

MARIO B. PESENDORFER

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Terrestrial Ecologist

- forest ecology, global change, conservation
- 38 publications, 600+ citations
- \$ 2.3 Mio in grant funding
- CA fieldwork, international collaborations
- teaching, mentoring, outreach experience

ACADEMIC APPOINTMENTS

Senior Postdoctoral Research Associate (Aug 2019 – current)

Institute of Forest Ecology, University of Natural Resources and Life Sciences, Vienna, Austria

Adjunct Professor (Jun 2021 – current)

Department of Forestry and Natural Resources, Purdue University, W. Lafayette, IN, USA

Research Associate (nominated; 2016 – current)

Smithsonian Migratory Bird Center, National Zoological Park, Washington, D.C., USA

Postdoctoral Research Associate (2014 – 2019)

Center for Avian Population Studies, Cornell Lab of Ornithology, Ithaca, NY, USA

EDUCATION

Habilitation in Forest Ecology (forthcoming, March 2022)

University of Natural Resources and Life Sciences, Vienna, Austria

Ph.D. in Ecology, Evolution & Behavior (2008 – 2014)

School of Biological Sciences, University of Nebraska – Lincoln, USA

Mag. rer. nat. (B.Sc. & M.Sc.) in Zoology & Behavioral Ecology (2003 – 2007)

Faculty of Life Sciences, University of Vienna, Austria

SCIENTIFIC EXPERTISE

Forest Ecology: Seed Production, Dispersal, Demography, and Disturbance

Long-term field observations, experiments, and simulation models to investigate the climatic drivers and ecological consequences of spatiotemporal variation in seed production and recruitment in forests, from individual trees to global patterns. Stand dynamic modeling (SORTIE-ND), landscape-scale remote sensing and simulation modeling. Fieldwork in primeval montane forest (Rothwald, Austria), Florida scrub (Archbold BS), California oak woodlands and chaparral (Santa Cruz Island, Hastings, Sedgwick NRS).

Behavioral, Population & Community Ecology: Species Interactions & Habitat Relationships

Movement, competition, occupancy, and abundance of animal populations in relation to habitat composition, spatial and temporal resource distribution, and social dynamics. Remote sensing, radio-tracking, mark-recapture, and behavioral observations of birds and rodents.

Conservation Biology: Habitat Restoration, Ecosystem Services, and Scenario Planning

Developing habitat restoration strategies aimed to harness and enhance existing ecosystem services by seed-dispersers. Field trials, executed with outreach programs and volunteers, to test new strategies and construct simulation models of conservation scenarios to scale up to landscape scales and beyond.

Institutional Partners: Austrian Federal Forests *ÖBF*, Austrian Forest Research Center *BFW*, Cary Institute of Ecosystem Studies, Cornell Lab of Ornithology, Natural History Museum Vienna *NHM*, Purdue University, Smithsonian Conservation Biology Institute *SCBI*, The Nature Conservancy *TNC*, UC Santa Barbara Office of Education Partnership, U.S. National Park Service *NPS*, U.S. Geological Survey *USGS*

PUBLICATIONS

(*graduate student; # shared first authorship)

*38 published articles, 17 first-authored, 630+ citations, H-Index: 13 (Google Scholar)***- in press -**

Gratzer G[#], **Pesendorfer MB**[#], Sachser F*, Wachtveitl L, Nopp-Mayr U, Szwagrzyk J, Canham CD (2022) Does fine-scale spatiotemporal variation in seed rain translate into plant population structure? *Oikos* in press.

- 2021 -

Pesendorfer MB, Ascoli D, Bogdziewicz M, Hacket-Pain A, Pearse IS, Vacchiano G (2021) The ecology and evolution of synchronized reproduction in plants. *Philosophical Transactions of the Royal Society B* 376: 20200369. (Introduction to Special Issue; highlighted in *Science*)

Pearse IS, Wion A, Gomez A, **Pesendorfer MB** (2021) Understanding masting for conservation and land management. *Phil Trans Roy Soc B* 376: 20200383.

Vacchiano G, **Pesendorfer MB**, Conedera M, Gratzer G, Rossi L, Ascoli D. 2021. Natural disturbances and masting: from mechanisms to fitness consequences. *Phil Trans Roy Soc B* 376: 20200384.

Pesendorfer MB, Bowman R, Gratzer G, Pruetz S, Tringali A, Fitzpatrick JW (2021) Fire history and weather interact to determine extent and synchrony of mast-seeding in rhizomatous scrub oaks of Florida. *Phil Trans Roy Soc B* 376: 20200381.

Fitzky AC*, Peron A, Kaser L, Karl T, Graus M, Tholen D, **Pesendorfer MB**, Mahmoud M, Sandén H, Rewald B. (2021) Diversity and interrelations among the constitutive VOC emission blends of four broad-leaved tree species at seedling stage. *Frontiers in Plant Science* 12: 708711.

Sachser F*, **Pesendorfer MB**, Gratzer G, Nopp-Mayr U (2021) Differential spatial responses of rodents to masting in forests with differing disturbance history. *Ecology and Evolution* 11: 11890-11902.

Martínez-Baroja L*, Pérez-Camacho L, Villar-Salvador P, Rebollo R, Leverkus AB, **Pesendorfer MB**, Molina-Morales M, Castro J, Rey Benayas JM (2021) Caching territoriality and site preferences by a scatter-hoarder drive the spatial pattern of seed dispersal. *Journal of Ecology* 109: 2342-2353.

- 2020 -

Bogdziewicz M, **Pesendorfer MB**, Crone EE, Pérez-Izquierdo C, Bonal R (2020) Flowering synchrony drives reproductive success in a wind-pollinated tree. *Ecology Letters* 23: 1820-1826.

Bogdziewicz M, Szymkowiak J, Bonal R, Hacket-Pain A, Espelta JM, **Pesendorfer MB**, Grewling L, Kasprzyk I, Belmonte J, DeLinares C, Penuelas J, Fernandez-Martinez M (2020) What drives phenological synchrony? Warm springs advance and desynchronize flowering in oaks. *Agricultural and Forest Meteorology* 294: 108140.

Moreira X, Abdala-Roberts L, Galmán A, Bartlow A, Berny-Mier y Terán J, Carrari E, Covelo F, de la Fuente M, Ferrenberg S, Fyllas N, Hoshika Y, Lee S, Marquis R, Nakamura M, Nell C, **Pesendorfer MB**, Steele M, Vázquez-González C, Zhang S, Rasmann S (2020) Ontogenetic consistency in oak defence syndromes. *Journal of Ecology* 108: 1822 - 1834.

Pesendorfer MB, Bogdziewicz M, Szymkowiak J, Borowski Z, Kantorowicz W, Espelta J, Fernandez-Martinez M (2020) Investigating the relationship between climate, stand age, and temporal trends in masting behavior of European forest trees. *Global Change Biology* 26: 1654-1667.

PUBLICATIONS (CONTINUED)

(*graduate student; # shared first authorship)

Bogdziewicz M, Ascoli D, Hackett-Pain A, Koenig WD, Pearse I, **Pesendorfer MB**, Satake A, Thomas P, Vacchiano G, Wohlgenuth T, Tanentzap A (2020) From theory to experiment in mast seeding: an agenda for experimental ecology. *Ecology Letters* 23: 210 - 220.

Suh YH*, **Pesendorfer MB**, Tringali A, Bowman R, Fitzpatrick JW (2020) Social and environmental predictors of natal dispersal age and distance in a cooperatively breeding bird. *Behavioral Ecology* 31: 692-701.

- 2019 -

Beckman E, **Pesendorfer MB**, Meyer A, Westwood M (2019). *Quercus pacifica* (Nixon & C.H.Müll.) In Beckman, E., Meyer, A., Man, G., Pivorunas, D., Denvir, A., Gill, D., Shaw, K., & Westwood, M. *Conservation Gap Analysis of Native U.S. Oaks* (pp. 158-165). Lisle, IL: The Morton Arboretum

Pesendorfer MB, Bogdziewicz M, Koenig WD, Ledwon M, Zywiec M (2019) Declining seed production before death in a widely distributed tree? *Annals of Forest Science* 76:11.

Moreira X, Abdala-Roberts L, Pérez-Ramos IM, Knops JMH, **Pesendorfer MB**, Mooney KA, Koenig WD (2019) Climatic cues associated with masting dampen the negative autocorrelation between past and current reproduction in oaks. *American Journal of Botany* 106: 51-60.

--- 2018 ---

Pesendorfer MB, Dickerson S, Dragoo J (2018) Observation of tool use in striped skunks: how community science and social media help document rare natural phenomena. *Ecosphere* 9: e02484.

Schubert SC*, **Pesendorfer MB**, Koenig WD (2018) Context-dependent post-dispersal predation of acorns in a California oak community. *Acta Oecologica*, 92: 52-58.

Koenig WD, Knops JMH, Carmen WJ, **Pesendorfer MB**, Dickinson JL (2018) Effects of mistletoe (*Phoradendron villosum*) on California oaks. *Biology Letters* 14: 20180240.

Pesendorfer MB, Koenig WD (2018) Does aggression avoidance drive oak tree attendance by corvid scatter-hoarders? *Behavioral Ecology and Sociobiology* 72: 85.

Borges S*, Oliveira F, Guerra R*, Oliveira T, **Pesendorfer MB**, Bezerra B, Souto A, Schiel N (2018) Stay gathered rather than scattered: strategies of common marmosets during agonistic interactions with birds in the Atlantic rain forest. *Folia Primatologica*, 89: 357 - 364.

Pesendorfer MB[#], Baker C[#], Stringer M, McEachern K, Bode M, McDonald-Madden E, Morrison SA, Sillett TS (2018) Oak habitat recovery on California's largest islands: scenarios for the role of corvid seed dispersal. *Journal of Applied Ecology* 55: 1185 - 1194.

--- 2017 ---

Koenig WD, Knops JMH, **Pesendorfer MB**, Zaya D, Ashley M (2017) Drivers of spatial synchrony of acorn production in the valley oak at two geographic scales. *Ecology* 98: 3056 – 3062.

Bogdziewicz M, Szymkowiak J, Kasprzyk I, Grewling L, Borowski Z, Borycka K, Kantorowicz W, Piotrowicz K, Ziemianin M, **Pesendorfer MB** (2017) Masting in wind-pollinated trees: the role of weather and pollination dynamics in driving seed production. *Ecology* 98: 2615 – 2625.

Koenig WD, **Pesendorfer MB**, Knops JMH (2017) Evolutionary drivers, proximate mechanisms, and spatial synchrony of acorn production in oaks. *International Oaks* 28: 29 - 40.

PUBLICATIONS (CONTINUED)

(*graduate student; # shared first authorship)

Pesendorfer MB, Koenig WD (2017). Competing for seed dispersal: evidence for the role of avian seed hoarders in mediating apparent predation among oaks. *Functional Ecology* 31: 622 - 631.

Koenig WD, Knops JMH, Carmen WJ, **Pesendorfer MB** (2017) Testing the terminal investment hypothesis in California oaks. *American Naturalist* 189: 564-569.

Pesendorfer MB, Sillett TS, Morrison SA (2017) Spatially biased dispersal by a scatter-hoarding corvid may accelerate passive habitat restoration on California's largest island. *Current Zoology* 63: 363-367. (Cover article)

--- 2016 ---

Koenig WD, Alejano R, Carbonero MD, Fernández-Rebollo P, Knops JMH, Marañón T, Padilla-Díaz CM, Pearse IS, Pérez-Ramos IM, **Pesendorfer MB** (2016) Is the relationship between mast-seeding and weather in oaks related to their life-history or phylogeny? *Ecology* 97: 2603-2615.

Pesendorfer MB, Sillett TS, Morrison SA, Kamil AC (2016). Context-dependent seed dispersal by a scatter-hoarding corvid. *Journal of Animal Ecology* 85: 798-805.

Pesendorfer MB, Koenig WD, Knops JMH, Pearse IS, Funk KA* (2016) Individual resource-limitation combined with population-wide pollen availability drives masting in the valley oak (*Quercus lobata*). *Journal of Ecology* 103: 637-645.

Pesendorfer MB, Koenig, WD (2016) The effect of within-year variation in acorn crop size on seed predation and dispersal by avian hoarders. *Oecologia* 181: 97-106.

Pesendorfer MB, Morrison SA, Sillett TS, Koenig, WD (2016) Scatter-hoarding corvids as seed dispersers for oaks and pines: a review of a widely distributed mutualism and its utility to habitat restoration. *The Condor: Ornithological Applications* 118: 215-237.

--- 2015 and older ---

Pesendorfer MB (2015) The effect of seed size variation in *Quercus pacifica* on seedling establishment and growth. *Proceedings for the 7th California Oak Symposium: Managing Oak Woodlands in a Changing World*. Nov. 2014, Visalia, CA. pp. 407-412.

Pearse IS, Koenig WD, Funk KA*, **Pesendorfer MB** (2015) Pollen limitation and flower abortion in a wind-pollinated, masting tree. *Ecology* 96: 587-593.

Pesendorfer MB, Langin KM, Cohen B, Principe Z, Morrison SA, Sillett TS (2014) Stand structure and acorn production of island scrub oaks (*Quercus pacifica*). *Monographs of the Western North American Naturalist* 7: 246-259.

Pesendorfer MB, Gunhold T, Schiel N, Souto A, Huber L, Range F (2009) The maintenance of traditions in free-living marmosets: individual habit or social conformity? *PLoS ONE* 4: e4472.

--- FORTHCOMING --- (available on request)

Hagemeyer NDGH*#, **Pesendorfer MB**#, Koenig WD, Walters EL (submitted) A population increase in acorn woodpeckers despite a reduction in preferred habitat: paradox or parallel mechanisms?

Pesendorfer MB, Bogdziewicz M, Nopp-Mayr U, Szwagrzyk J, Canham CD, Gratzner G (near submission) Interacting economies of scale by pollen limitation and seed predation in temperate forest trees.

THIRD-PARTY FUNDING (~ \$2.3 Mio acquired to date)

In evaluation

- **Austrian Science Foundation (FWF) ReInForce: Functional diversity and ecosystem effects of retention islands in shelterwood forestry. € 8,105,495** (Co-lead PI w/ Swen Renner)

Funded

- **Federal Ministry of Agriculture, Regions and Tourism (BMLRT), Austria (2021 – 2024)**
FORSEE: Austria's Future Forest Seeds. € 1'535'046.38 (Co-Lead PI w/ Georg Gratzer, WP Lead PI)
- **The Nature Conservancy California (2020 – 2021)** Demographic monitoring and assessing the impact of ecosystem services of island scrub-jays in oak habitat. **\$104,951 + \$53,955** (PI)
- **U.S. National Park Service (2019 – 2021)** Restoring fire scars with ecosystem services **\$150,000** (PI)
- **The Nature Conservancy California (2018 - 2019)** The role of animal-mediated seed dispersal in the recovery of oak chaparral from wildfire **\$ 49,896** (Co-PI w/ T. S. Sillett)
- **Polish Academy of Sciences (2017 – 2020)** Phenology synchrony or pollen coupling? Experimental evaluation of the role of pollen limitation and plant' resource state in driving seed production in masting plants. **\$ 158,608** (Co-PI w/ M. Bogdziewicz, R. Bonal, E.E. Crone, J.M. Espelta)
- **The Nature Conservancy California (2014 - 2017)** Demographic and behavioral response of island scrub-jays to variation in acorn crops. **\$ 189,843** (Co-PI with T. S. Sillett)

TEACHING

Instructor on Record: Developed and implemented course

- **Vegetation Ecology** BOKU, Summer 2021 (w/ Gratzer, Sanden)
- **Forest Ecosystem Dynamics** BOKU, Winter 2020/2021 (w/ Gratzer)
- **Sustainable Development Goals in Developing Countries** BOKU, Spring 2020 (w/ Gratzer, Scherb)
- **Introduction to Behavior** Cornell University, Summer 2019

Co-Teaching and Teaching Assistantship:

- **R Introductory Course** Self-developed; Hastings Natural History Reservation, 2014 – 18
- **Field Animal Behavior** University of Nebraska – Lincoln, 2012 (Co-taught w/ Alan Kamil)
- **Field Ornithology** University of Nebraska – Lincoln, 2011 (Co-taught w/ John Faaborg)
- **Introductory Biology Laboratory;** University of Nebraska - Lincoln, 3 Semesters (TA)
- **Organismic Biology Laboratory;** University of Nebraska - Lincoln, 3 Semesters (TA)

Selected Guest Lectures: (of 20+)

- **Field Ecology Course** UC NRS course (UC Santa Cruz), September 2016; 2017
- **Field Ecology** University of Chicago, April 2015 & 2016
- **Ecology** CSU Monterey Bay, Dec 2015, May 2016
- **California Ecosystems** UC Berkeley, May 2015

TRAINING:

- **Didactics of Online Teaching** BOKU Vienna, November 2021
- **CALS Teaching Experience Workshop** Cornell University, June 2019
- **Graduate Teaching Assistant Training Workshop** Univ. of Nebraska – Lincoln, Aug 2008

MENTORING

- **Smithsonian Scholars Program.** Mentored 30+ students in a collaboration with UC Santa Barbara & Smithsonian Institution. Students participate in workshops, fieldwork, and excursions to Channel Islands National Park, Smithsonian Conservation Biology Institute, Smithsonian Tropical Research Institute (Panama) (2015 – current; https://oep.ucsb.edu/programs/smithsonian_scholars_project/)
- **10 Publications with Graduate Students.** 9 published, 1 submitted/in revision
- **Graduate Student Mentor, Ph.D.:** Loreto Martínez de Baroja Villalón (University of Alcalá/Cornell Lab of Ornithology), Spencer Schubert (Old Dominion University), Natasha Hagemeyer (Old Dominion University), Young Ha Suh (Cornell University), Christopher Tarango (Cornell University), **M.Sc.:** Laura Wachtveitl (BOKU), Iris Oberklammer (BOKU), Johann Zollitsch (BOKU)
- **External Doctoral Committee Member:**
 - Mafalda Moreira (CIBIO-InBIO, Universidade do Porto, Portugal)
 - Bee Redfield (Purdue University, IN, USA)

SERVICE & EDITORIAL WORK

- **Lead Editor** Special Issue "*The Ecology and Evolution of Synchronized Reproduction in Plant Populations*" in *Philosophical Transactions of the Royal Society B* (October 2021) with D. Ascoli, M. Bogdziewicz, A. Hackett-Pain, I. Pearse, and G. Vacchiano
- **Ad-Hoc Reviewer** AoB Plants, American Journal of Botany, Animal Behaviour, Annals of Botany, Behavioral Ecology, Behavioral Ecology and Sociobiology, Biology Letters, Bird Study, The Condor, Current Zoology, Ecology, Ecological Entomology, Ecology & Evolution, Ecology Letters, Forest Ecology and Management, Functional Ecology, Ibis, Integrative Zoology, Journal of Animal Ecology, Journal of Ecology, Journal of Field Ornithology, Nature Plants, New Phytologist, New Zealand Journal of Zoology, Oikos, Ornithology, Plant Ecology, PLoS one, Science of the Total Environment, Tropical Conservation Science, Western Birds, Western North American Naturalist
- **Grant Reviewer** Animal Behavior Society (ABS), American Ornithological Society (AOS), Croatian Science Foundation, Ohio Agricultural Research and Development Center (OARDC), Polish Academy of Sciences, Polish Science Foundation, Rufford Small Grant Program, Sigma Xi (Cornell Chapter), U.S. National Science Foundation (NSF)
- **Early Career Editorial Board** for *The Condor* (2010 – 2013)
- **Elective Member & Membership Committee** American Ornithological Society (2018 – current)
- **Early Career Reviewer Mentor:** *Behavioral Ecology* (2020 – current)

OUTREACH & MEDIA

- **News Coverage:** Science, Discover Magazine, Scientific American, Anthropocene, IFL Science, Audubon Magazine, Conservation Magazine, Ars Technica, Earth Times
- **Channel Islands Future Scientists Camp – Initiator & Organizer.** 80+ students from underrepresented minority background experienced a full immersion course in ecology while volunteering in forest restoration projects. Guest lectures by geologists, historical ecologists, and conservation practitioners. Channel Islands National Park, California, USA
- **Middle & High School Guest Lectures** (30+) at various locations around California
- **Scientific Consulting** "Wildlife as Canon Sees It" advertising campaign in National Geographic Magazine, supervised by Joel Sartore (2012 – 2019)
- **Scientific Consulting** BBC Natural History Unit: Smart Birds; Green Planet, et al. (2014 - current)
- **Scientific American Interview** for podcast about scatter-hoarding review (2016)
- **Guest Blog Post** for British Ornithological Union (2016)

PROFESSIONAL SOCIETY MEMBERSHIPS

- **American Ornithologists' Union AOU** (2009 – current)
- **American Society of Naturalists ASN** (2017 – current)
- **Animal Behavior Society ABS** (2009 – current)
- **Canadian Society for Ecology and Evolution CSEE** (2019 – current)
- **German Ethological Society** (Ethologische Gesellschaft EG) (2005 – current)
- **International Society for Behavioral Ecology ISBE** (2011 – current)

AWARDS & FELLOWSHIPS

- **Elected Member:** American Ornithological Society AOS
- **Southwood Prize for Contributions by Early Career Researchers** Shortlisted *Journal of Applied Ecology* 2019.
- **Outstanding Leadership in Conservation Education** Office of Education Partnerships, UC Santa Barbara & Smithsonian Conservation Biology Institute, Washington, D.C.; 2018
- **Visiting Student Fellowship** Smithsonian Institution, Washington, D.C.; 2013 (**\$ 15,000**)
- **Smithsonian Predoctoral Fellowship** Council for Institutional Cooperation & Smithsonian Institution, Washington, D.C; 2012 (**\$ 30,000**)
- **Travel Awards** International Society for Behavioral Ecology; 2012 – 2016 (**\$ 1,700**)
- **Graduate Student Fellowship** Smithsonian Institution, Washington, D.C.; 2010 (**\$ 6,500**)
- **Animal Behavior Society Research Award;** 2010 (**\$ 500**)
- **American Ornithologists' Union Research Award;** 2010 (**\$ 700**)

INVITED PRESENTATIONS

- **Biological Sciences Seminar, Binghamton University**, Oct 2019
- **Integrative Biology Seminar, University of Guelph**, Jan 2019
- **From Shore to Sea Lecture, Channel Islands National Park**, Ventura, CA, Oct 2018
- **Archbold Biological Station**, Seminar Series, Venus, FL, Sep 2018
- **Smithsonian Migratory Bird Center**, National Zoological Park, Washington, D.C., Jan 2018
- **Old Dominion University**, Norfolk, VA, Jan 2018
- **Santa Barbara Botanical Garden**, Santa Barbara, CA, Jun 2017
- **Sedgwick Lecture Series**, UC Santa Barbara, May 2015, July 2016, June 2017
- **EcoSeries Lecture Humboldt State University**, Arcata, CA, Apr 2017
- **Smithsonian Conservation Biology Lecture Series**, National Zoological Park, Apr 2014
- **Corvid Cognition Symposium**, Int. Society for Behavioral Ecology, Lund, Sweden, Aug 2012
- **Madingley Lecture**, Sub-Department of Animal Behaviour, Cambridge University, Feb 2008

SELECTED CONFERENCE PRESENTATIONS

(presenter & first author)

- **Ecology Across Borders (BES & SFE)**, Liverpool, UK, Dec 10-15, 2021
- **Frugivory & Seed Dispersal (FSD)**, Uttarakhand, India, March 1-5, 2020
- **American Ornithology 2018**, Tucson, AZ, April 9-14, 2018
- **American Society of Naturalists**, Asilomar, CA, Jan 5-9, 2018
- **California Islands Symposium**, Ventura, CA, October 3-7, 2016
- **International Society for Behavioral Ecology**, Exeter, U.K., July 29 – August 2, 2016
- **California Oak Symposium**, Visalia, CA, November 3-6, 2014
- **International Society for Behavioral Ecology**, New York, NY, July 31 – August 5, 2014
- **International Society for Behavioral Ecology**, Lund, Sweden, August 11-17, 2012
- **Animal Behavior Society**, Bloomington, IN, July 25-30, 2011
- **European Conference on Behavioral Biology**, Belfast, N. Ireland, July 2006
- **International Ethological Conference**, Budapest, Hungary, August 2005