

## Eli D. Strauss

University of Konstanz  
Max Planck Institute of Animal Behavior  
Am Obstberg 1, 78315 Radolfzell am Bodensee, Germany  
estrauss@ab.mpg.de  
straussed.github.io

### Research Interests

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I'm a behavioral ecologist interested social evolution, focusing on how societies evolve and how social structure shapes selection at the individual level. I engage with these themes using a combination of long-term observational data, remote sensing, targeted field experiments, and computer simulations to understand the socioecological origins of fitness.

### Education and Employment

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- 2023 – Postdoctoral Researcher, University of Konstanz and Max Planck Institute of Animal Behavior
- 2021 – 2023 Humboldt Postdoctoral Fellow, Max Planck Institute of Animal Behavior  
Host: Damien Farine
- 2020 – 2021 BEACON Postdoctoral Fellow, Michigan State University
- 2019 – 2020 Postdoc of Excellence Fellow, University of Nebraska Lincoln (UNL)  
Advisor: Dai Shizuka
- 2019 – 2020 BEACON Postdoctoral Fellow, Michigan State University
- 2012 – 2019 Dual PhD at Michigan State University (MSU)  
Integrative Biology (IBIO) and Ecology, Evolution, & Behavior (EEBB)  
Advisor: Kay E. Holekamp
- 2007 – 2011 B.A. *cum laude* at University of California Berkeley  
Advisor: Steve Palmer

### Awards and Honors

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- 2019. Alexander von Humboldt Postdoctoral Research Fellowship (€128,160)
- 2019. Journal of Animal Ecology Elton Prize Finalist
- 2019. Animal Behavior Society Walter Clyde Allee Competition Finalist and Symposium Speaker
- 2019. Population Biology Postdoc of Excellence, University of Nebraska - Lincoln (\$45,000)
- 2019. Competitive award from BEACON Center for the Study of Evolution in Action. “Evolutionary perspectives on social inequality” (\$88,609)
- 2019. MSU EEBB Distinguished Student Speaker
- 2017. Best Graduate Student Talk at *Göttinger Freilandtage* conference, Germany
- 2012. NSF Graduate Research Fellowship (\$138,000)
- 2012. MSU Graduate School University Distinguished Fellowship (\$80,000)
- 2011. UC Berkeley Undergraduate Thesis in Cognitive Science with Highest Honors

**Peer-Reviewed Publications and Manuscripts in Progress** (underline = mentee co-author)

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- Strauss ED**, Jensen FH, Gersick AS, Thomas M, Holekamp KE, Strandburg-Peshkin A (under revision). Daily ranging and den usage patterns structure fission-fusion dynamics and social associations in spotted hyenas. *Behavioral Ecology & Sociobiology*. Preprint: <https://doi.org/10.1101/2021.10.01.462772>
- Strauss ED** (in press). Demographic turnover can be a leading driver of hierarchy dynamics, and social inheritance modifies its effects. *Philosophical Transactions of the Royal Society, B*. **McCormick SK**, Laubach ZM, **Strauss ED**, Montgomery TM, Holekamp KE (2022). Evaluating drivers of female dominance in the spotted hyena. *Frontiers in Ecology and Evolution*. 10: 1-15. <https://doi.org/10.3389/fevo.2022.934659>
- Ogino M**, **Strauss ED**, Farine DR. (2022) Challenges to studying long-term effects on moment-by-moment collective actions. *Philosophical Transactions of the Royal Society, B*. 378: 20220064. <https://doi.org/10.1098/rstb.2022.0064>
- He P, Klarevas-Irby JA, Papageorgiou D, Christensen C, **Strauss ED**, Farine DR. (2022). A guide to sampling design for GPS-based studies of social behavior. *Methods in Ecology and Evolution*. <https://doi.org/10.1111/2041-210X.13999>
- Strauss ED**, Shizuka D. (2022) The ecology of wealth inequality in animal societies. *Proceedings of the Royal Society, B*. 289: 20220500 <https://doi.org/10.1098/rspb.2022.0500>
- Strauss ED**, Curley JP, Shizuka D, Hobson EA (2022). The centennial of the pecking order: current state and future prospects for the study of dominance hierarchies. *Philosophical Transactions of the Royal Society, B*. 376: 20200432. <https://doi.org/10.1098/rstb.2020.0432>
- Strauss ED**, Shizuka D (2022). The dynamics of dominance: open questions, challenges, and solutions. *Philosophical Transactions of the Royal Society, B*. 377: 20200445. <https://doi.org/10.1098/rstb.2020.0445>
- Strauss ED**, DeCasien AR, Galindo G, Hobson EA, Shizuka D, Curley JP (2022). DomArchive: a century of published dominance data. *Philosophical Transactions of the Royal Society, B*. 376: 20200436. <https://doi.org/10.1098/rstb.2020.0436>
- Brown AK**, Pioon MO, Holekamp KE, **Strauss ED** (2021). Infanticide by females is a leading source of juvenile mortality in a large social carnivore. *The American Naturalist* 198. <https://doi.org/10.1086/716636>.
- Holekamp KE, **Strauss ED** (2020) Reproduction within a hierarchical society from a female's perspective. *Integrative and Comparative Biology* 60: 753–764. <https://doi.org/10.1093/icb/icaa068>.
- Strauss ED**, Shizuka D, Holekamp KE. (2020) Juvenile rank acquisition influences fitness independent of adult rank. *Proceedings of the Royal Society, B*. 287: 20192969. <http://doi.org/10.1098/rspb.2019.2969>.
- Green DS, Farr M, Holekamp KE, **Strauss ED**, Zipkin E. (2019) Can hyena behavior predict abundances of sympatric carnivores? *Philosophical Transactions of the Royal Society, B*. 374: 20180065. <http://doi.org/10.1098/rstb.2018.0065>.
- Strauss ED**, Holekamp KE. (2019) Social alliances improve rank and fitness in convention-based societies. *Proceedings of the National Academy of Sciences of the United States of America* 116: 8919–8924. On the cover of the 30 April, 2019 issue. <http://doi.org/10.1073/pnas.1810384116>.

- Strauss ED**, Holekamp KE. (2019) Inferring longitudinal hierarchies: Framework and methods for studying the dynamics of dominance. *Journal of Animal Ecology* 88: 521-536. <http://doi.org/10.1111/1365-2656.12951>.
- Smith JE, Lehmann KDS, Montgomery TM, **Strauss ED**, Holekamp KE. (2017) Insights from long-term field studies of mammalian carnivores. *Journal of Mammalogy* 98: 631-641. <http://doi.org/10.1093/jmammal/gyw194>.
- Holekamp KE, **Strauss ED**. (2016) Aggression and dominance: An interdisciplinary overview. *Current Opinion in Behavioral Sciences* 12: 44-51. <http://doi.org/10.1016/j.cobeha.2016.08.005>
- Jones SC, **Strauss ED**, Holekamp KE. (2015) Ecology of African Carrion. Pp. 459-489 in *Carrion Ecology, Evolution, and Their Applications*. Benbow ME, Tomberlin JK, Tarone AM (Eds). CRC Press. Boca Raton, FL.
- Johnson AE, **Strauss ED**, Pickett R, Adami C, Dworkin I, Goldsby HJ. (2014) More bang for your buck: Quorum-sensing capabilities improve the efficacy of suicidal altruism. *ALIFE 14: Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems*, New York, NY. <http://doi.org/10.1162/978-0-262-32621-6-ch020>.
- Strauss ED**, Schloss KB, Palmer SE. (2013) Color preferences change after experience with liked/disliked colored objects. *Psychonomic Bulletin & Review* 20: 935-943. <http://doi.org/10.3758/s13423-013-0423-2>.
- Schloss KB, **Strauss ED**, Palmer SE. (2013) Object color preferences. *Color Research & Application* 38: 393-411. <http://doi.org/10.1002/col.21756>

## Software

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2021. **Strauss ED**, DeCasien AR, Galindo G, Hobson EA, Shizuka D, Curley JP. DomArchive: a century of published dominance data. R package version 1.0. <https://github.com/DomArchive/DomArchive>
2019. **Strauss ED**. DynaRankR: Inferring Longitudinal Dominance Hierarchies. R package version 1.0.0. <https://CRAN.R-project.org/package=DynaRankR>

## Invited Seminars and Workshops

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2022. **Invited talk**. Anthropology Department, University of Texas at Austin, Austin, TX.
2020. **Invited talk**. Long-term Animal Research Seminar Series, organized by Duke University, Durham NC.
2020. **Invited talk**. Department of Biological Sciences, University of Cincinnati, Cincinnati OH.
2020. **Invited talk**. Program in Evolution and Behaviour, University of Lethbridge, Lethbridge AB, Canada.
2019. **Invited talk**. Program in Ecology, Evolution, & Behavior, Michigan State University, Lansing MI.
2019. **Invited member** of Reorganizing Social Organization Workshop at Max Planck Institute of Evolutionary Anthropology, Leipzig, Germany.
2019. **Invited talk**. Department of Migration, Max Planck Institute of Animal Behavior, Radolfzell, Germany.
2019. **Invited talk**. Warder Clyde Allee Competition, Animal Behavior Society, Chicago IL.

2017. **Invited talk.** School of Biological Sciences, University of Nebraska, Lincoln NE.

**Conference Presentations** (underline denote mentee presenter)

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2020. Brown AK, Holekamp KE, **Strauss ED**. Infanticide by females is a leading source of juvenile mortality in a large social carnivore. Poster presented at *Ecological Society of America*, virtual.
2019. Brown AK, **Strauss ED**, Holekamp KE. The function of infanticide by females in a large social carnivore. Poster presented at *University Undergraduate Research and Arts Forum*, East Lansing MI (Awarded First Place, \$100).
2018. **Strauss ED**, Shizuka D, Holekamp KE. Early life dominance interactions predict longevity in spotted hyenas. Talk presented at *BEACON Center for Evolution in Action*, East Lansing MI.
2018. O’Toole A, **Strauss ED**, Holekamp KE. Mechanisms underlying variation in maternal rank inheritance during development of spotted hyenas. Poster presented at *University Undergraduate Research and Arts Forum*, East Lansing MI (Awarded First Place, \$100).
2018. Rivers CJ, Montgomery TM, **Strauss ED**, Holekamp KE. Does social rank affect play behavior in juvenile spotted hyenas (*Crocuta crocuta*)? Poster presented at *Mid-Michigan Symposium for Undergraduate Research Experiences*, East Lansing MI.
2018. **Strauss ED**, Shizuka D, Holekamp KE. Early life dominance interactions predict longevity in spotted hyenas. Talk presented at *International Society for Behavioral Ecology*, Minneapolis MN.
2018. Redgate G, Chojnacki A, Gutwein K, Woloszyk Z, Laubach ZM, Montgomery TM, **Strauss ED**. Detection of leopards by prey in relation to habitat. Poster presented at *University Undergraduate Research and Arts Forum*, East Lansing MI.
2017. Sawdy MA, **Strauss ED**, Rojas CA, Montgomery TM, Melvin TA, Bahlai CA, Bond AL. Environmental drivers of egg size variation in northern rockhopper penguins (*Eudyptes moseleyi*). Poster presented at *Ecological Society of America*, Portland OR.
2017. **Strauss ED**, Holekamp KE. Social bonds predict dynamics of dominance status in societies of spotted hyenas. Talk presented at *Göttinger Freilandtage*, Gottingen, Germany (Awarded “Best student talk,” \$180).
2017. **Strauss ED**, Holekamp KE. Social rank reversals in a long-term study of spotted hyenas. Talk presented at *Animal Behavior Society*, Toronto, ON.
2017. **Strauss ED**, Holekamp KE. The structure of nepotistic dominance hierarchies: The role of kinship and dominance. Talk presented at *BEACON Center for Evolution in Action*, East Lansing MI.
2016. **Strauss ED**, Holekamp KE. Social rank reversals in a long-term study of spotted hyenas. Talk presented at *Ecology, Evolution, and Behavior Research Symposium*, East Lansing MI.
2015. Glover A, **Strauss ED**, Holekamp KE. The relationship between aggression and submission in spotted hyenas. Talk presented at *Emerging Researchers National Conference*, Washington DC.
2014. Claiborne D, **Strauss ED**, Holekamp KE. Social hierarchy of the spotted hyena (*Crocuta crocuta*). Poster presented at *Annual Biomedical Research Conference for Minority Students*, San Antonio TX.
2014. **Strauss ED**, Holekamp KE. Intraspecific variation in the society of a social carnivore. Poster presented at *Animal Behavior Society*, Princeton NJ.

2014. Mirmomeni M, Hintze A, **Strauss ED**, Adami C. The collective hunting game: A new game to model social behavior in animals. Talk presented at *Society for the Study of Evolution*, Raleigh NC.
2011. **Strauss ED**, Schloss KB, Palmer SE. The effects of imagined experiences of objects on preferences for colors. Talk presented at *Vision Science Society*, Naples FL.
2010. **Strauss ED**, Schloss KB, Palmer SE. The good, the bad, and the ugly: Effects of object exposure on color preferences. Poster presented at *Vision Science Society*, Naples FL.
2010. Schloss KB, Fortenbaugh FC, **Strauss ED**, Palmer SE. CSI Berkeley Episode II: Perceptual organization and selective attention. Talk presented at *Vision Science Society*, Naples FL.
2009. Schloss KB, Fortenbaugh FC, **Strauss ED**, Palmer SE. CSI Berkeley Episode II: Perceptual organization and selective attention. Talk presented at *Configural Processing Consortium*, Boston MA.

### Grants and Fellowships

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- 2021 Supporting safe, inclusive, and diverse field biology by amplifying underrepresented voices and providing mentoring resources for early career biologists. Grant awarded by Cluster for the Advanced Study of Collective Behaviour, University of Konstanz (€3800).
- 2021 – 2023 Alexander von Humboldt Postdoctoral Research Fellowship (€128,160)
- 2019 MSU Dissertation Completion Fellowship (\$7,500)
- 2018 MSU Dissertation Continuation Fellowship (\$7,500)
- 2017 BEACON Travel Fellowship (\$1,000)
- 2017 EEBB Travel Fellowship (\$600)
- 2016 IBIO John R. Shaver Award (\$1,125)
- 2016 EEBB Summer Fellowship (\$1,800)
- 2014 EEBB Summer Fellowship (\$1,800)
- 2013 EEBB Travel Fellowship (\$400)
- 2012 BEACON Top-up Fellowship (\$3,000)
- 2010 UC Berkeley Undergraduate Research Apprenticeship Summer Award
- 2009 UC Berkeley Undergraduate Research Apprenticeship Summer Award

### Mentoring

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Name	Years	Topic
Ann-Kathrin Pohle	2022 -	Delayed benefits of juvenile social play in spotted hyenas
Heidi Rogers	2020 - 2021	Master's capstone project on feeding competition
Ally Brown	2019 - 2021	Undergraduate independent research project on infanticide, culminating in prize winning poster and manuscript published in <i>The American Naturalist</i> .
Candice Rivers	2018	Play data extraction, management, and analysis, culminating in poster presentation
Ashley O'Toole	2016 - 2018	Behavioral data extraction, management, and analysis, culminating in the presentation of a prize-

		winning poster on variation in maternal rank inheritance
Taryn Withers	2016 - 2018	Aggression and submission data extraction, management, and analysis
Siera Tyl	2016 - 2017	Aggression and submission data extraction and management
Antonia Langfeldt	2016 - 2017	Aggression and submission data extraction and management
Kecil John	2016 - 2017	Aggression and submission data extraction and management
Nicole Seman	2016	Aggression and submission data extraction and management
Genevieve Redgate	2014 - 2015	Field methods for behavior and group research project, culminating in a poster presentation
Allie Chojnacki	2014 - 2015	Field methods for behavior and group research project, culminating in a poster presentation
Katelyn Gutwein	2014 - 2015	Field methods for behavior and group research project, culminating in a poster presentation
Zack Woloszyk	2014 - 2015	Field methods for behavior and group research project, culminating in a poster presentation
Alyyah Glover	2013 - 2014	REU SROP program for students from underrepresented backgrounds. Independent research project on patterns of submission and aggression, culminating in two poster presentations
Daniel Clairborne	2013 - 2014	REU SROP program for students from underrepresented backgrounds. Independent research project on patterns of submission and aggression, culminating in two poster presentations

## Teaching

2023	Certified Carpentries Instructor
2018 (fall)	IBIO 830 Statistical Methods in Evolution and Ecology (teaching assistant for graduate-level course)
2018 (sum)	IBIO 341 Fundamentals of Genetics (teaching assistant)
2016 (spring)	IBIO 445 Evolution (discussion Instructor)
2015 – 2017	IBIO 490 Behavioral Ecology of African Mammals (lead instructor for study-abroad course)

## Service and Outreach

2022 -	Max Planck Institute data science instructor (Carpentries instructor training + teaching upcoming data science courses)
2022 -	Member of Diversity, Equity and Inclusion Working group at Max Planck-Institute of Animal Behavior (MPI-AB)
2022	Founder and organizer of FIELD Perspectives blog aimed at promoting safer, and more inclusive field research. <a href="https://fieldperspectives.org">fieldperspectives.org</a>

- 2021 – 2022 External representative of MPI-AB to Max Planck Society PostdocNet  
2021 – 2022 Postdoc representative to MPI-AB faculty meeting  
2020 – 2021 Guest Editor for *Philosophical Transactions of the Royal Society, B*  
2021 Organizer of Mara Hyena Project Scientific Reproducibility Workshop  
2020 – 2021 Contributor to MPI-AB Open Data Science Workshop  
2017 – 2018 Graduate student representative to IBIO faculty meeting  
2017 – 2018 Founder + organizer of MSU Hacky Hour (data analysis support group)  
2017 – 2018 EEBB Recruitment Liaison (organizing graduate student recruitment event)  
2017 – 2018 Volunteer for MSU Science Festival  
2016 – 2019 Founder and organizer of Biology on Tap (monthly science outreach event reaching audiences of ~100 members of the public)  
2016 – 2018 Member of EEBB Quantitative Methods Committee (revamping stats curriculum)  
2015 – 2016 Member of IBIO Seminar Committee  
2014 – 2015 Presenter of weekly public talks about spotted hyenas at Serena Lodge, Kenya  
2014 – 2015 Contributor to Mara Hyena Project field blog  
2013 – 2014 Volunteer for MSU Museum Darwin Day

## Media Coverage

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2022. “A massive societal problem for humans is also harming animals” *Inverse*.  
<https://www.inverse.com/science/animal-societies-wealth-inequality>
2022. “Waffles, la hiena que llegó a hembra alfa desde lo más bajo al liderar la insurrección de las humildes.” *El País*. [https://elpais.com/ciencia/2022-02-01/waffles-la-hiena-que-llego-a-hembra-alfa-desde-lo-mas-bajo-al-liderar-la-insurreccion-de-las-humildes.html?ssm=TW\\_CC\\_MAT](https://elpais.com/ciencia/2022-02-01/waffles-la-hiena-que-llego-a-hembra-alfa-desde-lo-mas-bajo-al-liderar-la-insurreccion-de-las-humildes.html?ssm=TW_CC_MAT)
2021. “Animal social networks.” *Rotating Planet*.  
<http://www.youtube.com/watch?v=yLe0CA9MX9Q>
2020. “Great expectations? Falling short of status no laughing matter for hyenas.” *Nebraska Today*. <http://research.unl.edu/blog/great-expectations-falling-short-of-status-no-laughing-matter-for-hyenas/>
2020. “Female hyenas kill off cubs in their own clans.” *ScienceNews*.  
<http://www.sciencenews.org/article/female-hyena-moms-kill-cubs-own-clans>
2019. “Hyena society stability has last laugh.” *Scientific American 60-Second-Science*.  
<http://www.scientificamerican.com/podcast/episode/hyena-society-stability-has-last-laugh/>
2019. “For hyenas, climbing the social ladder is easier with friends.” *PBS NOVA*.  
<http://www.pbs.org/wgbh/nova/article/hyenas-climbing-social-ladder-easier-friends/>

## Peer Review

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Invited Reviewer for:

*Frontiers in Ecology and Evolution*  
*Communications Biology*  
*Scientific Reports*  
*Methods in Evolution and Ecology*  
*International Journal of Primatology*  
*Proceedings of the Royal Society B*

*Behavioral Ecology*  
*Behavioral Ecology and Sociobiology*  
*Functional Ecology*  
*Animal Behaviour*  
*Behavior Research Methods*  
*Evolution and Ecology*  
*Primates*  
*SIAM Review Research Spotlights*  
*Philosophical Transactions of the Royal Society B*  
*Royal Society Open Science*  
*The American Naturalist*

### **Society Memberships**

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Ecological Society of America  
Association for the Study of Animal Behavior  
Animal Behavior Society  
Society for Integrative and Comparative Biology

### **References**

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Kay E. Holekamp  
University Distinguished Professor of Integrative Biology  
Michigan State University  
holekamp@msu.edu

Daizaburo Shizuka  
School of Biological Sciences  
University of Nebraska Lincoln  
dshizuka2@unl.edu

Damien Farine  
Eccellanza Professor in Department of Evolutionary Biology and Environmental Studies  
University of Zurich, Switzerland  
Department of Collective Behavior, Max Planck Institute of Animal Behavior, Germany  
dfarine@ab.mpg.de

Ariana Strandburg-Peshkin  
Department for the Ecology of Animal Societies  
Max Planck Institute of Animal Behavior  
astrandburg@ab.mpg.de