Judy P. Che-Castaldo

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EDUCATION

2011	Ph.D. Behavior, Ecology, Evolution, and Systematics Program. University of Maryland, College Park, MD. Advisor: David W. Inouye
2005	Tropical biology: An ecological approach (a research field course). Organization for Tropical Studies, San Pedro, Costa Rica
2004	B.S. *magna cum laude* in Biology. The College of William and Mary, Williamsburg, VA. Research advisor: John P. Swaddle

PROFESSIONAL APPOINTMENTS

2021 –	Biologist. Branch of Species Status Assessment Science Support, Ecological Services Program, USFWS, Falls Church, VA
2015 – 2021	Research Scientist. Department of Conservation and Science, Lincoln Park Zoo, Chicago, IL
2012 – 2015	Postdoctoral Fellow. National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD
2011 – 2012	Postdoctoral Research Associate. Department of Plant Science and Landscape Architecture, University of Maryland (UMD), College Park, MD

PUBLICATIONS

Refereed Journal Articles & Book Chapters

2023	Gascoigne, S. J. L., S. Rolph, D. Sankey, N. Nidadavolu, A. S. Stell Picman, *et al.*, 2023. A standard protocol to report discrete stage-structured demographic information. *Methods in Ecology and Evolution* **14**:2065–2083
2023	Gray, S. M., A. W. Parsons, J. E. Andrews, K. Schad Eebes, L. J. Faust, and J. Che-Castaldo, 2023b. Institutional networks in cooperative population management: Exploring patterns in transfer fulfillment. *Zoo Biology* **42**:547–556
2023	Gray, S. M., L. J. Faust, P. Senner, K. S. Eebes, and J. P. Che-Castaldo, 2023a. Influence of institutional attributes on fulfillment of transfer and breeding recommendations in zoos and aquariums. *Zoo Biology* **42**:142–149
2023	Davidow, M., T. L. J. Schafer, C. Merow, J. Che-Castaldo, M.-C. Düker, E. Feng, and D. S. Matteson, 2023. Clustering future scenarios based on predicted range maps. *Methods in Ecology and Evolution* **14**:1346–1360
2022	Hernández-Yáñez, H., S. Y. Kim, and J. P. Che-Castaldo, 2022. Demographic and life history traits explain patterns in species vulnerability to extinction. *PLoS One* **17**:e0263504
2022	Gray, S. M., L. J. Faust, N. A. Kuykendall, R. A. Bladow, K. Schad Eebes, and J. P. Che-Castaldo, 2022. Reasons for unfulfilled breeding and transfer recommendations in zoos and aquariums. *Zoo Biology* **41**:143–156

2022   Jones, O. R., P. Barks, I. Stott, T. D. James, S. Levin, W. K. Petry, P. Capdevila, J. Che-Castaldo, J. Jackson, G. Römer, C. Schuette, C. C. Thomas, and R. Salguero-Gómez, 2022. Rcompadre and rage—two r packages to facilitate the use of the compadre and comadre databases and calculation of life-history traits from matrix population models. *Methods in Ecology and Evolution* **13**:770–781

2021   Feng, M.-L. E. and J. Che-Castaldo, 2021. Comparing the reliability of relative bird abundance indices from standardized surveys and community science data at finer resolutions. *PLoS One* **16**:e0257226

2021   Che-Castaldo, J., K. Havercamp, K. Watanuki, T. Matsuzawa, S. Hirata, and S. R. Ross, 2021b. Comparative survival analyses among captive chimpanzees (pan troglodytes) in america and japan. *PeerJ* **9**:e11913

2021   Jenouvrier, S., J. Che-Castaldo, S. Wolf, M. Holland, S. Labrousse, M. LaRue, B. Wienecke, P. Fretwell, C. Barbraud, N. Greenwald, et al., 2021. The call of the emperor penguin: Legal responses to species threatened by climate change. *Global Change Biology* **27**:5008–5029

2021   Che-Castaldo, J. P., R. Cousin, S. Daryanto, G. Deng, M.-L. E. Feng, R. K. Gupta, D. Hong, R. M. McGranaghan, O. O. Owolabi, T. Qu, et al., 2021c. Critical risk indicators (cris) for the electric power grid: a survey and discussion of interconnected effects. *Environment Systems and Decisions* **41**:594–615

2021   Che-Castaldo, J., S. M. Gray, K. M. Rodriguez-Clark, K. Schad Eebes, and L. J. Faust, 2021a. Expected demographic and genetic declines not found in most zoo and aquarium populations. *Frontiers in Ecology and the Environment* **19**:435–442

2021   Paniw, M., T. D. James, C. R. Archer, G. Römer, S. Levin, A. Compagnoni, J. Che-Castaldo, J. M. Bennett, A. Mooney, D. Z. Childs, et al., 2021. The myriad of complex demographic responses of terrestrial mammals to climate change and gaps of knowledge: A global analysis. *Journal of Animal Ecology* **90**:1398–1407

2021   Compagnoni, A., S. Levin, D. Z. Childs, S. Harpole, M. Paniw, G. Römer, J. H. Burns, J. Che-Castaldo, N. Rüger, G. Kunstler, et al., 2021. Herbaceous perennial plants with short generation time have stronger responses to climate anomalies than those with longer generation time. *Nature communications* **12**:1–8

2020   Che-Castaldo, J., O. R. Jones, B. E. Kendall, J. H. Burns, D. Z. Childs, T. H. G. Ezard, H. Hernandez-Yanez, D. J. Hodgson, E. Jongejans, T. Knight, C. Merow, S. Ramula, I. Stott, Y. Vindenes, H. Yokomizo, and R. Salguero-Gómez, 2020. Comments to "Persistent problems in the construction of matrix population models". *Ecological Modelling* **416**:108913

2020   Santymire, R. M., S. R. Lavin, H. Branvold-Faber, J. Kreeger, J. Che-Castaldo, M. Rafacz, and P. Marinari, 2020. Influence of vitamin e and carcass feeding supplementation on fecal glucocorticoid and androgen metabolites in male black-footed ferrets (mustela nigripes). *PLOS ONE* **15**:1–13

2020   Li, Y.-W., J. W. Malcom, J. P. Che-Castaldo, and M. C. Neel, 2020. Recovery plans need better science to support decisions that allow species to decline in abundance but be recovered. *bioRxiv* page 2020.02.27.966101

2019   Che-Castaldo, J. P., A. Byrne, K. Perišin, and L. J. Faust, 2019a. Sex-specific median life expectancies from ex situ populations for 330 animal species. *Scientific Data* **6**:article 190019

2019	Che-Castaldo, J. P., B. Johnson, N. Magrisso, L. Mechak, K. Melton, K. Mucha, L. Terwilliger, M. Theis, S. T. Long, and L. J. Faust, 2019b. Patterns in the long-term viability of north american zoo populations. *Zoo Biology* **38**:78–94
2018	Che-Castaldo, J. P., C. J. Che-Castaldo, and M. C. Neel, 2018a. Predictability of demographic rates based on phylogeny and biological similarity. *Conservation Biology* **32**:1290–1300
2018	Che-Castaldo, J. P., S. A. Grow, and L. J. Faust, 2018b. Evaluating the contribution of North American zoos and aquariums to endangered species recovery. *Scientific Reports* **8**:9789
2017	Meyerson, R., D. Moore, S. Long, and J. Che-Castaldo, 2017. Welfare of captive polar bears and their value to *in situ* conservation efforts, pages 489–502. Springer
2016	Che-Castaldo, J. P. and M. C. Neel, 2016. Species-level persistence probabilities for recovery and conservation status assessment. *Conservation Biology* **30**:1297–1306
2016	Salguero-Gomez, R., O. R. Jones, C. R. Archer, C. Bein, H. de Buhr, *et al.*, 2016. COMADRE: A global data base of animal demography. *Journal of Animal Ecology* **85**:371–384
2016	Evans, D. M, J. P. Che-Castaldo, D. Crouse, F. W. Davis, R. Epanchin-Niell, *et al.*, 2016. Species recovery in the United States: Increasing the effectiveness of the Endangered Species Act. *Issues in Ecology* **20**
2015	Che-Castaldo, J. P. and D. W. Inouye, 2015. Interspecific competition between a non-native metal-hyperaccumulating plant (*Noccaea caerulescens*, Brassicaceae) and a native congener across a soil metal gradient. *Australian Journal of Botany, special issue on Ultramafic Ecosystems* **63**:141–151
2015	Salguero-Gomez, R., O. R. Jones, C. R. Archer, Y. M. Buckley, J. Che-Castaldo, *et al.*, 2015. The COMPADRE Plant Matrix Database: An open online repository for plant demography. *Journal of Ecology* **103**:202–218
2015	Wei, C. A., W. R. Burnside, and J. P. Che-Castaldo, 2015. Teaching socio-environmental synthesis with the case studies approach. *Journal of Environmental Studies and Sciences* **5**:42–49
2014	Che-Castaldo, J. P. and D. W. Inouye, 2014. Field germination and survival of experimentally introduced metal hyperaccumulator *Noccaea caerulescens* (Brassicaceae) across a soil metal gradient. *The American Midland Naturalist* **171**:229–245
2013	Neel, M. C. and J. P. Che-Castaldo, 2013. Predicting recovery criteria for threatened and endangered plant species on the basis of past abundances and biological traits. *Conservation Biology* **27**:385–397
2013	Zeigler, S., J. P. Che-Castaldo, and M. C. Neel, 2013. Actual and potential use of population viability analysis in recovery of plant species listed under the U.S. Endangered Species Act. *Conservation Biology* **27**:1265–1278
2012	Che-Castaldo, J. P. and M. C. Neel, 2012. Testing surrogacy assumptions: Can threatened and endangered plants be grouped by biological similarity and abundances? *PLoS ONE* **7**:e51659
2011	Che-Castaldo, J. P. and D. W. Inouye, 2011. The effects of dataset length and mast seeding on the demography of *Frasera speciosa*, a long-lived monocarpic plant. *Ecosphere* **2**:1–18

2005	LeClerc, J. E., J. P. K. Che, J. P. Swaddle, and D. A. Cristol, 2005. Reproductive success and developmental stability of eastern bluebirds on golf courses: Evidence that golf courses can be productive. *Wildl. Soc. Bull.* **33**:483–493
2004	Swaddle, J. P., J. P. K. Che, and R. E. Clelland, 2004. Symmetry preference as a cognitive by-product in starlings. *Behaviour* **141**:469–478

FUNDING

2019 – 2021	NSF HDR Collaborative Research: Predictive Risk Investigation SysteM (PRISM) for Multi-layer Dynamic Interconnection Analysis (HDR-1940276). co-PI with D. S. Matteson (Cornell), R. Cousin (Columbia), R. Gupta (UCSD), R. McGranaghan (ASTRA), W. Ren (UKY), C. Shen (Penn State), M. G. Sherman (UMass), L. Wang (UMN). $2,420,000
2017 – 2020	NSF Advances in Biological Informatics (DBI-1661342): An open-access global repository of plant and animal demographic data. PI with co-PIs R. Salguero-Gomez (Univ. Oxford) and O. R. Jones (Univ. Southern Denmark). $615,858
2012 – 2015	Postdoctoral fellowship, National Socio-Environmental Synthesis Center $55,000/yr
2009 – 2011	NSF Doctoral Dissertation Improvement Grant (DEB-0909909): Ecology and the use of a metal-hyperaccumulating plant in phytoremediation. PI with D. W. Inouye $7,057
2008	Max and Vera Britton Environmental Science Award, and Cosmos Scholars Award, Cosmos Club Foundation $1,420
2000 – 2008	Gates Millennium Scholar, Gates Foundation

RESEARCH PRESENTATIONS

Recent Oral Presentations ([*]indicates advisee presenter)

2022	Che-Castaldo, J. P., and J. Servis. Exploring the role of ecological forecasting in Species Status Assessments under the Endangered Species Act. Ecological Forecasting Initiative (EFI) virtual conference
2021	Feng, M.-L. E.[*], M. G. Sherman, T. Schafer, C. J. Che-Castaldo, R. Cousin, D. S. Matteson, and J. P. Che-Castaldo. Novel indicators of biodiversity status based on financial portfolio metrics. American Geophysical Union (AGU) Fall Meeting, virtual conference
2020	Che-Castaldo, J. P., M.-L. E. Feng, D. S. Matteson, M. G. Sherman, and D. A. Sunter. Developing a new biodiversity risk indicator based on finance metrics. AGU Fall Meeting, virtual conference
2020	Che-Castaldo, J. P., D. S. Matteson, M. G. Sherman, and D. A. Sunter. Developing a species risk indicator based on financial metrics to inform conservation prioritization. Ecological Society of America (ESA) Annual Meeting, virtual
2020	Gray, S. M.[*], J. E. Andrews, L. F. Faust, and J. P. Che-Castaldo. Institutional networks in cooperative population management: exploring patterns in transfer fulfillment. ESA Annual Meeting, virtual conference

2019	Che-Castaldo, J. P., S. Gray, K. S. Eebes, and L. J. Faust. Cooperatively managed zoo populations show stable demographic and genetic trends over time. British Ecological Society (BES) Annual Meeting. Belftast, UK
2019	Che-Castaldo, J. P., K. Perišin, K. Melton, K. S. Eebes, and L. J. Faust. Changes in the demographic and genetic status of North American zoo populations over time. International Congress for Conservation Biology (ICCB). Kuala Lumpur, Malaysia
2019	Hernandez-Yanez, H.[*], S. Y. Kim, and J. P. Che-Castaldo. Patterns in demography based on species vulnerability to extinction. ICCB. Kuala Lumpur, Malaysia

Invited Talks

2024	Assessing viability under the Endangered Species Act using the species status assessment framework. Dept of Forest and Wildlife Ecology, Univ Wisconsin. Madison, WI
2023	Population modeling to inform species management in zoos and in under the Endangered Species Act. Smithsonian National Zoo and Conservation Biology Institute. Washington, DC
2021	Comparative demographic analysis to inform species management in zoos and in the wild. Stony Brook University. Stony Brook, NY
2017	Assessing the role of US zoos in biodiversity conservation. German Centre for Integrative Biodiversity Research (iDiv). Leipzig, Germany

SUPERVISORY AND MENTORING EXPERIENCE

2023	Supervised and mentored 1 Directorate Fellows Program (DFP) Fellow. HQ Ecological Services Program, USFWS
2015 – 2022	Supervised and mentored 1Ph.D.-level biologist, 5 M.S.-level biologists and 8 B.S.-level biologists/research assistants/interns, including 11 women and 4 underrepresented minorities. Conservation and Science Dept., Lincoln Park Zoo
2005 – 2015	Supervised and mentored 11 undergraduate or volunteer research assistants. SESYNC, UMD, and Rocky Mountain Biological Laboratory

TEACHING EXPERIENCE

2024	Just-in-time species status assessments and recovery planning course, Co-instructor, Fort Vancouver, WA
2017 – 2023	Introduction to matrix population models and demographic analysis using the COM(P)ADRE matrix databases, Co-Instructor, workshop at ESA 2017, NACCB 2018, ICCB 2019, BES 2019, SORTEE 2023
2013 – 2015	Teaching Socio-Environmental Synthesis with Case Studies, Co-instructor, 3 short courses
2008 – 2010	Principles of Ecology, Graduate teaching assistant, 4 semesters
2005 – 2009	Principles of Biology II, Graduate teaching assistant, 3 semesters

POPULAR PRESS

Jan. 2024	Guest on the Science Friday radio show to discuss the protections and successes of the Endangered Species Act
Mar. 2022	ABC Australia coverage of our demographic traits and extinction risk study (12 news stories from 11 outlets total)
Aug. 2021	Smithsonian Magazine coverage of our Emperor Penguin PVA study (254 news stories from 210 outlets total)

ADDITIONAL SKILLS

Software: R, RShiny, Git/Bitbucket, LaTeX, Markdown, PopLink, ZooRisk, Vortex, PMx, QGIS
Languages: fluent in English and Cantonese, competent in French