
CURRICULUM VITAE – DR ALASTAIR R. HARBORNE

NATIONALITY: British / Australian

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RESEARCH OVERVIEW

I am an ecologist primarily interested in coral reef fishes, providing novel insights into the impacts of environmental change on these fishes, and underpinning sound conservation science. A current research focus, in both the Caribbean and Pacific, is examining the processes (abiotic and biotic) controlling the abundance, ecology, and behavior of coral reef fish species, and integrating this work into food web models to provide a comprehensive understanding of tropical communities and the threats to their health. For example, these studies are demonstrating the potential impacts of sea-level rise on reef-flat food webs in the Pacific through changing predator-prey interactions and foraging behavior. I am also interested in the impacts of marine reserves, including the indirect effects of trophic cascades driven by increases in predatory species. I also have a growing interest in comparing tropical and sub-tropical reefs. Finally, I am interested in collaborating with researchers from other disciplines (e.g. physiologists and geomorphologists / sedimentologists) to provide novel approaches to understanding the ecology of fishes and their provision of reef services.

QUALIFICATIONS

January 2002 – December 2006: PhD at the University of Exeter. Supervised by Professor Peter Mumby. *Viva voce* examination January 2007, formally approved on 5th March 2007.

“The ecology of coral reef communities at seascape scales”.

Focused on considering Caribbean marine habitats at seascape scales to provide novel insights into their ecology and conservation, including (1) separating natural variation from marine reserve effects; (2) habitats as surrogates of fish community structure; (3) mapping wave energy using remotely-sensed imagery and linear wave theory; (4) modelling the beta diversity of coral reefs; and (5) functional value of Caribbean reef habitats to ecosystem processes. My PhD was part of a larger project entitled “Coupled natural and human dynamics in coral reef ecosystems”.

October 1990 – July 1993: Degree at the University of Southampton - First Class BSc joint honours degree - Oceanography with Biology. *Dissertation* – “A study of interhabitat differences within the coral reef fish community on and around the Belize Barrier Reef”.

EMPLOYMENT

January 2016 onwards: *Assistant Professor, Florida International University*

Tenure track research and teaching position, involving 67% research, 23% teaching / instruction, and 10% service. The research component involves conducting research of the highest caliber and publishing in peer-reviewed journals, teaching contributes to the department’s teaching mission at undergraduate and graduate levels, and service involves advising students, participating in faculty meeting and committees, and to national societies and journals.

16th March 2015 – 29th January 2016: *Post-doctoral Research Fellow*

Employed under a contract from The Nature Conservancy (TNC), this position involved developing maps and models of fishing pressure and standing stocks across Micronesia to support conservation efforts as part of TNC’s Mapping Ocean Wealth initiative.

1st March 2012 – 28th Feb 2015: *Australian Research Council DECRA Research Fellow*

This research fellowship, worth AU\$375,000, was entitled “The effects of sea-level rise on the

feeding ecology of coral-reef fishes in shallow water, and the implications for reef-flat food webs". The aim of this on-going research was to establish the migration and feeding ecology of reef fishes on reef flats, and to integrate these data into models of how food webs vary with tidal state. The research examined the implications of sea-level rise on the tropho-dynamics of shallow reef habitats.

1st December 2008 – 30th November 2011: *Natural Environment Research Council Independent Research Fellow*

This research fellowship, worth £247,243, was entitled "A holistic model of the factors controlling reef-fish populations, including both pre- and post-settlement processes". The aim of this on-going research was to analyse a uniquely large database on fish species' abundances across The Bahamas in order to gain insight into the relative importance of different processes controlling their populations.

1st October 2004 – 30th November 2008: *Research / Teaching Assistant, University of Exeter*

During the completion of my PhD, and subsequently as a post-doctoral researcher, I was employed at the University of Exeter in two different capacities. Firstly, I worked as a Research Assistant to Prof. Peter Mumby as part of the Remote Sensing Working group within the World Bank's Coral Reef Targeted Research Program. The remainder of my time was as a Teaching Assistant.

1st May 1996 – 31st December 2001: *Coral Cay Conservation (CCC) Marine Science Co-ordinator*

Responsible for the marine scientific programme carried out by CCC (a non-profit making NGO utilising paying volunteers to survey marine resources in developing countries). Role included establishing and directing survey and training protocols for fieldwork carried out by CCC volunteers and local counterparts and subsequent data analysis and making management recommendations.

13th September 1993 - 1st May 1996: *CCC Assistant Science Co-ordinator*

Aided development of survey methodologies used by CCC volunteers, and subsequent data analysis. Input into CCC scientific reports, information dissemination and identified and carried out research for publications. Directed fieldwork and training of volunteers and Belizeans in the field.

FUNDING

- The Nature Conservancy, Mapping fishing and fish stocks across The Bahamas, \$25,000, 2016
 - Australian Research Council Discovery Early Career Researcher Award Fellowship, AU\$375,00, 2012 – 2015
 - Natural Environment Research Council Independent Research Fellowship, £247,243, 2008-2011
 - Earthwatch Institute "Mangroves and coral reefs as effective fish nurseries": the effects of fishing, climate change, and altering coasts", US\$190,000, 2011-2015
 - Great Barrier Reef Foundation "Quantification of coral reef habitat structural complexity and community composition in a changing ocean using 3D models" AU\$152,400 (co-I on a project led by Prof. Maria Byrne, University of Sydney), 2013-2014
 - UQ new staff research start-up grant "Fishes on coral reef flats: are they thermal generalists compared to fishes in deeper water?", AU\$11,910
 - UQ Global Change Institute Seed Grant "The effects of predators on blue carbon storage in an algal dominated landscape" (to Atwood Macreadie, Madin, and Harborne), AU\$8,600, 2014
 - Alumni Fund, University of Exeter, Widening participation in Bahamas field course, £20,000, 2007
 - Darwin Initiative, Dynamics of juvenile corals in Honduras, £30,000, 2001
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TEACHING

At Florida International University I currently teach:

- OCB 3043, Marine Biology and Oceanography, which provides an introduction to marine biology and biological oceanography. I am also the instructor of record for the associated lab.
 - OCB 3264, Coral Reef Biology, which provides an introduction to the taxonomy, biology and
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ecology of the main groups on coral reefs inhabitants

I am an Associate of the Higher Education Academy (UK), having completed a course in 'Learning and Teaching in Higher Education'.

I created and taught three under-graduate courses in marine biology at the University of Exeter: (1) Marine biology (level II), 15 credit course, (2) Tropical marine biology (level III), 15 credit course, (3) Bahamas field course (level II), 15 credits

These courses were very attractive to students, achieving high levels of participation (>50 for the taught courses, and the maximum 32 for the field course), and receiving high feedback ratings.

I contributed to the production of material for the University of Queensland's massive open online course (MOOC) on "Tropical coastal ecosystems" delivered via the edX platform.

STUDENT SUPERVISION

- I am co-supervisor of 5 PhD students (3 completed, 2 on-going)
 - At the University of Queensland I hosted a PhD student from Universidade Federal Fluminense for six months in order to help him prepare his thesis for submission
 - I have supervised 1 Honours student at the University of Queensland
 - I have also supervised / co-supervised under-graduate and MSc projects and dissertations.
 - I have acted as an internal PhD examiner to four students at the University of Exeter (UK), and external examiner for students at the University of York (UK) and James Cook University and Griffith University (Australia). MSc external marker for a project at the University of the South Pacific.
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JOURNAL EDITING / REVIEWING

- Ecological Editor for *Coral Reefs* (impact factor 3.662)
 - *Ad hoc* editor for *Conservation Biology*.
 - Reviewer for 40 different journals, including *Current Biology*, *Ecology*, *Ecological Monographs*, *Ecology Letters*, *Global Change Biology*, *Oikos*, and *Conservation Biology*.
 - Reviewer of standard grants to the Natural Environment Research Council
 - Reviewer of fellowship and project grants to the Australian Research Council
 - Grant reviewer for the major funding councils of the USA, France and the Netherlands
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LEARNED SOCIETIES / COMMITTEES

- Councillor for the International Society for Reef Studies (from Jan 2011-2014)
 - Member of the International Society for Reef Studies
 - Member of the Australian Coral Reef Society
 - Academic member of the Southeast Florida Coral Reef Initiative
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CONSULTANCY WORK

- 2008 & 2011: Remote sensing consultant to Kerzner Foundation
 - 2007: Co-taught a one week course in Zanzibar on the use of UNESCO's Winbilko software to delegates from across the East African region
 - 2005: Consultant to the Khaled bin Sultan Living Oceans Foundation to train staff in remote-sensing techniques.
 - 2000: Consultant for the UNDP-GEF to prepare a report on the status of reefs within a series of marine parks east of Peninsula Malaysia.
 - 1998: Consultant on an ODA funded project being undertaken by the Universities of Sheffield and Newcastle (UK) to prepare a national habitat map of Belize and train a Belizean counterpart.
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OTHER SKILLS AND EXPERIENCE

- Founder member of the Reef Conservation - UK committee. This includes organisation of an annual one-day conference for UK reef researchers and administration of a small grants scheme
 - Developed and presented numerous marine survey workshops on behalf of the RGS Expedition Advisory Centre and BP Conservation Programme.
 - Presentations at a variety of scientific conferences including the 9th, 10th, 11th, 12th, and 13th International Coral Reef Symposia, four European meetings of the International Society for Reef Studies, and the 9th Indo-Pacific Fish Conference. Guest lecturer for Swan Hellenic cruises.
 - Seminar presentation at USGS, Lafayette, Louisiana and ARC Centre of Excellence for Coral Reef Studies, Townsville
 - Media interviews for BBC World Service, BBC news and local radio stations.
 - PADI Rescue Diver and Emergency First Responder with over 550 logged dives in the Caribbean, South East Asia, South Pacific and the Red Sea. Small boat licence.
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PUBLICATION LIST

Cited by 3564; *h* Index 24, *i10*-index 32

(<http://scholar.google.com.au/citations?user=LcANET4AAAAJ&hl=en>)

h index 19 (Web of Science, ResearcherID: F-6155-2013)

Journal articles (Impact factor in parentheses)

- Harborne, A.R.**, A. Rogers, Y-M Bozec, and P.J. Mumby. 2017. Multiple stressors and the functioning of coral reefs. *Annual Review of Marine Science*. *In press* [13.214].
- Harborne A.R.**, J.D. Selwyn, J.M. Lawson and M. Gallo. 2017. Environmental drivers of diurnal visits by transient predatory fishes to Caribbean patch reefs. *Journal of Fish Biology*. *In press* [1.246].
- Brown, C.J., **A.R. Harborne**, C.B. Paris, and P.J. Mumby. 2016. Uniting paradigms of connectivity in marine ecology. *Ecology*. **97**, 2447-2457 [4.656].
- Eaton, L., K.A. Sloman, R.W. Wilson, A.B. Gill, and **Harborne, A.R.** 2016. Non-consumptive effects of native and invasive predators on juvenile Caribbean parrotfish. *Environmental Biology of Fishes*. **99**, 499-508 [1.570].
- Harborne, A.R.** and B. A. Tholan. 2016. Tool use by *Choerodon cyanodus* when handling vertebrate prey. *Coral Reefs*. **35**, 1069 [3.623].
- Hedley, J.D., C.M. Roelfsema, I. Chollett, **A.R. Harborne**, S.F. Heron, S. Weeks, W.J. Skirving, A.E. Strong, C.M. Eakin, T. Christensen, V. Ticzon, S. Bejarano, and P.J. Mumby. 2016. Remote sensing of coral reefs for monitoring and management: A review. *Remote Sensing*. **8**, 118; doi:10.3390/rs8020118 [3.180].
- Harborne, A.R.**, I. Nagelkerken, N.H. Wolff, Y-M Bozec, M. Dorenbosch, M.G.G. Grol, and P.J. Mumby. 2016. Direct and indirect effects of nursery habitats on coral-reef fish assemblages, grazing pressure and benthic dynamics. *Oikos*. **125**, 957-967 [3.444].
- Harborne, A.R.**, B. Talwar, and E.J. Brooks. 2016. The conservation implications of spatial and temporal variability in the diurnal use of Bahamian tidal mangrove creeks by transient predatory fishes. *Aquatic Conservation: Marine and Freshwater Ecosystems*. **26**, 202–211 [1.756].
- Cordeiro, C.A.M.M., T.C. Mendes, **A.R. Harborne**, and C.E.L. Ferreira. 2015. Spatial distribution of nominally herbivorous fishes across environmental gradients on Brazilian rocky reefs. *Journal of Fish Biology*. *In press*. DOI:10.1111/jfb.12849 [1.734].
- Rogers, A., **A.R. Harborne**, C.J. Brown, Y-M. Bozec, C. Castro, I. Chollett, K. Hock, C. Knowland, A. Marshall, J.C. Ortiz, T. Razak, G. Roff, J. Samper-Villarreal, M.I. Saunders, N. Wolff, and P.J. Mumby. 2015. Anticipative management for coral reef ecosystem services in the 21st century. *Global Change Biology*. **21**, 504-514 [8.224].
- O'Farrell, S., **A.R. Harborne**, Y-M. Bozec, B.E. Luckhurst, and P.J. Mumby. 2015. Protection of functionally important parrotfishes increases their biomass but fails to deliver enhanced recruitment. *Marine Ecology Progress Series*. **522**, 245–254 [2.640].
- Igulu, M.M., I. Nagelkerken, M. Dorenbosch, M.G.G. Grol, **A.R. Harbone**, I.A. Kimirei, P.J. Mumby, A.D. Olds, and Y.D. Mgaya. 2014. Mangrove habitat use by juvenile reef fish: meta-analysis reveals that tidal regime matters more than biogeographic region. *PLoS ONE* **9**(12): e114715. doi:10.1371/journal.pone.0114715 [3.530].

- Bridge, T., R. Ferrari, M. Bryson, R. Hovey, W. Figueira, S. Williams, **A.R. Harborne**, M. Byrne. 2014. Variable responses of benthic communities on a high-latitude reef to a coral bleaching event. *PLoS ONE* 9(11): e113079. doi:10.1371/journal.pone.0113079 [3.530].
- Cordeiro, C.A.M.M., **A.R. Harborne** and C.E.L. Ferreira. 2014. Controls of the distribution and composition of sea urchin assemblages on Brazilian subtropical rocky reefs. *Marine Biology* **161**, 2221-2232 [2.393].
- Micheli, F., P.J. Mumby, D.R. Brumbaugh, K. Broad, C.P. Dahlgren, **A.R. Harborne**, K.E. Holmes, C.V. Kappel, S.Y. Litvin, and J.N. Sanchirico. 2014. High vulnerability of ecosystem function and services to diversity loss in Caribbean coral reefs. *Biological Conservation* **171**, 186-194 [4.036].
- Harborne, A.R.** 2013. The ecology, behaviour and physiology of fishes on coral reef flats, and the potential impacts of climate change. *Journal of Fish Biology* **83**, 417-447 [1.734].
- Roff, G., Wabnitz C.C.C., Harborne A.R., and P.J. Mumby. 2013. Macroalgal associations of motile epifaunal invertebrate communities on coral reefs. *Marine Ecology-an Evolutionary Perspective* **34**. 409-419 [1.843].
- Harborne, A.R.**, H.L. Jelks, W.F. Smith-Vaniz, and L.A. Rocha. 2012. Abiotic and biotic controls of cryptobenthic fish assemblages across a Caribbean seascape. *Coral Reefs* **31**, 977-990 [3.623].
- Harborne, A.R.**, P.J. Mumby, and R. Ferrari Legorretta. 2012. The effectiveness of different meso-scale rugosity metrics for predicting intra-habitat variation in coral-reef fish assemblages. *Environmental Biology of Fishes* **95**, 431-442 [1.570].
- Harborne, A.R.** 2012. Seasonal variation in the functional response of a coral-reef piscivore alters the inverse density-dependent mortality of its prey. *Coral Reefs* **31**, 247-251 [3.623].
- Mumby, P.J., R.S. Steneck, A.J. Edwards, R. Ferrari, J.P. Gibson, **A.R. Harborne**, R. Coleman. 2012. Fishing down a Caribbean food web relaxes trophic cascades. *Marine Ecology Progress Series* **445**, 13-24 [2.640].
- Harborne, A.R.**, P.J. Mumby, E.V. Kennedy, and R. Ferrari. 2011. Biotic and multi-scale abiotic controls of habitat quality: their effect on coral-reef fishes. *Marine Ecology Progress Series* **437**, 201-214 [2.640].
- Harborne, A.R.**, and P.J. Mumby. 2011. Novel ecosystems: Atlantic fish assemblages in warming waters. *Current Biology* **21**, R822-R824 [9.916].
- Perry, C.T., M. Salter, **A.R. Harborne**, S.F. Crowley, H.L. Jelks, and R.W. Wilson. 2011. Fish as major carbonate mud producers and new components of the tropical carbonate factory. *Proceedings of the National Academy of Sciences of the United States of America* **108**, 3865-3869 [9.809].
- Mumby, P.J., **A.R. Harborne**, and D.R. Brumbaugh. 2011. Grouper as a natural biocontrol of invasive lionfish. *PLoS ONE* 6(6): e21510. doi:10.1371/journal.pone.0021510. [3.530].
- Mumby, P.J. and **A.R. Harborne**¹. 2010. Marine reserves enhance the recovery of corals on Caribbean reefs. *PLoS ONE* 5(1): e8657. doi:10.1371/journal.pone.0008657 [3.530].
- Wilson, S.K., M. Adjeroud, D.R. Bellwood, M.L. Berumen, D. Booth, Y.-M. Bozec, P. Chabanet, A. Cheal, J. Cinner, M. Depczynski, D.A. Feary, M. Gagliano, N.A.J. Graham, A.R. Halford, B.S. Halpern, **A.R. Harborne**, A.S. Hoey, S. Holbrook, G.P. Jones, M. Kulbiki, Y. Letourneur, T. Lison De Loma, T. McClanahan, M.I. McCormick, M.G. Meekan, P.J. Mumby, P.L. Munday, M.C. Öhman, M.S. Pratchett, B. Riegl, M. Sano, R.J. Schmitt, and C. Syms. 2010. Critical knowledge gaps in current understanding of climate change impacts on coral reef fishes. *Journal of Experimental Biology*, **213**, 894-900 [3.000].
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- Harborne, A.R.** 2009. First among equals: why some habitats should be considered more important than others during marine reserve planning. *Environmental Conservation*, **36**, 87-90 [2.320].
- Harborne, A.R.**, P.J. Mumby, C.V. Kappel, C.P. Dahlgren, F. Micheli, K.E. Holmes, and D.R. Brumbaugh. 2008. Tropical coastal habitats as surrogates of fish community structure, grazing, and fisheries value. *Ecological Applications*, **18**, 1689-1701 [3.820].
- Harborne, A.R.**, P.J. Mumby, C.V. Kappel, C.P. Dahlgren, F. Micheli, K.E. Holmes, J.N. Sanchirico, K. Broad, I.A. Elliott, and D.R. Brumbaugh. 2008. Reserve effects and natural variation in coral reef communities. *Journal of Applied Ecology*, **45**, 1010-1018 [4.754].
- Mumby, P.J., K. Broad, D.R. Brumbaugh, C.P. Dahlgren, **A.R. Harborne**, A. Hastings, K.E. Holmes, C.V. Kappel, F. Micheli, and J.N. Sanchirico. 2008. Coral reef habitats as surrogates of species, ecological functions, and ecosystem services. *Conservation Biology*, **22**, 941-951 [4.320].
- Mumby, P.J., **A.R. Harborne**, J. Williams, C.V. Kappel, D.R. Brumbaugh, F. Micheli, K.E. Holmes, C.P.

¹ Equal contribution to authorship

² Nominated (one of five) for 'Best Paper Award' from Vol 28 (2009) of Coral Reefs

- Dahlgren, C.B. Paris, and P.G. Blackwell. 2007. Trophic cascade facilitates coral recruitment in a marine reserve. *Proceedings of the National Academy of Sciences of the United States of America* **104**, 8362-8367 [9.809].
- Harborne, A.R.**, P.J. Mumby, F. Micheli, C.T. Perry, C.P. Dahlgren, K.E. Holmes, and D.R. Brumbaugh. 2006. The functional value of Caribbean coral reef, seagrass and mangrove habitats to ecosystem processes. *Advances in Marine Biology* **50**, 57-189 [2.048].
- Harborne, A.R.**, P.J. Mumby, K. Zychaluk, J.D. Hedley, and P.G. Blackwell. 2006. Modeling the beta diversity of coral reefs. *Ecology* **87**, 2871-2881 [5.175].
- Mumby, P.J., C.P. Dahlgren, **A.R. Harborne**, C.V. Kappel, F. Micheli, D.R. Brumbaugh, K.E. Holmes, J.M. Mendes, K. Broad, J.N. Sanchirico, K. Buch, S. Box, R.W. Stoffle, and A.B. Gill. 2006. Fishing, trophic cascades, and the process of grazing on coral reefs. *Science* **311**, 98-101 [31.480].
- Mumby, P.J., F. Micheli, C.P. Dahlgren, S.Y. Litvin, A.B. Gill, D.R. Brumbaugh, K. Broad, J.N. Sanchirico, C.V. Kappel, **A.R. Harborne**, and K.E. Holmes. 2006. Marine parks need sharks? Response. *Science* **312**, 527-528 [31.480].
- Mumby, P.J., J.D. Hedley, K. Zychaluk, **A.R. Harborne**, and P.G. Blackwell. 2006. Revisiting the catastrophic die-off of the urchin *Diadema antillarum* on Caribbean coral reefs: fresh insights on resilience from a simulation model. *Ecological Modelling* **196**, 131-148 [2.326].
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- Hoyle M. and **A.R. Harborne**. 2005. Mixed effects of habitat fragmentation on species richness and community structure in a microarthropod microecosystem. *Ecological Entomology* **30**, 684-691 [1.967].
- Beger, M., **A.R. Harborne**, T.P. Dacles, J.L. Solandt, and G.L. Ledesma. 2005. A framework of lessons learned from community-based marine reserves and its effectiveness in guiding a new coastal management initiative in the Philippines. *Environmental Management* **34**, 786-801 [1.648].
- Mumby, P.J., A.J. Edwards, J.E. Arias-González, K.C. Lindeman, P.G. Blackwell, A. Gall, M.I. Gorczynska, **A.R. Harborne**, C.L. Pescod, H. Renken, C.C.C. Wabnitz, and G. Llewellyn. 2004. Mangroves enhance the biomass of coral reef fish communities in the Caribbean. *Nature* **427**, 533-536 [42.351].
- White, W.H., **A.R. Harborne**, I.S. Sotheran, R. Walton, and R.L. Foster-Smith. 2003. Using an Acoustic Ground Discrimination System to map coral reef benthic classes. *International Journal of Remote Sensing* **24**, 2641-2660 [1.359].
- Harborne, A.R.**, D.C. Afzal, and M.J. Andrews. 2001. Honduras: Caribbean coast. *Marine Pollution Bulletin* **42**, 1221-1235 [2.793].
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- Mumby, P.J., **A.R. Harborne**, P.S. Raines, and J.M. Ridley. 1995. A critical assessment of data derived from Coral Cay Conservation volunteers. *Bulletin of Marine Science* **56**, 737-751 [1.333].
- Book chapters, conference proceedings and non-reviewed papers*
- A.R. Harborne** and Mumby, P.J. In Press. FAQs about Caribbean Parrotfish Management and their Role in Reef Resilience. In A. Hoey, D. Bellwood, and R. Bonaldo (eds). The Biology and Ecology of Parrotfishes. Science Publishers.
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- P.J. Mumby, D.R. Brumbaugh, **A.R. Harborne**, G. Roff. 2013. On the relationship between native grouper and invasive lionfish in the Caribbean. PeerJ Preprints.
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