

Annual Review of Ecology, Evolution, and Systematics, Vol. 51, 2020. Eds.: Douglas J. Futuyma, H. Bradley Shaffer, Daniel Simberloff. Palo Alto, California, USA, Annual Reviews, 624 S., ISBN 978-0-8243-1451-4, ISSN 1543-592X.

“Arthropod Origins: Integrating Paleontological and Molecular Evidence”, mit diesem Beitrag von Gregory D. Edgecombe beginnt der Band 51 des “Annual Review of Ecology, Evolution, and Systematics”.

Weitere Übersichtsartikel schließen sich an:

- Überarbeitung der Kommentierung zu § 36, 44 und 67
- Aktualisierung BNatSchG
- 10 neue Entscheidungen

Das bringt Ihnen die 162. Aktualisierung:

Diversification of Neotropical Freshwater Fishes (James S. Albert, Victor A. Tagliacollo, Fernando Dagosta); Resolving Food-Web Structure (Robert M. Pringle, Matthew C. Hutchinson); Hedgerows as Ecosystems: Service Delivery, Management, and Restoration (Ian Montgomery, Tancredi Caruso, Neil Reid); What We Don’t Know About Diet-Breadth Evolution in Herbivorous Insects (Nate B. Hardy, Chloe Kaczvinsky, Gwendolyn Bird, Benjamin B. Normark); Extending Plant Defense Theory to Seeds (James W. Dalling, Adam S. Davis, A. Elizabeth Arnold, Carolina Sarmiento, Paul-Camilo Zalamea); Origin and Evolution of the Turtle Body Plan (Tyler R. Lyson, Gabriel S. Bever); Our Current Understanding of Commensalism (Kaitlyn A. Mathis, Judith L. Bronstein); Evolutionary Dynamics and Consequences of Parthenogenesis in Vertebrates (Matthew K. Fujita, Sonal Singhai, Tuliana O. Brunes, Jose A. Maldonado); Ecological Interactions and Macroevolution: A New Field with Old Roots (David H. Hembry, Marjorie G. Weber); Genomic Prediction of (Mal)Adaptation Across Current and Future Climatic Landscapes (Thibaut Capblancq, Matthew C. Fitzpatrick, Rachael A. Bay, Moises Exposito-Alonso, Stephen R. Keller); Food Webs and Ecosystems: Linking Species Interactions to the Carbon Cycle (Oswald J. Schmitz, Shawn J. Leroux); Ecology and Neurobiology of Fear in Free-Living Wildlife (Liana Y. Zanette, Michael Clinchy); Predator Effects on Plant-Pollinator Interactions, Plant Reproduction, Mating Systems, and Evolution (Amanda D. Benoit, Susan Kalisz); What Do We Really Know About Adaptation at Range Edges? (Amy L. Angert, Megan G. Bontrager, Jon Ågren); The Floral Microbiome: Plant, Pollinator, and Microbial Perspectives (Rachel L. Vannette); Parallelism in Flower Evolution and Development (Carolyn A. Wessinger, Lena C. Hileman); The Evolution of Mutualistic Dependence (Guillaume Chomicki, E. Toby Kiers, Susanne S. Renner); The Structure of Ecological Networks Across Levels of Organization (Paulo R. Guimarães Jr.); The Evolution of Annual and Perennial Plant Life Histories: Ecological Correlates and Genetic Mechanisms (Jannice Friedman); The Rules of Attraction: The Necessary Role of Animal Cognition in Explaining Conservation Failures and Successes (Alison L. Greggor, Oded Berger-Tal, Daniel T. Blumstein); Gene Drive Dynamics in Natural Populations: The Importance of Density Dependence, Space, and Sex (Sumit Dhole, Alun L. Lloyd, Fred Gould); Avian Diversity: Speciation,

Macroevolution, and Ecological Function (Joseph A. Tobias, Jente Ottenburghs, Alex L. Pigot); Climate Disruption of Plant-Microbe Interactions (Jennifer A. Rudgers, Michelle E. Afkhami, Lukas Bell-Dereske, Y. Anny Chung, Kerri M. Crawford, Stephanie N. Kivlin, Michael A. Mann, Martin A. Nuñez); Intraspecific Genetic Variation and Species Interactions Contribute to Community Evolution (Thomas G. Whitham, Gerard J. Allan, Hillary F. Cooper, Stephen M. Shuster).

Weiterhin wird auf fachlich verwandte Beiträge in anderen “Annual Reviews” verwiesen:

Z. B. im **Annual Review of Animal Biosciences**, Volume 8 (2020):

Evolution of Marsupial Genomes (Janine E. Deakin, Rachel J. O’Neill); The Genetics and Epigenetics of Sex Change in Fish (Oscar Ortega-Recalde, Alexander Goikoetxea, Timothy A. Hore, Erica V. Todd, Neil J. Gemmell); Conservation and Management of Salmon in the Age of Genomics (Robin S. Waples, Kerry A. Naish, Craig R. Primmer); Defining Pollinator Health: A Holistic Approach Based on Ecological, Genetic, and Physiological Factors (Margarita M. López-Urbe, Vincent A. Ricigliano, Michael Simone-Finstrom).

Im **Annual Review of Earth and Planetary Sciences**, Volume 48 (2020):

The Stratigraphy of Mass Extinctions and Recoveries (Steven M. Holland); Splendid Innovation: The Extinct South American Native Ungulates (Darin A. Croft, Javier N. Gelfo, Guillermo M. López); Reconstructing Vertebrate Paleocolor (Jakob Vinther); Ecological Response of Plankton to Environmental Change: Thresholds for Extinction (Christopher M. Lowery, Paul R. Bown, Andrew J. Fraass, Pincelli M. Hull).

Im **Annual Review of Entomology**, Volume 65 (2020):

Invasion Biology, Ecology, and Management of the Western Flower Thrips (Stuart R. Reitz, Yulin Gao, William D.J. Kirk, Mark S. Hoddle, Kirsten A. Leiss, Joe E. Funderburk); Sexual Size Dimorphism: Evolution and Perils of Extreme Phenotypes in Spiders (Matjaž Kuntner, Jonathan A. Coddington); Ecology of Terrestrial Arthropods in Freshwater Wetlands (Darold P. Batzer, Haitao Wu); Versatile and Dynamic Symbioses Between Insects and *Burkholderia* Bacteria (Martin Kaltenpoth, Laura V. Flórez); Microbial Symbionts of Parasitoids (Marcel Dicke, Antonino Cusumano, Erik H. Poelman); The Global Expansion of Dengue: How *Aedes aegypti* Mosquitoes Enabled the First Pandemic Arbovirus (Oliver J. Brady, Simon I. Hay);

Global Trends in Bumble Bee Health (Sydney A. Cameron, Ben M. Sadd); Chikungunya Virus: Role of Vectors in Emergence from Enzootic Cycles (Scott C. Weaver, Rubing Chen, Mawlouth Diallo); Dormancy, Diapause, and the Role of the Circadian System in Insect Photoperiodism

(David S. Saunders); Non-Bee Insects as Visitors and Pollinators of Crops: Biology, Ecology, and Management (R. Rader, S.A. Cunningham, B.G. Howlett, D.W. Inouye); Ecology and Evolution of Insect-Fungus Mutualisms (Peter H.W. Biedermann, Fernando E. Vega); Insect Declines in the Anthropocene (David L. Wagner).

Im **Annual Review of Environment and Resources**, Volume 45 (2020):

Soil Microbiomes Under Climate Change and Implications for Carbon Cycling (Dan Naylor, Natalie Sadler, Arunima Bhat-tacharjee, Emily B. Graham, Christopher R. Anderton, Ryan McClure, Mary Lipton, Kirsten S. Hofmocker, Janet K. Jansson); The State of the World's Insects (Paul Eggleton); The Impacts of Ocean Acidification on Marine Ecosystems and Reliant Human Communities (Scott C. Doney, D. Shallin Busch, Sarah R. Cooley, Kristy J. Kroeker); The Harvest of Tropical Wildlife for Bushmeat and Traditional Medicine (Tien Ming Lee, Amanda Sigouin, Miguel Pinedo-Vasquez, Robert Nasi).

Im **Annual Review of Genetics**, Volume 54 (2020):

RAD51 Gene Family Structure and Function (Braulio Bonilla, Sarah R. Hengel, McKenzie K Grundy, Kara A. Bernstein); A Field Guide to Eukaryotic Transposable Elements (Jonathan N. Wells, Cédric Feschotte); Evolutionary Genomics of High Fecundity (Bjarki Eldon); Linking Genes to Shape in Plants Using Morphometrics (Hao Xu, George W. Bassel); Mitochondria Are Fundamental for the Emergence of Metazoans: On Metabolism, Genomic Regulation, and the Birth of Complex Organisms (Hadar Medini, Tal Cohen, Dan Mishmar); Pioneer Transcription Factors Initiating Gene Network Changes (Kenneth S. Zaret); The Evolutionary and Historical Foundation of the Modern Horse: Lessons from Ancient Genomics (Ludovic Orlando); The Sins of Our Forefathers: Paternal Impacts on De Novo Mutation Rate and Development (R. John Aitken, Geoffrey N. De Iuliis, Brett Nixon); Toxin-Antidote Elements Across the Tree of Life (Alejandro Burga, Eyal Ben-David, Leonid Kruglyak); What Has a Century of Quantitative Genetics Taught Us About Nature's Genetic Toolkit?

(Christopher M. Jakobson, Daniel F. Jarosz).

Im **Annual Review of Genomics and Human Genetics**, Volume 21 (2020):

How Natural Genetic Variation Shapes Behavior (Natalie Niepoth, Andres Bendesky).

Im **Annual Review of Marine Science**, Volume 12 (2020):

Antarctic Futures: An Assessment of Climate-Driven Changes in Ecosystem Structure, Function, and Service Provisioning in the Southern Ocean (A.D. Rogers, B.A.V. Frinault, D.K.A. Barnes, N.L. Bindoff, R. Downie, H.W. Ducklow, A.S. Friedlaender, T. Hart, S.L. Hill, E.E. Hofmann, K. Linse, C.R. McMahon, E.J. Murphy, E.A. Pakhomov, G. Reygondeau, I.J. Staniland, D.A. Wolf Gladrow, R.M. Wright); Changing Tides: The Role of Natural and Anthropogenic Factors (Stefan A. Talke, David A. Jay); Climate-Driven Shifts in Marine Species Ranges: Scaling from Organisms to Communities (Malin L. Pinsky, Rebecca L. Selden, Zoë Kitchel); Evolution, Microbes, and Changing Ocean Conditions (Sinéad Collins, Philip W. Boyd, Martina A. Doblin); Marine Microbial Assemblages on Microplastics: Diversity, Adaptation, and Role in Degradation (Sonja Oberbeckmann, Matthias Labrenz); Phytoplankton in the Tara Ocean (Juan José Pierella Karlusich, Federico M. Ibarbalz, Chris Bowler); The Role of Symbioses in the Adaptation and Stress Responses of Marine Organisms (Amy Apprill); The Emerging Ecological and Biogeochemical Importance of Sponges on Co-

ral Reefs (Joseph R. Pawlik, Steven E. McMurray); The North Atlantic Ecosystem, from Plankton to Whales (Andrew J. Pershing, Karen Stamieszkin); The Nutritional Ecology of Marine Apex Predators (Gabriel E. Machovsky-Capuska, David Raubenheimer); Improving Predictions of Salt Marsh Evolution Through Better Integration of Data and Models (Patricia L. Wi-berg, Sergio Fagherazzi, Matthew L. Kirwan); Vascular Plants Are Globally Significant Contributors to Marine Carbon Fluxes and Sinks (Simon M. Cragg, Daniel A. Friess, Lucy G. Gillis, Stacey M. Trevathan-Tackett, Oliver M. Terrett, Joy E.M. Watts, Daniel L. Distel, Paul Dupree); The Biological Pump During the Last Glacial Maximum (Brie D. Galbraith, Luke C. Skinner).

Im **Annual Review of Microbiology**, Volume 74 (2020):

Ape Origins of Human Malaria (Paul M. Sharp, Lindsey J. Plenderleith, Beatrice H. Hahn); Archaeal DNA Replication (Mark D. Greci, Stephen D. Bell); The Plant Microbiome: From Ecology to Reductionism and Beyond (Connor R. Fitzpatrick, Isai Salas-González, Jonathan M. Conway, Omri M. Finkel, Sarah Gilbert, Dor Russ, Paulo José Pereira Lima Teixeira, Jeffery L. Dangl); What Is Metagenomics Teaching Us, and What Is Missed? (Felicia N. New, Ilana L. Brito); The Influence of Bacteria on Animal Metamorphosis (Giselle S. Cavalcanti, Amanda T. Alker, Nathalie Delherbe, Kyle E. Malter, Nicholas J. Shikuma); Toward a Fully Resolved Fungal Tree of Life (Timothy Y. James, Jason E. Stajich, Chris Todd Hittinger, Antonis Rokas); Prospects and Pitfalls: Next-Generation Tools to Control Mosquito-Transmitted Disease (E.P. Caragata, S. Dong, Y. Dong, M.L. Simões, C. V. Tikhe, G. Dimopoulos); A Bacterial Tower of Babel: Quorum-Sensing Signaling Diversity and Its Evolution (Nitzan Aframian, Avigdor Eldar); Conflict, Competition, and Cooperation Regulate Social Interactions in Filamentous Fungi (A. Pedro Gonçalves, Jens Heller, Adriana M. Rico-Ramírez, Asen Daskalov, Gabriel Rosenfield, N. Louise Glass); The Ingenuity of Bacterial Genomes (Paul C. Kirchberger, Marian L. Schmidt, Howard Ochman).

Im **Annual Review of Phytopathology**, Volume 57 (2019):

Revisiting the Concept of Rost Range of Plant Pathogens (Cindy E. Morris, Benoît Moury); Genome Editing, Gene Drives, and Synthetic Biology: Will They Contribute to Disease-Resistant Crops, and Who Will Benefit? (Kevin V. Pixley, Jose B. Falck-Zepeda, Ken E. Giller, Leland L. Glenna, Fred Gould, Carol A. Mallory-Smith, David M. Stelly, C. Neal Stewart Jr.); Durability of Quantitative Resistance in Crops: Greater Than We Know? (Christina Cowger, James K.M. Brown); Molecular Dialog Between Parasitic Plants and Their Rosts (Christopher R. Clarke, Michael P. Timko, John I. Yoder, Michael J. Axtell, James H. Westwood); Ecology and Evolution of the Sudden Oak Death Pathogen *Phytophthora ramorum* (Niklaus J. Grünwald, Jared M. LeBoldus, Richard C. Hamelin); The Evolution, Ecology, and Mechanisms of Infection by Gram-Positive, Plant-Associated Bacteria (Shree P. Thapa, Edward W. Davis III, Qingyang Lyu, Alexandra J. Weisberg, Danielle M. Stevens, Christopher R. Clarke, Gitta Coaker, Jeff H. Chang); Understanding Adaptation, Coevolution, Rost Specialization, and Mating System in Castrating Anther-Smut Fungi by Combining Population and Comparative Genomics (Fanny E. Hartmann, Ricardo C. Rodríguez de la Vega, Fan-tin Carpentier, Pierre Gladieux, Amandine Cornille, Michael

E. Hood, Tatiana Giraud); Interactions and Coadaptation in Plant Metaorganisms (M. Amine Hassani, Ezgi Özkurt, Heike Seybold, Tal Dagan, Eva H. Stukenbrock); Surviving in a Hostile World: Plant Strategies to Resist Pests and Diseases (Samuel W. Wilkinson, Melissa H. Magerøy, Ana López Sánchez, Lisa M. Smith, Leonardo Furci, T.E. Anne Cotton, Paal Krokene, Jurriaan Ton).

From **the Annual Review of Plant Biology**, Volume 71 (2020)

Regulation and Evolution of C4 Photosynthesis (Urte Schlüter, Andreas P.M. Weber); Modeling Plant Metabolism: From Network Reconstruction to Mechanistic Models (Teresa J. Clark, Longyun Guo, John Morgan, Jorg Schwender); Evolution of Plant Hormone Response Pathways (Miguel A. Blázquez, David C. Nelson, Dolf Weijers); Salt Tolerance Mechanisms of Plants (Eva van Zelm, Yanxia Zhang, Christa Testerink); Molecular Mechanisms of Pollination Biology (Róisín Fattorini, Beverley J. Glover); Sequencing and Analyzing the Transcriptomes of a Thousand Species Across the Tree of Life for Green Plants (Gane Ka-Shu Wong, Douglas E. Soltis, Jim Leebens-Mack, Norman J. Wickett, Michael S. Barker, Yves Van de Peer, Sean W. Graham, Michael Melkonian).

Ebenso wie die vorher erschienenen Bände des Annual Review of Ecology, Evolution, and Systematics wird Band 51 durch ein kumulatives Register der beteiligten Autoren und ein kumulierendes Titelverzeichnis für die Bände 47 bis 51 ergänzt. Außerdem sind die Abstracts der Artikel des Bandes 51 online unter <http://www.annualreviews.org/errata/ecolsys> verfügbar.

Die Redaktion

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“Plant Communication”, mit diesem Beitrag von Richard Karban beginnt der Band 52 des “Annual Review of Ecology, Evolution, and Systematics”.

Weitere Übersichtsartikel schließen sich an:

The Ecological Importance of Allelopathy (José L. Hierro, Ragan M. Callaway); Why Are Species’ Traits Weak Predictors of Range Shifts? (Steven R. Beissinger, Eric A. Riddell); From Insects to Frogs, Egg–Juvenile Recruitment Can Have Persistent Effects on Population Sizes (Barbara J. Downes, Barbara L. Peckarsky, Jill Lancaster, William D. Bovill, Maria Alp); The Biology of Chernobyl (Timothy A. Mousseau); Ancient Invaders: How Paleogenetic Tools Help to Identify and Understand Biological Invasions of the Past (Michael Knapp, Catherine J. Collins, Elizabeth Matisoo-Smith); Genetic Perspective on Cetacean Evolution (Andrea A. Cabrera, Martine Bérubé, Xênia M. Lopes, Marie Louis, Tom Oosting, Alba Rey-Iglesia, Vania E. Rivera-León, Dóra Székely, Eline D. Lorenzen, Per J. Palsbøll); Evolvability: A Quantitative-Genetics

Perspective (Thomas F. Hansen, Christophe Pélabon); Effects of Selection at Linked Sites on Patterns of Genetic Variability (Brian Charlesworth, Jeffrey D. Jensen); The Invisible Hand of the Periodic Table: How Micronutrients Shape Ecology (Michael Kaspari); Demographic Consequences of Phenological Shifts in Response to Climate Change (Amy M. Iler, Paul J. CaraDonna, Jessica R.K. Forrest, Eric Post); Multispecies Coalescent: Theory and Applications in Phylogenetics (Siavash Mirarab, Luay Nakhleh, Tandy Warnow); Biotic and Abiotic Controls on the Phanerozoic History of Marine Animal Biodiversity (Andrew M. Bush, Jonathan L. Payne); Are Terrestrial Biological Invasions Different in the Tropics? (Kwek Yan Chong, Richard T. Corlett, Martin A. Nuñez, Jing Hua Chiu, Franck Courchamp, Wayne Dawson, Sara Kuebbing, Andrew M. Liebhold, Michael Padmanaba, Lara Souza, Kelly M. Andersen, Songlin Fei, Benjamin P.Y.-H. Lee, Shawn Lum, Matthew S. Luskin, Kang Min Ngo, David A. Wardle); Evolution of Mimicry Rings as a Window into Community Dynamics (Krushnamegh Kunte, Athulya Girish Kizhakke, Viraj Nawge); A Dual Role for Behavior in Evolution and Shaping Organismal Selective Environments (William T. Wcislo); The Ecology and Evolution of Model Microbial Mutualisms (Jeremy M. Chacón, Sarah P. Hammarlund, Jonathan N.V. Martinson, Leno B. Smith Jr., William R. Harcombe); Evolution of the Mode of Nutrition in Symbiotic and Saprotrophic Fungi in Forest Ecosystems (Annie Lebreton, Qingchao Zeng, Shingo Miyauchi, Annegret Kohler, Yu-Cheng Dai, Francis M. Martin); Dynamics of Ecological Communities Following Current Retreat of Glaciers (Gentile Francesco Ficetola, Silvio Marta, Alessia Guerrieri, Mauro Gobbi, Roberto Ambrosini, Diego Fontaneto, Andrea Zerboni, Jerome Poulénard, Marco Caccianiga, Wilfried Thuiller); The Emerging Phylogenetic Perspective on the Evolution of Actinopterygian Fishes (Alex Dornburg, Thomas J. Near); Causes, Consequences, and Conservation of Ungulate Migration (Matthew J. Kauffman, Ellen O. Aikens, Saeideh Esmaeili, Petra Kaczensky, Arthur Middleton, Kevin L. Monteith, Thomas A. Morrison, Thomas Mueller, Hall Sawyer, Jacob R. Goheen); Animal Migration: An Overview of One of Nature’s Great Spectacles (Adam M. Fudickar, Alex E. Jahn, Ellen D. Ketterson); The Alignment of Natural and Sexual Selection (Locke Rowe, Howard D. Rundle); Evolution in Cities (Sarah E. Diamond, Ryan A. Martin); Sensory and Cognitive Ecology of Bats (Rachel A. Page, Hannah M. ter Hofstede); Evolution of Thermal Sensitivity in Changing and Variable Climates (Lauren B. Buckley, Joel G. Kingsolver); Causes and Consequences of Apparent Timescaling Across All Estimated Evolutionary Rates (Luke J. Harmon, Matthew W. Pennell, L. Francisco Henao-Diaz, Jonathan Rolland, Breanna N. Siple, Josef C. Uyeda); What Have We Learned from the First 500 Avian Genomes? (Gustavo A. Bravo, C. Jonathan Schmitt, Scott V. Edwards); Cascading Impacts of Seed Disperser Loss on Plant Communities and Ecosystems (Haldre S. Rogers, Isabel Donoso, Anna Traveset, Evan C. Fricke).

Die Abstracts der Artikel des Bandes 52 sind online unter <http://www.annualreviews.org/errata/ecolsys> verfügbar.

Die Redaktion