
NATALIA BORREGO, PhD

Max Planck Institute of Animal Behavior | University of Konstanz | University of Minnesota Lion Center
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EDUCATION

PhD	University of Miami, Biology Dissertation – <i>Cognitive complexity in Carnivora: The evolutionary link between social complexity and cognitive complexity</i>	2016
MSc	Florida Gulf Coast University, Environmental Science Thesis – <i>Mercury accumulation in South Florida Blackbirds</i>	2011
BSc	University of Florida, Wildlife Ecology and Conservation	2005

PROFESSIONAL POSITIONS

2016-2017	Postdoctoral Scholar, School of Life Sciences, University of Kwazulu-Natal
2017-2018	Research Associate, School of Life Sciences, University of Kwazulu-Natal
2017-2018	Visiting Assistant Professor, Department of Natural Sciences, Baruch College, City University of New York
2017-2019	Affiliated Faculty, Department of Psychology, Animal Behavior and Conservation Program, Hunter College, City University of New York
2018-2021	Post-doctoral Teaching Fellow at the rank of Assistant Professor, Department of Biology, American University Cairo

Current

<i>Since 2016</i>	Research Associate Lion Research Center, University of Minnesota
<i>Since 2021</i>	Postdoctoral Researcher - <i>Independent project funded by Collaborative Research Grant</i> Max Planck Institute of Animal Behavior, Department for the Ecology of Animal Societies
<i>Since 2022</i>	Project leader Centre for the Advanced Study of Collective Behavior, University of Konstanz
<i>Since 2025</i>	ZENiT Research Fellow Zukunftskolleg, University of Konstanz

FUNDING

FELLOWSHIPS (\$169,592)

2009-2011	NIH, Initiative for Maximizing Student Development Fellowship - \$30,900
2011-2013	National Science Foundation, Science Made Sensible Fellowship - \$60,000
2009-2015	Florida Education Fund, McKnight Doctoral Fellowship - \$51,000
2016-2017	University of Kwazulu-Natal, Post Doctoral Scholarship - \$27,692

GRANTS (APPROX. \$600,00)

2010	University of Miami Jay M. Savage Award in Tropical Biology - \$400
2012-2014	University of Miami, Department of Biology, Kushlan Fund - \$4,100
2013	University of Miami, Dean's Summer Research Fellowship - \$5,000
2016	Animal Behavior Society, Walter Clyde Allee Honorable Mention - \$750
2018 - 2020	Team member: National Geographic Council for Exploration Grant - \$27,000
2019-2021	American University Cairo, Research Support Grant - \$6,861
2022	Cluster for the Advanced Study of Collective Behavior Small Grant – €9,500

Current

Awarded 2021	Collaborative Research Grant Ecology of Animal Societies Department, University of Konstanz/Max Planck Institute of Animal Behavior - €146,728+ salary
Awarded 2022	Centre for the Advanced Study of Collective Behavior Newcomer Grant University of Konstanz – €305,978
Awarded 2025	ZENiT Award Zukunftskolleg, University of Konstanz – €87,000

TEACHING

INSTRUCTION

Adjunct Instructor, Florida Gulf Coast University - Biology II Laboratory	2007 to 2009
Visiting Assistant Professor, Baruch College, City University of New York - Fundamentals of Ecological Research Lecture and Laboratory - Conservation Biology and Sustainable Development	2017 to 2018

Postdoctoral Teaching Fellow at the rank of Assistant Professor, American University in Cairo	2018 to 2021
<ul style="list-style-type: none"> - Scientific Thinking: Animal Behavior Theme - Scientific Thinking: Evolution Theme 	

ADVISING

Victoria O'Connor, MA student Hunter College, Department of Psychology, Animal Behavior and Conservation <i>Thesis: Exploring innovation and behavioral flexibility in African lions (Panthera leo) and snow leopards (Panthera unica)</i>	2017-2019
Samar El Sayad, MSc student Beni-Suef University, Cairo, Egypt <i>Thesis topic: Behavioral and biochemical studies of captive Big Cats in Egypt</i>	2019-present
Katja Regan University of Konstanz <i>BSc. Honors thesis title: How does habitat diversity shape lion behavior in high density systems</i>	2024-2025
Anna Greszki University of Konstanz <i>BSc. Honors thesis title: Investigating the influence of temporal and spatial abiotic drivers on the behavior of male lions</i>	2024-2025
Luisa Ketterer University of Konstanz <i>BSc. Honors thesis title: The influence of home range and neighbor dynamics territorial behavior in lions</i>	2024-2025

CONTINUING EDUCATION

2018	American University Cairo Center for Learning and Teaching, Teaching Enhancement Certificate
2018-2019	American University Cairo Center for Learning and Teaching, Teaching Advancement Program: The Faculty Institute of Learning and Teaching Immersion Track.
2024, 2025	ARTEMIS program mentor. Workshops on mentorship for graduate students from diverse cultures (i.e. African nations)

PUBLICATIONS

*Joint first, †joint corresponding

PEER-REVIEWED JOURNAL ARTICLES

1. **Borrego, N.**, A. Ozgul, K.B. Armitage, D.T. Blumstein, and M.K. Oli. 2008. Spatiotemporal variation in survival of male yellow-bellied marmots. *Journal of Mammalogy*. 89: 365-373. <https://doi.org/10.1644/07-MAMM-A-061R1.1>
2. **Borrego, N.** and M. Gaines. 2016. Social carnivores outperform asocial carnivores on an

- innovative problem. *Animal Behaviour*. 114:21-26. <https://doi.org/10.1016/j.anbehav.2016.01.013>
3. **Borrego, N.** and B. Dowling. 2016. Lions (*Panthera leo*) solve, learn, and remember a novel resource acquisition problem. *Journal of Animal Cognition*. 19(5) 1019-1025. <https://doi.org/10.1007/s10071-016-1009-y>
 4. **Borrego, N.** 2017. Big cats as a model system for the study of the evolution of intelligence. *Behavioral Processes*. <https://doi.org/10.1016/j.beproc.2017.03.010>
 5. **Borrego, N.**, A. Ozgul, R. Slotow, and C. Packer. 2018. Lion population dynamics: do nomadic males matter? *Behavioral Ecology*. <https://doi.org/10.1093/beheco/ary018>
 6. McEnvoy, O., S. M. Miller, W. Beets, **N. Borrego**, A. Burger, B. Courtenay, S. Ferreira, c. Hanekom, M. Hofmeyer, C. Packer, D. Robertson, K. Stratford, R. Slotow, and D. M. Paker. 2019. Use of contraceptive techniques as management tools to mimic natural reproductive rates in managed African lions (*Panthera leo*). *Wildlife Research*. 46: 398-408. <https://doi.org/10.1071/WR18079>
 7. **Borrego, N.** 2020. Socially tolerant lions (*Panthera leo*) solve a novel cooperative problem. *Animal Cognition*. 23.2: 327-336. <https://doi.org/10.1007/s10071-019-01336-4>
 8. Burkhart, J. C., S. Gupta, **N. Borrego**, S. Heilbronner, C. Packer. 2022. Oxytocin increases prosocial behavior in groups of African lions. *iScience*. 104049. <https://doi.org/10.1016/j.isci.2022.104049>
 9. O'Connor, V., Chase, S., Chodorow, M., and **Borrego, N.** 2022. Exploring Innovation and Behavioral Flexibility in African lions (*Panthera leo*) and snow leopards (*Panthera uncia*). *Behavioural Processes*. 199, 104648. <https://doi.org/10.1016/j.beproc.2022.104648>
 10. Williams, H.J., Sridhar, V.H., Hurme, E., Gall, G.E., **Borrego, N.**, Finerty, G.E., Couzin, I.D., Galizia, C.G., Dominy, N.J., Rowland, H.M. and Hauber, M.E., 2023. Sensory collectives in natural systems. *Elife*, 12, p.e88028. <https://doi.org/10.7554/eLife.88028>
 11. Conquet, E., Paniw, M., **Borrego, N.**, Nater, C.R., Packer, C. and Ozgul, A., 2024. Multifaceted density dependence: Social structure and seasonality effects on Serengeti lion demography. *Journal of Animal Ecology*, 93(10), pp.1493-1509. <https://doi.org/10.1111/1365-2656.14158>
 12. *[†]**Borrego, N.**, *[†]**Finerty, G.E.**, ., Alibhai, S. K., Jewell, Z. C., Tschanz, P., Balone, T., Gabaikanye, T., Gana, M., Monnaanoka, S., Mamou, M., Pudidaroma, S., Tshiana, M., Tshiana, M., Araldi, A., Crofoot, M. C., Henley, S., Ithuteng, P. A., & Schiess-Meier, M. 2024. The Crossroads of Tradition and Modern Technology: Integrative Approaches to Studying Carnivores in Low Density Ecosystems. *Frontiers in Conservation Science*, 5, p.1402500. <https://doi.org/10.3389/fcosc.2024.1402500>

Under revision & review

13. *[†]**Borrego, N.**, *[†]**Chakrabarti, S.**, *[†]**Finerty, G. E.**, Marella, V. N. S. N., Bump, J. K. & Crofoot, C. M. Beyond the Serengeti Lion: Addressing ecological and systemic biases in behavioral research via horizontal comparison. *Under minor revision for Animal Behaviour ANBEH-D-25-00441*
14. Stracquadanio, L., O'Malley, K. D., Aralid, A., **Borrego, N.**, Balone, R., Ithuteng, P., Knight, T., Ngaka, K. & Finerty, G. E. Long-term data reveals differences in large carnivore prey preference and habitat-specific predation patterns in the Central Kalahari, Botswana. *Under review at Animal Behaviour ANBEH-S-25-00678*

15. Feyer, S.P, Klein, K., Kobourov, S., Snell, K., **Borrego, N.**, Finerty, G. E., van Bemmelen, R. S. A., O'Hanlon, N. J., Heydinger, J., Muzuma, U. & Schriber, F. 2D versus 2.5D Layer Arrangement for Animal Behaviour Multilayer Networks. *Under review at Animal Behaviour ANBEH-D-25-00389 for Special Issue: Multilayer networks for animal sociality.*
16. Heydinger, J., Muzuma, U., Finerty, G. E., **Borrego, N.**, Horth-Hanssen, T. & Beasley, J. Prey availability and Reproductive Demands Organize Space Use Across Temporal Scales in Desert-Adapted Lions. *Under review at Movement Ecology*
17. Heydinger, J., Muzuma, U., Horth-Hanssen, T., Finerty, G. E., Borrego, N. & Beasley, J. Bottom-up spatial constraints combine with top-down temporal effects to shape herbivore activity patterns in an arid landscape. *Under review at Journal of Animal Ecology JAE-2025-00558*

BOOK CHAPTERS

18. Palmer, M. S., **N. Borrego**, and C. Packer. (2023) Social Strategies of the African Lion in *Social Strategies of Carnivorous Mammalian Predators: Hunting and Surviving as Families*. Springer International Publishing, 7-45.

CONFERENCE PAPERS

19. Miller, S. M., Ferreira, S., Kilian, H., Parker, D., Courtenay, B., Hanekom, C., & **Borrego, N.** 2018. Reintroduction, genetic management and genetic rescue of lion populations. In *IUCN SSN Cat Specialist Group. Guidelines for the Conservation of Lions in Africa*. Version 1.0. Muri/Bern, Switzerland, (p. 111).
20. ^{*†}**Borrego, N.**, ^{*†}**Finerty, G. E.**, Balone, T., Gabaikanye, T., Gana, M., Monnaanoka, S., Tshiana, M. Tshiana, M., Araldi, A., Crofoot, M., Henley, S., Ithuteng, P., Schiess-Meier, M. *In Press*. Beyond Observation: Indigenous Tracking Explores Complex Lion Behavior in Challenging Environments. SAWMA 2024 Conference Proceedings, African Journal of Wildlife Research.

PRESENTATIONS & INVITED TALKS

**invited*

- 2024 [†]**Borrego, N.**, [†]**Chakrabarti, S.**, [†]**Finerty, G.E.**, ASAB Winter Meeting, Edinburg. *Talk title:* Building bridges from Boxes: The role of under-studied populations in expanding the horizons of animal behavior.
- 2024 [†]**Borrego, N.** and [†]**Finerty, G.E.**, ASAB Winter Meeting, Edinburg. *Talk title:* The crossroads of tradition and technology
- 2024 [†]**Borrego, N.**, and [†]**Finerty, G.E.** Savannah Science Network Meeting. *Poster:* Pride & Seek – tracking African lion Behavior
- 2024 [†]**Borrego, N.** and [†]**Finerty, G.E.** South African Wildlife Management Association. *Talk title:* The crossroads of tradition and modern technology
- 2025 ^{*}**Borrego, N.** & Finerty, G.. Human-Carnivore Co-Adaptation Workshop. Hosted by University of Cologne in Kasane, Botswana. *Talk title:* Dynamic Behaviors, Dynamic Landscapes: Flexibility and adaptation in Lion (*Panthera leo*) Behavior

- 2025 ***Borrego, N.** Max Planck Institute for Evolutionary Anthropology, Leipzig. *Talk title:* Big Cats, Bigger questions: Proximate and ultimate drivers of behavior
- 2025 †,***Chakrabarti, S., †Borrego, N., †Finerty, G.E.** Behavior 2025: XXXVIII International Ethological Congress. Panelist and symposium speaker. *Panel:* Unlocking comparative research in animal social behavior. *Talk title:* Understanding lion societies: The role of comparative research
- 2025 †**Borrego, N., †Finerty, G.E.** South African Wildlife Management Association. *Talk title:* Beyond observation: emerging technologies unlock new frontiers in lion behavioral ecology

STUDENT PRESENTATIONS

*student, †mentee

- 2019 *O'Connor, V., Chase, S., Thomas, P, and **Borrego, N.** Exploring problem-solving and innovation in snow leopards (*Panthera onca*), Poster at the 26th Annual International Conference on Comparative Cognition
- 2019 *O'Connor, V., Chase, S., Thomas, P, and **Borrego, N.** Exploring problem-solving and innovation in snow leopards (*Panthera onca*), 56th Annual Meeting of the Animal Behaviour Society
- 2020 *O'Connor, V., **Borrego, N.**, and Vonk, J. Exploring innovation and behavioral flexibility in jaguars, Amur leopards and clouded leopards. Annual Meeting of the Animal Behavior Society
- 2024 †Balone, T. KSI – Kill Site Investigation - Novel approach to investigate hunting behaviour in Kalahari lions using Indigenous tracking skills.” Poster at The 5th Botswana Biodiversity Symposium, Kasane, Botswana

SCIENCE COMMUNICATION & PRESS COVERAGE (*FULL LIST AVAILABLE UPON REQUEST*)

I have built a strong record of science communication, serving as presenter and consultant on more than 10 television documentaries for Smithsonian Channel, BBC, PBS, National Geographic, AppleTV, and Sky, including *Killer IQ: Predator Challenge*, *Big Cats*, and *Earth at Night*. My work has also been featured in over a dozen popular press articles, such as *Science*, *Scientific American*, *Smithsonian Magazine*, *Slate*, and *The Atlantic*, and I have contributed to children's books, podcasts, museum exhibits, and public lectures.

REFERENCES

1. **Prof. Craig Packer**
University of Minnesota, Head of Lion Research Center
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Phone: +1 612 275 3686
2. **Prof. Meg Crofoot**
Director of the MPI-AB, Department for the Ecology of Animal Societies
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3. **Prof. Fady Marcos**
Center for Learning and Teaching
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