feeding Megafauna. *Trends in Ecology & Evolution* DOI 10.1016/j.tree.2018.01.005

Kathrine Burgess, Michel Guerrero, Anthony Richardson, Mike Bennett, **Andrea Marshall** (2017) Use of epidermal mucus in elasmobranch stable isotope studies: a pilot study using the giant manta ray (*Manta birostris*). *Marine and Freshwater Research* DOI 10.1071/MF16355

Kathrine Burgess, Michel Guerrero, Anthony Richardson, Mike Bennett, **Andrea Marshall** (2017) Use of epidermal mucus in elasmobranch stable isotope studies: a pilot study using the giant manta ray (*Manta birostris*). *Marine and Freshwater Research* DOI 10.1071/MF16355

Steph Venables, Giles Winstanley, Libby Bowles & **Andrea Marshall** (2016) A Giant Opportunity: The Economic Impact of Manta Rays on the Mozambican Tourism Industry - An Incentive for Increased Management and Protection. *Tourism in Marine Environments*. DOI 10.3727/154427316X693225

Katherine Burgess, Lydie Couturier, **Andrea Marshall**, Anthony Richardson, Scarla Weeks & Mike Bennett (2016) *Manta birostris*, predator of the deep? Insight into the diet of the giant manta ray through stable isotope analysis. *Royal Society Open Science* 3: 160717.

Donald Croll, Heidi Dewar Nick Dulvy, Daniel Fernando, Malcolm Francis, Felipe Galvan-Magana, Martin Hall, Shawn Heinrichs, **Andrea Marshall**, Douglas McCauley, Kelly Newton, Guiseppe Notarbartolo-di-Sciara, Mary O'Malley, John O'Sullivan, Marloes Poortviet, Marlon Roman, Guy Stevens, Bernie Tershy & Will White (2015) Vulnerabilities and Fisheries Impacts: The Uncertain Future of Manta and Devil Rays. *Aquatic Conservation: Marine and Freshwater Ecosystems*. DOI 10.1002/aqc.2591.

Tom Kashiwagi, E Maxwell, **Andrea Marshall** & A Christensen (2015) Evaluating manta ray mucus as an alternative DNA source for population genetics study: underwater-sampling, dry-storage, and PCR success. *PeerJ* 3:31188; DOI 10.7717/peerj.1188

Chris Rohner, Anthony Richardson, Clare Prebble, **Andrea Marshall**, Mike Bennett, Scarla Weeks, Jeremy Cliff, Sabine Wintner & Simon Pierce (2015) Laser photogrammetry improves size and demographic estimates for whale sharks, *PeerJ* DOI 10.7717/peerj.886.

Craig McClain, Meghan Balk, Mark Benfield, Trevor Branch, Catherine Chen, James Cosgrove, Alistar Dove, Rebecca Helm, Fredrick Hochberg, Lindsay Gaskins, Frank Lee, **Andrea Marshall**, Steven McMurray, Caroline Schanche, Shane Stone & Andrew Thaler (2015) Sizing ocean giants: patterns of intraspecific size variation in marine megafauna. *PeerJ* DOI 10.7717/peerj.715

Alex Hearn, David Acuna, James Ketchum, Cesar Penaherrera, Jonathan Green, **Andrea Marshall**, Michel Guerrero & G Shillinger (2014). Elasmobranchs of the Galapagos Marine Reserve. In: Galapagos Mar. Reserv. A Dyn. Soc. Syst. (eds. Denkinger, J. & Vinueza, L.). pp. 23–59.

Elitza Germanov & **Andrea Marshall** (2014) Running the Gauntlet: Regional Movement Patterns of *Manta alfredi* through a complex of parks and fisheries. *PLoS One* 9(10): e110071

Peter Haskell, Andrew McGowan, Anna Westling, Adriana Mendex-Jimenez, Chris Rohner, Kym Collins, Marcela Rosero-Caicedo, Jodi Salmond, Ara Monadjem, **Andrea Marshall** & Simon Pierce (2014) Monitoring the effects of tourism on whale shark *Rhincodon typus* behaviour in Mozambique, *Oryx*. DOI:10.1017/S0030605313001257

Lydie Couturier, Chris Rohner, Anthony Richardson, **Andrea Marshall**, Fabrice Jaïne, Mike Bennett, Kathy Townsend, Scarla Weeks & Peter Nichols (2013) Stable isotope and signature fatty acid analyses suggest reef manta rays feed on demersal zooplankton, *PLoS ONE* 8(10): e77152.

Lydie Couturier, Chris Rohner, Anthony Richardson, Simon Pierce, **Andrea Marshall**, Fabrice Jaïne, Kathy Townsend, Mike Bennett, Scarla Weeks & Peter Nichols (2013) Unusually high levels of n-6 polyunsaturated fatty acids in whale sharks and reef manta rays, *Lipids*. DOI 10.1007/s11745-013-3829-8

Chris Town, **Andrea Marshall** & Nutthaporn Sethasathien (2013) Manta Matcher: Automated Photographic Identification of Manta Rays using Keypoint Features. *Journal of Applied Ecology* DOI 10.1002/ece3.587.

Chris Rohner, Simon Pierce, **Andrea Marshall**, Scarla Weeks, Mike Bennett & Anthony Richardson (2013) Trends in sightings and environmental influences on a coastal aggregation of manta rays and whale sharks, *Marine Ecology Progress Series*, 482: 153–168.

Tom Kashiwagi, **Andrea Marshall**, Mike Bennett & Jennifer Ovenden (2012) The genetic signature of recent speciation in manta rays (*Manta alfredi* and *M. birostris*) *Molecular Phylogenetics and Evolution* 64: 212-218.

**Andrea Marshall** & Simon Pierce (2012) The use and abuse of photographic identification in sharks and rays. *Journal of Fish Biology* 80: 1361-1379.

Lydie Couturier, **Andrea Marshall**, Fabrice Jaune, Tom Kashiwagi, Simon Pierce, Anthony Richardson, Kathy Townsend, Scarla Weeks & Mike Bennett. Biology, ecology and conservation of the Mobulidae. *Journal of Fish Biology* 80: 1075-1119

**Andrea Marshall**, Christine Dudgeon & Mike Bennett (2011) Size and structure of a photographically identified population of manta rays *Manta alfredi* in southern Mozambique. *Marine Biology* 158(5): 1111.

Tom Kashiwagi, **Andrea Marshall**, Mike Bennett & Jennifer Ovenden (2011) Habitat segregation and mosaic sympatry of the two species of manta ray in the Indian and Pacific Oceans: *Manta alfredi* and *M. birostris*. *Marine Biodiversity Records* 4, e53.

**Chris Rohner**, Anthony Richardson, **Andrea Marshall**, Scarla Weeks & Simon Pierce (2011) How large is the world's largest fish Measuring whale sharks *Rhincodon typus* with laser photogrammetry, *Journal of Fish Biology*, 78: 378–385.

**Andrea Marshall** & Mike Bennett (2010) Reproductive ecology of the reef manta ray (*Manta alfredi*) in southern Mozambique. *Journal of Fish Biology* 77: 169-190.

**Andrea Marshall** & Mike Bennett MB (2010) Investigation of shark predation on *Manta alfredi* off the coast of Mozambique using bite mark analysis. *South African Journal of Marine Science* 32(3).

**Andrea Marshall**, Leonard Compagno & Mike Bennett (2009) Redescription of genus *Manta* with resurrection of *Manta alfredi* (Krefft, 1868) (Chondrichthyes; Myliobatoidei; Mobulidae). *Zootaxa* 2301: 1–28.

**Andrea Marshall**, Simon Pierce & Mike Bennett (2008) Morphological measurements of manta rays (*Manta birostris*) with a description of a foetus from the east coast of Southern Africa. *Zootaxa* 1717: 24-30.

Simon Pierce, Will White & **Andrea Marshall** (2008) New record of the smalleye stingray, *Dasyatis microps* (Myliobatiformes: Dasyatidae), from the western Indian Ocean. *Zootaxa* 1734: 65-68.

Conrad Speed, Mark Meekan, David Rowat, Simon Pierce, **Andrea Marshall** & Corey Bradshaw (2008) Scarring patterns and relative mortality rates of Indian Ocean whale sharks. *Journal of Fish Biology* 72: 1488-1503.

**Andrea Marshall**, Peter Kyne, Michael Bennett (2008). Comparing the diet of two sympatric urolophid elasmobranchs (*Trygonoptera testacea* Müller & Henle and *Urolophus kapalensis* Yearsley & Last): evidence of ontogenetic shifts and possible resource partitioning. *Journal of Fish Biology* 72: 883-898.

## Journal Reviews

Lydie Couturier, **Andrea Marshall**, Fabrice Jaïne, Tom Kashiwagi, Simon Pierce, Anthony Richardson, Kathy Townsend, Scarla Weeks, Michael Bennett (2012) Biology, ecology and conservation of mobulid rays, *Mobulidae* (Gill, 1893) *Journal of Fish Biology* 80: 1075-1119.

**Andrea Marshall**, Simon Pierce (2012) The uses and abuses of photographic identification in sharks and rays. *Journal of Fish Biology* 80: 1361-1379.

## Books (Contributing author)

Simon Pierce, Jason Holmberg, Alison Kock, **Andrea Marshall** (In press) Photographic identification of sharks. In: *Shark research: emerging technologies and applications for the field and laboratory*. Carrier JC, Heithaus MR, Simpfendorfer CA (eds.). CRC Press, Boca Raton. pp 219-234

Fishes of the Western Indian Ocean (In press), *Mobulidae* Chapter.

“The Galapagos Marine Reserve: a Dynamic Socio-Ecological System,” of the Galapagos Book Series, “Social and Ecological Interactions in the Galapagos Islands,” edited by Stephen J. Walsh & Carlos F. Mena. Springer Science & Business Media (2014).

## IUCN Redlist Assessments

**Marshall, A.**, Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Pacoureau, N., Rigby, C.L., Romanov, E. & Sherley, R.B. 2019. *Mobula alfredi*. *The IUCN Red List of Threatened Species* 2019: e.T195459A68632178. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T195459A68632178.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Bennett, M.B., Kodja, G., Hinojosa-Alvarez, S., Galvan-Magana, F., Harding, M., Stevens, G. & Kashiwagi, T. 2018. *Mobula birostris* (amended version of 2011 assessment). *The IUCN Red List of Threatened Species* 2018: e.T198921A126669349. <https://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T198921A126669349.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Rigby, C.L. & Romanov, E. 2019. *Mobula mobular*. *The IUCN Red List of Threatened Species* 2019: e.T110847130A110847142. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T110847130A110847142.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Rigby, C.L. & Romanov, E. 2019. *Mobula hypostoma*. *The IUCN Red List of Threatened Species* 2019: e.T126710128A896599. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T126710128A896599.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Bigman, J.S., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Pardo, S.A., Rigby, C.L., Romanov, E. & Walls, R.H.L. 2019. *Mobula tarapacana*. *The IUCN Red List of Threatened Species* 2019: e.T60199A124451161. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T60199A124451161.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Bigman, J.S., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Pardo, S.A., Rigby, C.L., Romanov, E., Smith, W.D. & Walls, R.H.L. 2019. *Mobula thurstoni*. *The IUCN Red List of Threatened Species* 2019: e.T60200A124451622. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T60200A124451622.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Rigby, C.L. & Romanov, E. 2019. *Mobula hypostoma*. *The IUCN Red List of Threatened Species* 2019: e.T126710128A896599. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T126710128A896599.en>. Downloaded on 14 January 2020.

**Marshall, A.**, Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Rigby, C.L. & Romanov, E. 2019. *Mobula munkiana*. *The IUCN Red List of Threatened Species* 2019: e.T60198A124450956. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T60198A124450956.en>. Downloaded on 14 January 2020.

## **RESEARCH STUDENTS**

**PhD:** (present) Stephanie Venables, University of Western Australia, Thesis: From DNA to MPA: developing genetic techniques to improve the management and protection of threatened manta ray populations.

**PhD:** (present) Robert Perryman, University of Western Australia, Thesis: Social Networking of Manta alfredi populations in Dampier Strait Area of Raja Ampat, Indonesia.

**PhD** (2020): Elitza Germanov, Murdoch University, Thesis: From Megafauna to Microplastics: Understanding the habitat use reveals potential threats to Indonesia's manta ray populations

**PhD:** (2017) Katherine Burgess, University of Queensland, Thesis: Feeding ecology and habitat use of the giant manta ray, *Manta birostris* at a key aggregation site off mainland Ecuador.

**MSc:** (2013) Hannah Robbins, University of Derby, Thesis: The hitchhikers of Mozambique- An investigation into the relationship between the Echeneidae and their manta ray hosts.

**Honors:** (2013) Elisabeth Maxwell, Lamar University, Thesis: Assessing the reliability of mucus sampling for DNA from manta rays (*Manta birostris* and *M. alfredi*)

**Honors:** (2011) Robert Raw, University of Cape Town, Thesis: The use of photo-identification software as a non-invasive method for the study of population demographics of Sevengilled Sharks, *Notorynchus cepedianus*

**MSc:** (2010) Daan van Duinkerken, Utrecht University, Thesis: Movements and site fidelity of the reef manta ray, *Manta alfredi*, along the coast of southern Mozambique

## **SPEAKING APPEARANCES & EVENTS**

- Regular guest speaker for online ‘Exploring by the Seat of your Pants’ live classroom events (2015-2020)
- Virtuoso Conference 2019 Las Vegas
- Visiting Heroes Smithsonian 2018
- Keynote Speaker READ Global Event (2017)
- Keynote Speaker for National Geographic Live 2013
- Keynote Speaker for Bright Young Things 2013
- Speaker- TED 2012 Johannesburg
- Guest Speaker- Georgia Aquarium 2012
- Keynote Speaker- London Dive Show 2011
- Keynote Speaker- Birmingham Dive Show 2010
- Speaker and Guest Panelist- Blue Ocean Film Festival 2010
- Keynote Speaker- London Dive Show 2010

## **MEDIA FEATURES**

### **Television**

- Africa with Ade – BBC (2019)
- Heroes of the Wilderness – Warner Brothers Productions (2017)
- ‘Wild Things with Dominic Monaghan’- Bugzilla Productions (2015)
- ‘SHARKS’ (Mexico) 3-part series BBC (2015)
- Manta Rays enjoy protection in Mozambique Deutsche Welle (2015)
- Ocean Gems episode Ecuador- Tom Campbell Productions (2013)
- Emission Thalassa Documentary on Dr. Andrea Marshall’s work in Mozambique (France 3, TV5 Monde, Plantete Thalassa) (2011)
- ‘Man to Manta’- Doc Martin Productions (2011)
- ‘Mozambique’- Ushuaia Productions (2010)
- ‘Andrea- Queen of Mantas’ BBC Natural World Documentary (2009)

- The Last Paradise-Mozambique (60 min) & Die Frau des Teufels (The Manta Lady)- (30min)- Blue Planet Film Productions (2007)

## Select Print & Web

- National Geographic (USA), BBC Wildlife (UK), New Scientist (UK), African Geographic (South Africa), Oceans Geographic (Asia), O Magazine (USA), Endemico (Chile), Alert Diver (USA), Wired (USA), Diver (USA & UK), Geo (Germany), Oceans (France), Dive (UK), Tauchen (Germany), Buceadores (Spain), Immersion (Portugal), Fathoms (Australia), Fins (Asia), DiveStyle (South Africa) and Duik (Netherlands).
- 2030 NOW – Life Exhibitions (2019)

## Radio

- BBC World News 2009
- Woman's Hour UK 2009
- Boyd Mathison's National Geographic Radio Show 2013

## AWARDS & DISTINCTIONS

- Sea Hero of the Year 2017 Scuba Diver Magazine
- Conde Naste 50 Greatest Travelers of Our Time (2017)
- Blue Marine Foundation & Boat International Ocean Award (2016)- category: science that made the most original or important contribution of ocean conservation
- Emerging Explorer- National Geographic (2013)
- Fellow- Explorers Club (USA) (2013)
- Merit Award for Conservation Hero & Merit Award for Scientific Content for the BBC Natural world documentary, Andrea: Queen of Mantas by the International Wildlife Film Festival 2010.

## TECHNICAL SKILLS

- PADI Divemaster (DM-158495) (1997)
- Fully and semi closed rebreather certification (TDI & Inspiration) (2000/8)
- NAUI Nitrox diver's license
- Proficient drysuit diver
- Experienced underwater photographer & videographer
- Small vessel skippers license including surf launching experience
- Advanced four-wheel driving
- Capture and handling techniques for sharks and rays
- Tagging techniques for large and small elasmobranchs
- Genetic sampling of large and small elasmobranchs
- Proficient at small and large elasmobranch dissection

- Ecological research and software applications including: PRIMER, SPSS, MARK, SIGMA STAT, etc.

## **SOCIETIES / MEMBERSHIPS**

- Fellow- Explorers Club
- Explorer- National Geographic Society
- IUCN- Shark Specialist Group (SSG)
- American Elasmobranch Society
- WIOMSA Western Indian Ocean Marine Science Association