

Takao Sasaki

Odum School of Ecology, University of Georgia
140 E Green St
Athens, GA 30602 USA
E-mail: takao.sasaki@uga.edu
Office phone: +1 (706) 705-0574
Website: <http://sasakilab.ecology.uga.edu>

Appointments

2018- Assistant Professor, Odum School of Ecology, University of Georgia
2022- Courtesy faculty, Entomology Department, University of Georgia

Education

2008-2013 **Ph. D. Biology, Arizona State University**
Advisor: Stephen Pratt
Committee members: Nia Amazeen, Jennifer Fewell, Bert Hölldobler, Marco Janssen and Jürgen Liebig
Dissertation: “Psychology of a superorganism”

2006-2008 **M. S. Applied psychology, Arizona State University**
Advisors: David. Becker, Douglas Kenrick and Steven Neuberg
Thesis: “The relationship between product information quantity and diversity of consumer decisions”

1998-2002 **B. S. Physics, Nihon University**

Research Experience

2014-2018 Royal Society Newton Postdoctoral Fellow/Marie Skłodowska-Curie Postdoctoral Fellow, Zoology Department, Oxford University
Advisor: Dora Biro

2013-2014 Postdoctoral Fellow, School of Life Sciences and Centre for Social Dynamics and Complexity, Arizona State University.
Advisors: Bert Hölldobler and Stephen C. Pratt

Publications

43 Aikins, C.G., Altizer, S., Davis, A., Donaldson, K. & **Sasaki, T.** (in review). Monarch butterflies use social cues for orientation during migration and improve performance. *Proceedings of the Royal Society B*

- 42 Invernizzi, E., Michelot, T., Popov, V., Ng, N., Macqueen E., Rouviere A., Webster, M. & **Sasaki, T.** (in review). Identifying cues for self-organised nest wall building behaviour in the rock ant, *Temnothorax rugatulus*, using hidden Markov models. *Animal Behaviour*
- 41 Taylor, B.Z., Rajagopal, S. & **Sasaki, T.** (in review). Negative effects of miniature tags on individual behaviors in the rock ant, *Temnothorax rugatulus*. *PLoS ONE*
- 40 Santos, C., Rajagopal, S., Sanabria, F. & **Sasaki, T.** (in review). Reversal learning in ant colonies. *Animal Cognition*
- 39 Tyler, K., Vassie, D. & **Sasaki, T.** (in review). The history of option quality affects nest site choice in the acron ant, *Temnothorax cuvispinosus*. *Biology Letters*
- 38 Wang, L., Qiu, Z., **Sasaki, T.** & Kang, Y. (2023). Dynamical behavior of a colony migration system: do colony size and quorum threshold affect collective decisions? *SIAM Journal on Applied Mathematics* S43-S64
- 37 Doering, G.N., Pratt, S.C. & **Sasaki, T.** (2023). Is collective nest site selection in ants influenced by the anchoring effect? *Behavioural Processes* 208, 104861
- 36 Aikins, C.G., **Sasaki, T.** & Altizer, S. (2023). Neither copy nor avoid: no evidence for social cue use in monarch butterfly oviposition site selection. *Journal of Insect Behavior*, 36 (1), 33-44
- 35 Collet, J., Morford, J., Lewin, P., Bonnet-Lebrun, A., **Sasaki, T.** & Biro, D. (2023). Mechanisms of collective learning: how can animal groups improve collective performance across trials. *Philosophical Transaction of the Royal Society B*, 378 (1874)
- 34 **Sasaki, T.**, Masuda, N., Mann, R.P. & Biro, D. (2022). Empirical test of the many-wrongs hypothesis reveals weighted averaging of individual routes in pigeon flocks. *iScience*, 25(10):105076
- 33 Valentini, G., Pavlic, T.P., Walker, S.I., Pratt, S.C., Biro, D. & **Sasaki, T.** (2021). Naïve individuals promote collective exploration in homing pigeons. *eLife*, 10:e68653
- 32 Collet, J., **Sasaki, T.** & Biro, D (2021). Pigeons retain partial memories of homing paths years after learning them individually, collectively, or culturally. *Proceedings of Royal Society B*, 288: 20212110.
- 31 Davis, A.K., Clancy, K.M. & **Sasaki, T.** (2021). How to take an ant's pulse: a procedure for non-destructively monitoring baseline and stimulated heart rate in Formicidae. *Entomologia Experimentalis et Applicata*, 169: 807-812
- 30 Kano, F., **Sasaki, T.** & Biro, D (2021). Collective attention in navigating homing pigeons: group size effect and individual differences. *Animal Behaviour*, 180, 63-80
- 29 O'Shea-Wheller, T.A., Hunt, E.R. & **Sasaki, T.** (2021). Functional heterogeneity in superorganisms: Emerging trends and concepts. *Annals of the Entomological Society of America*, saaa039
- 28 **Sasaki, T.**, Briner, J.E. & Pratt, S.C. (2020). The effect of brood quantity on nest choice in the *Temnothorax rugatulus*. *Annals of the Entomological Society of America*, saaa018

- 27 **Sasaki, T.**, Danczak, L., Thompson, B., Morshed, T. & Pratt, S.C. (2020). Route learning during tandem running in the rock ant *Temnothorax albipennis*. *Journal of Experimental Biology*. 223: jeb221408
- 26 Valentini, G., Masuda, N., Shaffer, Z., Hanson, J.R., **Sasaki, T.**, Walker, S.I. Pavlic, T.P. & Pratt, S.C. (2020). Division of labour promotes the bread of information in colony emigrations by the ant *Temnothorax rugatulus*. *Proceedings of the Royal Society B* 287, 20192950
- 25 **Sasaki, T.**, Stott, B. & Pratt, S.C. (2019). Rational time investment during collective decision making in *Temnothorax* ants. *Biology Letters*, 15(10).
- 24 Buffin, A., **Sasaki, T.** & Pratt, S.C. (2018). Scaling of speed with group size in cooperative transport by the ant *Novomessor cockerelli*. *PLOS ONE*, 13(10): e0205400.
- 23 Kano, F., Walker, J., **Sasaki, T.** & Biro, D (2018). Head-mounted sensors reveal visual attention of free-flying homing pigeons. *Journal of Experimental Biology*, 221, jeb183475.
- 22 **Sasaki, T.**, Pratt, S.C. & Kacelnik, A. (2018). Parallel vs. comparative evaluation of alternative options by colonies and individuals of the ant *Temnothorax rugatulus*. *Scientific Reports*, 8, 12730.
- 21 **Sasaki, T.**, Mann, R.P., Warren, K.N., Herbert, T., Wilson, T. & Biro, D. (2018). Personality and the collective: Bold homing pigeons occupy higher leadership ranks in flocks. *Philosophical Transaction of the Royal Society B*, 373(1746).
- 20 Pratt, S.C. & **Sasaki, T.** (2018). Psychology of a superorganism: collective decision-making by insect societies. *Annual Review of Entomology*, 63, 259-275.
- 19 Charbonneau, D., **Sasaki, T.** & Dornhaus, A. (2017). Who needs 'lazy' workers?: Inactive workers act as a 'reserve' labor force replacing active workers, but inactive workers are not replaced when they are removed. *PLoS ONE* 12(9): e0184074.
- 18 Kennedy, P., Baron, G., Bitao, Q., Freitag, D., Helanterä, H., Hunt, E.R., Manfredini, F., O'Shea-Wheller, T., Patalano, S., Pull, C., **Sasaki, T.**, Taylor, D., Wyatt, T. & Sumner, S. (2017). Deconstructing superorganisms and societies to address big questions in biology. *Trends in Ecology and Evolution*, 32(11), 861-872.
- 17 **Sasaki, T.** & Biro, D. (2017). Cumulative culture can emerge from collective intelligence in animal groups. *Nature Communications*, 8, 15049.
- 16 Shaffer, Z., **Sasaki T.**, Haney, B., Janssen, M., Pratt, S.C. & Fewell, J.H. (2016). The foundress's dilemma: group selection for cooperation among queens of the harvester ant, *Pogonomyrmex californicus*. *Scientific Reports*, 6, 29828.
- 15 Biro, D., **Sasaki, T.** & Portugal, S.J. (2016). Bringing a time-depth perspective to collective animal behaviour. *Trends in Ecology & Evolution*, 31(7), 550-562.
- 14 **Sasaki, T.**, Shaffer, Z., Pratt, S.C. & Janssen, M (2016). Evolution of networks for different payoff distributions. *Current Zoology*, 62(3), 52-214.

- 13 **Sasaki, T.**, Penick, C.A., Shaffer, Pratt, S.C. & Liebig, J. (2016). A simple behavioural model predicts the emergence of complex animal hierarchies. *American Naturalist*, 187(6), 765-775.
- 12 **Sasaki, T.**, Colling, B., Sonnenschein, A., Boggess, M.M., & Pratt, S.C. (2015). Flexibility of collective decision making during house hunting in *Temnothorax* ants. *Behavioural Ecology and Sociobiology*, 69, 707-714.
- 11 Becker, D. V., Mortensen, C. R., Anderson, U., & **Sasaki, T.** (2014). Out of sight but not out of mind: Memory scanning is attuned to threatening faces. *Journal of Evolutionary Psychology*, 12(5), 901-912.
- 10 **Sasaki, T.**, Hölldobler, B., Millar, J.G., & Pratt, S.C. (2014). A context dependent alarm signal in the ant *Temnothorax rugatulus*. *Journal of Experimental Biology*, 217, 3229-3236.
- 9 **Sasaki, T.** & Pratt S.C. (2013). Ants learn to rely on more informative attributes during decision making. *Biology letters*, 9, 20130667.
- 8 **Sasaki, T.**, Granovskiy, B., Mann, R.P., Sumpter, D.J.T., & Pratt, S.C. (2013). A crowd is wise for hard tasks but not for easy ones. *Proceedings of the National Academy of Sciences of the United States of America*, 110(34), 13769-13773.
- 7 Shaffer, Z., **Sasaki, T.** & Pratt S.C. (2013) Linear recruitment leads to allocation and flexibility in collective foraging by ants. *Animal Behavior*, 86(5), 967-975.
- 6 Pinter-Wollman, N., Hobson, E., Smith, J., Edelman, A., Shizuka, D., de Silva, S., Waters, J., Prager, S., **Sasaki, T.**, Wittemyer, G., Fewell, J. & McDonald, D. (2013). The dynamics of animal social networks: analytical, conceptual, and theoretical advances. *Behavioral Ecology*, 24, 1-24.
- 5 **Sasaki, T.** & Pratt, S.C. (2012). Groups have a larger cognitive capacity than individuals. *Current Biology* 22(19), R827-R829.
- 4 Becker, D.V., Mortensen, C. R., Ackerman J.M., Shapiro J., Anderson, U., **Sasaki, T.**, Maner, J., Neuberg, S. & Kenrick, D. (2011). Signal detection on the battlefield: Priming self-protection vs. revenge-mindedness differentially modulates the detection of enemies and allies. *PLoS ONE*, 6(9): e23929.
- 3 **Sasaki, T.**, Becker, D. V. Janssen, M. & Neel, R. (2011). Does greater product information actually inform consumer decisions? The relationship between product information quantity and diversity of consumer decisions. *Journal of Economic Psychology* 32, 391-398.
- 2 **Sasaki, T.** & Pratt, S.C. (2011). Emergence of group rationality from irrational individuals. *Behavioral Ecology*, 22, 276-281.
- 1 Ackerman, J. M, Becker, D. V., Mortensen, C. R., **Sasaki, T.**, Neuberg, S. L, & Kenrick, D. T. (2009). A pox on the mind: Disjunction of attention and memory in processing physical disfigurement. *Journal of Experimental Social Psychology* 45, 478-485.

Selected Grants and Awards

2023	USDA, National Wildlife Research Center (PI), \$354,696 (pending)
2023	NSF, Integrative Organismal Systems (PI), \$660,469
2023	UGA Faculty Seed Grant, \$25,000
2022	Templeton World Charity Foundation Grant (PI), \$228,128
2022	NSF, Science of Learning and Augmented Intelligence (PI), \$740,619
2019	UGA Junior Faculty Seed Grant, \$15,000
2019	UGA Global Research Collaboration Grant Program, \$8,000
2016	Marie Skłodowska-Curie Fellowship, €195,454
2014	Glushko Dissertation Prize, \$10,000
2012	Best oral presentation in North American Section-International Union for the study of Social Insects
2010	Outstanding Teaching Assistant Awards, nominated
2010	Student competition for president's prize in Entomological Society of America meeting, 2 nd place

Selected Invited Talks

2023	Gordon Research Conference on Collective Behavior, Grand Summit, Maine, USA
2023	Diverse Intelligences Summit, University of St Andrews, UK
2023	International conference on behavior analysis and recognition for knowledge discovery, Atlanta, USA (keynote speaker)
2023	Seminar at Savannah Ricer Ecology Laboratory (SREL), University of Georgia, USA
2022	Department seminar in Psychology, Arizona State University, USA
2022	Physics and Biology seminar, Georgia Institute of Technology, USA
2022	Department Seminar in Integrative Biology, University of Texas, Austin, USA
2021	Cognitive Science Colloquium, University of Tübingen, Germany (online)
2020	Animal Cognition seminar, University of Cincinnati, USA
2020	Allen Discovery Center, Tufts University, USA
2020	Entomology Department seminar, Virginia Polytechnic Institute, USA
2019	National Institute for Basic Biology, Japan
2019	School of Science and Technology, Kwansei Gakuin University, Japan

- 2018 Evolution of Social Complexity Colloquium, Arizona State University, USA
- 2018 Centre for Advanced Studies, The Graduate University for Advanced Studies, Japan
- 2018 Department of Neurobiology and Behavior, Cornell University, USA
- 2017 Centre de Biologie Integrative, Univeristy of Toulouse, France
- 2017 School of Psychology and Neuroscience, St Andrews, UK
- 2017 School of Biological Sciences, Royal Holloway University of London, UK
- 2017 School of Biological and Chemical Science, Queen Mary University, UK
- 2017 Department of Biology, University of Pennsylvania, USA
- 2016 Department of Computer Sciences, University of Bath, UK
- 2016 Department of Psychology, University of Washington, USA
- 2015 Social Insect Behaviour Workshop, Champalimaud Foundation, Portugal

Selected Conference Presentations

- 2022 Collective learning: how do ant colonies collectively cover an unwanted substance. Ethology Conference, Hakata, Japan.
- 2022 Associative learning in ant colonies, International Union for the Study of Social Insects meeting. San Diego.
- 2021 Studying individual and collective navigation using modern technologies. Animal Behaviour Society meeting, online.
- 2020 Route learning during tandem running in the rock ant, *Temnothorax albipennis*. Insect Navigation Workshop, Sussex, UK (online).
- 2019 Empirical test of the many-wrongs principle using homing pigeons, *Columba livia*. Behaviour meeting, Chicago, USA.
- 2018 information use during tandem running in the rock ant, *Temnothorax albipennis*. International Union for the Study of Social Insects meeting, Guaja, Brazil.
- 2017 A crowd is wise for hard tasks but not for easy ones. International Convention for Psychological Science. Vienna, Austria.
- 2016 From collective to cumulative culture in animal groups. Culture Conference, Birmingham, UK.
- 2014 A context dependent alarm signal in the ant *Temnothorax rugatulus*. International Union for the Study of Social Insects meeting, Cairns, Australia.
- 2013 A crowd is wise for hard tasks but not for easy ones. International Ethological Conference Association for the Study of Animal Behaviour, Newcastle, the UK.
- 2012 Colonies more precisely discriminate options than individual ants do. North American Section-International Union for the study of Social Insects, North Carolina, USA. **Best student oral presentation.**

2010 Emergence of group rationality from irrational individuals. Entomological Society of America, San Diego, California, USA. **2nd place, student competition for President's Prize.**

Teaching Experience (listed only for Univ. of Georgia)

2019- Cognitive Ecology (every fall semester)
2019- Evolutionary Ecology (every spring semester)
2019&2020 Behavioral Ecology (guest lecturer)
2021 Endangered Species Practicum (guest lecturer)

Postdoc and Student Supervision (listed only for Univ. of Georgia)

2023- Bradley Ohlinger and Horace Zeng (postdoctoral researchers)
2021-2022 Cristina Santos (postdoctoral researcher)
2020-2023 Ben Taylor (M.S. student)
2020-2022 Caroline Aikins (M.S. student)
2019- Supraja Rajagopal (Ph.D. students)

Synergistic Activities

Local High School Visit (2022~)

In collaboration with Dr. Amitab Verma, a faculty at College of Environment and Design, the outreach class was developed and presented at Barnett Shoals High School, a title-1 local school. The class title was “Learning through Visual Observation & Graphic Representation: Drawing as a Medium of Understanding our Environment”.

EcoReach (2020 ~)

I have been a faculty advisor for the “EcoReach” program at UGA since 2019. I work with teachers at local schools, particularly ones in areas of low socio-economic status. I provide interactive programs to heighten awareness of issues related to ecology and inspire school-age children’s interest in the science of ecology.

Science Café (2022)

This is a local event that facilitates a connection between the scientific community of Athens, GA and the Athens community at large. Dr. Sasaki gave a talk at a local coffee shop and disseminated his latest findings to general public.

Insect-ival (2018 ~)

This is an annual event at the State Botanical Garden of Georgia. This event is usually attended by over 1,000 people, including many K-12 students. The Sasaki Lab has been setting up a booth demonstrating how we study ant behavior using cutting-edge technologies.

Ask-a-biologist (2010 ~)

This acclaimed web site (<http://askbiologist.asu.edu/>) at Arizona State University was created ten years ago to provide a user friendly educational interface between students, parents, teachers, and academic researchers.

Media services

2022 National Geographic Kids: Teaching in animals

2021 Muse Magazine-Science Magazine for Kids: Teaching in ants

References

Stephen C. Pratt, Professor
School of Life Sciences
Arizona State University
P.O. Box 874501
Tempe AZ 85287-4501 USA
stephen.pratt@asu.edu
+1 (480) 727-9425

Bert Hölldobler, Regents' and Foundation Professor
School of Life Sciences
Arizona State University
P.O. Box 874501
Tempe AZ 85287-4501 USA
bert.hoelldobler@asu.edu
+1 (480) 727-8415

Dora Biro, Professor
Brain and Cognitive Sciences
University of Rochester
358 Meliora Hall
P.O. Box 270268
Rochester, NY 14627
dbiro@ur.rochester.edu
+1 (585) 275-1844

Josep Call, Professor
School of Psychology and Neuroscience
University of St Andrews
Westburn Lane
St Andrews Fife UK
jc276@st-andrews.ac.uk
+44 (0)1334 463608