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Short presentation

I am a community ecologist leading a research group that explores how physiological traits govern performance and species co-existence across environmental gradients in a changing climate. I have a special fondness for ants from danish grasslands to panamanian rainforests. Visit my website (www.jonathanshik.com) for more information about my work and to find opportunities to join my team!

Employment

Associate Professor
Ecology and Evolution

København Ø, Denmark
14 Apr 2016 → nu

Research outputs

Ecological strategies of (pl)ants: Towards a world-wide worker economic spectrum for ants
Gibb, H., Bishop, T. R., Leahy, L., Parr, C. L., Lessard, J., Sanders, N. J., Shik, Jonathan Z., Ibarra-Isassi, J., Narendra, A. , Dunn, R. R. & Wright, I. J., 2023, In: Functional Ecology. 37, 1, 13 p.

Evidence that the domesticated fungus *Leucoagaricus gongylophorus* recycles its cytoplasmic contents as nutritional rewards to feed its leafcutter ant farmers
A. Leal-Dutra, Caio, Yuen, L. M., Guedes, B. A. M., Contreras Serrano, Marta, Marques, P. E. & Shik, Jonathan Z., 2023, In: IMA Fungus. 14, 1, 13 p., 19.

Reciprocal nutritional provisioning between leafcutter ants and their fungal cultivar mediates performance of symbiotic farming systems
Bolander, M., Andersen, J. E., Conlon, B. H., Arnan, X., Michelsen, Anders & Shik, Jonathan Z., 2023, In: Functional Ecology. 37, 12, p. 3079-3090 12 p.

A fungal symbiont converts provisioned cellulose into edible yield for its leafcutter ant farmers
Conlon, B. H., O'Tuama, D., Michelsen, Anders, Crumière, A. J. J. & Shik, Jonathan Z., 2022, In: Biology Letters. 18, 4, 6 p., 20220022.

Male ant reproductive investment in a seasonal wet tropical forest: Consequences of future climate change
Donoso, D. A., Basset, Y., Shik, Jonathan Z., Forrister, D. L., Uquillas, A., Salazar-Méndez, Y., Arizala, S., Polanco, P., Beckett, S., Diego Dominguez, G. & Barrios, H., 2022, In: PLoS ONE. 17, 3 , 13 p., e0266222.

Nutritional challenges of feeding a mutualist: Testing for a nutrient–toxin tradeoff in fungus-farming leafcutter ants
Crumière, A. J. J., Mallett, S., Michelsen, Anders, Rinnan, Riikka & Shik, Jonathan Z., 2022, In: Ecology. 103, 6, 12 p., e3684.

Orthogonal protocols for DNA extraction from filamentous fungi
Conlon, B. H., Schmidt, Suzanne, Poulsen, Michael & Shik, Jonathan Z., 2022, In: STAR Protocols. 3, 1, 10 p., 101126.

Nutritional niches reveal fundamental domestication trade-offs in fungus-farming ants
Shik, Jonathan Z., Kooij, P. W., Donoso, D. A., Santos, J. C., Gomez, E. B., Franco, M., Crumière, A. J. J., Arnan, X., Howe, Jack, Wcislo, W. T. & Boomsma, Jacobus J., 2021, In: Nature Ecology & Evolution. 5, 1, p. 122-134

The multidimensional nutritional niche of fungus-cultivar provisioning in free-ranging colonies of a neotropical leafcutter ant
Crumière, A. J. J., James, A., Lannes, P., Mallett, S., Michelsen, Anders, Rinnan, Riikka & Shik, Jonathan Z., 2021, In: Ecology Letters. 24, 11, p. 2439-2451 13 p.

24 Messages on a Sustainable Career in Research at UCPH
Larsen, K. R. (ed.), Wegener, H. C., Stein, A., Bach, A., Williams, A. R., Gall, C., Gravert, C., Gloriam, D. E., Lorenzen, E. , Yvanez, E., Cappellini, E., Poulsen, F., Mortensen, J., Bentzen, J. S., Shik, J. Z., Miskowiak, K. W., Elgaard, K. K. E., Jønsson, K. A., Won, K. J., Nørgaard, L. C. & 9 others, Cantarero Arevalo, Lourdes, Kristiansen, Maria, Lund, Marianne N. , Borregaard, Michael Krabbe, Høyland-Kroghsbo, Nina Molin, Iversen, Rune, Viskum, U., Nosch, Marie Louise Bech & Hjorth, Jens, 2020, University of Copenhagen. 31 p.

Nutritional Dimensions of Invasive Success
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The evolution of multicellular complexity: the role of relatedness and environmental constraints
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Using Nutritional Geometry to Explore How Social Insects Navigate Nutritional Landscapes
Crumiere, A. J. J., Stephenson, C. J., Nagel, M. & Shik, Jonathan Z., 2020, In: Insects. 11, 1, 14 p., 53.

Can interaction specificity in the fungus-farming termite symbiosis be explained by nutritional requirements of the fungal crop?
da Costa, R. R., Vreeburg, S. M. E., Shik, Jonathan Z., Aanen, D. K. & Poulsen, Michael, 2019, In: Fungal Ecology. 38, p. 54-61

Evidence for locally adaptive metabolic rates among ant populations along an elevational gradient
Shik, Jonathan Z., Arnan, X., Oms, C. S., Cerdá, X. & Boulay, R., 2019, In: Journal of Animal Ecology. 88, 8, p. 1240-1249 10 p.

Using nutritional geometry to define the fundamental macronutrient niche of the widespread invasive ant *Monomorium pharaonis*
Krabbe, B. A., Arnan, X., Lannes, P., Bergstedt, C. E., Larsen, Rasmus Stenbak, Pedersen, Jes Søe & Shik, Jonathan Z., 2019, In: PLoS ONE. 14, 6, 17 p., e0218764.

The farming ant *Sericomyrmex amabilis* nutritionally manages its fungal symbiont and social parasite
Shik, Jonathan Z., Consilio, A., Kaae, T. & Adams, R. M. M., Aug 2018, In: Ecological Entomology. 43, 4, p. 440-446

Context is everything: mapping *Cyphomyrmex*-derived compounds to the fungus-growing ant phylogeny
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Kooij, P. W., Dentinger, B. M., Donoso, D. A., Shik, Jonathan Z. & Gaya, E., 2018, In: Insects. 9, 4, p. 1-12 191.

Disentangling nutritional pathways linking leafcutter ants and their co-evolved fungal symbionts using stable isotopes
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Reconstructing the functions of endosymbiotic Mollicutes in fungus-growing ants
Sapountzis, P., Zhukova, M., Shik, Jonathan Z., Schiøtt, M. & Boomsma, Jacobus J., 2018, In: eLife. 7, p. 1-31 e39209.

Extreme polygyny in the previously unstudied subtropical ant *Temnothorax tuscaloosae* with implications for the biogeographic study of the evolution of polygyny
Guénard, B., Shik, Jonathan Z., Booher, D., Lubertazzi, D. & Alpert, G., 2016, In: Insectes Sociaux. 63, 4, p. 543-551 9 p.

Liquid foraging behaviour in leafcutting ants: the lunchbox hypothesis
Rytter, W. & Shik, Jonathan Z., 2016, In: Animal Behaviour. 117, p. 179-186 8 p.

Nutrition mediates the expression of cultivar-farmer conflict in a fungus-growing ant
Shik, Jonathan Z., Gomez, E. B., Kooij, P. W., Santos, J. C., Wcislo, W. T. & Boomsma, Jacobus J., 2016, In: National Academy of Sciences. Proceedings. 113, 36, p. 10121-10126 6 p.

Aphid honeydew provides a nutritionally balanced resource for incipient Argentine ant mutualists
Shik, Jonathan Z., Kay, A. D. & Silverman, J., 2014, In: Animal Behaviour. 95, p. 33-39 7 p.

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Prey handling performance facilitates competitive dominance of an invasive over a native keystone ant
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The life history continuum hypothesis links traits of male ants with life outside the nest.
Shik, Jonathan Z., Donoso, D. A. & Kaspari, M., 2013, In: Entomologia Experimentalis et Applicata. 149, 2, p. 99-109

Towards a nutritional ecology of invasive establishment: aphid mutualists provide better fuel for incipient Argentine ant colonies than insect prey
Shik, Jonathan Z. & Silverman, J., 2013, In: Biological Invasions. 15, 4, p. 829-836

A life history continuum in the males of a Neotropical ant assemblage: refuting the sperm vessel hypothesis
Shik, Jonathan Z., Flatt, D., Kay, A. & Kaspari, M., 2012, In: Naturwissenschaften. 99, 3, p. 191-197

Diet composition does not affect ant colony tempo.
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Effect of scattered and discrete hydramethylnon bait placement on the Asian needle ant
Rice, E. S., Shik, Jonathan Z. & Silverman, J., 2012, In: Journal of Economic Entomology. 105, 5, p. 1751-1757

Toward a general life history model of the superorganism: predicting the survival, growth, and reproduction of ant societies
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Preliminary assessment of metabolic costs of the nematode Myrmeconema neotropicum on its host, the tropical ant *Cephalotes atratus*
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Scaling community structure: how bacteria, fungi, and ant taxocenes differentiate along a tropical forest floor
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The metabolic costs of building ant colonies from variably sized subunits
Shik, Jonathan Z., 2010, In: Behavioral Ecology and Sociobiology. 64, 12, p. 1981-1990

Lifespan in male ants linked to mating syndrome
Shik, Jonathan Z. & Kaspari, M., 2009, In: Insectes Sociaux. 56, 2, p. 131-134

Ant colony size and the scaling of reproductive effort
Shik, Jonathan Z., 2008, In: Functional Ecology. 22, 4, p. 674-681

The Effect of Human Activity on Ant Species (Hymenoptera: Formicidae) Richness at the Mont St. Hilaire Biosphere Reserve, Quebec
Shik, Jonathan Z., Francoeur, A. & Buddle, C. M., 2005, In: The Canadian Field-Naturalist. 119, 1, p. 38-42