C. Ashton Drew, PhD, CSE

Founder/CEO | Lead Scientist and Data Analyst | ESA Certified Senior Ecologist

ashton.drew@kdv-decisions.com

> *Dr. Ashton Drew brings nearly three decades of experience in predictive modeling, ecological data analytics, and decision-support tool development. As Founder/CEO of KDV Decision Analysis LLC (USA) and KDV Decisions North (Canada), she specializes in strategic planning, sampling design, and adaptive management, with a strong record of scientific programming instruction and research partnerships across academic, government, and industry sectors.*

PROFESSIONAL EXPERIENCE

KDV Decisions North, Yukon, Canada

Owner, Lead Scientist and Data Analyst (2025 – present)

- Manage and analyze data for large international public health and equity research projects
- Handle sensitive personal data according to HIPAA and PIPEDA/PHIPA
- Apply FAIR and OCAP data principles as best practice
- Co-author mixed methods peer-reviewed articles

KDV Decision Analysis LLC, North Carolina, USA

Owner, Lead Scientist and Data Analyst (2015 – present)

- Facilitate solutions to data collection, management, analysis, and communication challenges
- Predictive modeling and decision analysis for strategic planning
- Design decision support tools for adaptive management
- Scientific programming course development and instruction

Biodiversity and Spatial Information Center, USGS Cooperative Fish and Wildlife Research Unit, Department of Biology, North Carolina State University, North Carolina, USA

Research Coordinator, Environmental Decision Analysis (2011 – 2015)

- Develop applications of spatial ecological data to support planning decisions
- Integrate expert knowledge into species habitat and management decision optimization models

Postdoctoral Research Associate (2006 – 2011)

- Model vertebrate species distribution to support USFWS & USGS Strategic Habitat Conservation
- Field research to validate and improve models in support of adaptive management and monitoring
- Co-develop and teach courses in climate change, conservation planning, and modeling
- Research program advancement: grant-writing, student and technician supervision

Eastern Carolina University, North Carolina, USA

Adjunct Faculty (2011 – 2014)

- Serve as thesis committee member for population ecology research

Marine Ecology & Conservation Laboratory, Marine, Earth & Atmospheric Sciences Department, North Carolina State University, Raleigh, North Carolina, USA

Graduate Research Assistant & NSF Graduate Research Fellow (2000 – 2006)

- Investigate behavioral, population, and community level aspects of reef fish spatial ecology
- Manage field research for international (Bahamas) and local (Florida, North Carolina) projects

Laboratory Technician (1999 – 2000)

- Laboratory processing of coastal benthic invertebrate samples

US Environmental Protection Agency (under contract through the Environmental Careers Organization), Research Triangle Park, North Carolina, USA

Field Biologist and Crew Supervisor (1998 – 1999)

- Create and deliver field training program for research interns
- Coordinate and supervise field research crews
- Survey riparian land cover and vegetation communities

AXYS Environmental Consulting Ltd., Victoria, British Columbia, Canada

Wildlife Biologist and GIS Technician (1996 – 1998)

- Inventory species in terrestrial, freshwater, and marine habitats of British Columbia
- Assess quality of habitat for endangered species, aquaculture potential, urban green space
- Mediate stakeholder meetings to negotiate objectives and elicit knowledge
- Write technical reports and produce maps for government and private clients

EDUCATION

PhD, 2006, Marine Science — North Carolina State University, NC, USA

MMM, 1996, Marine Management — Dalhousie University, NS, Canada

BA Magna Cum Laude, 1995, Environmental Science — Beloit College, WI, USA

CONTRACTS

- Advancing Transportation through Linkages, Automation and Screening (ATLAS) Project (**Axiom, NC Department of Transportation**, 2017–2028)
  - Build and validate state-wide high resolution wetland models
  - Create, validate, and maintain threatened and endangered species models
  - Research design and data analytics for bat culvert use project
  - Provide agency-wide training to staff and consultants on topics relevant to best practice in statistics, modeling, and AI applications
- Survey Data Management and Analytics for the Responder-Perpetrated Sexual Exploitation and Abuse in Humanitarian Crises (RESPONDER) Partnership (**Queens University**, 2025–2029)
- Structured Decision-Making Workshop: Establishment of Quantitative Conservation Targets for Imperiled Freshwater Mussel Species (**North Carolina State University**, 2026–2027)
- Falls Lake Chlorophyll-a Criterion and Nutrient Management Alternatives to Support Designated Uses (**Brown & Caldwell, UNRBA**, 2020–2027)
- Water Temperature Data Management and Reporting: Integrating CYFN data into the YG Postgres database and R Shiny applications (**Council of Yukon First Nations**, 2026)
- Fisheries Data Management and Statistical Coding in R Course (**Department of Fisheries and Oceans Canada**, 2026)
- Paleo Food Web Analysis and Visualization Application (**University of Nevada**, 2026)
- Strategies for Expert Elicitation for Refining Modeling Inputs and Assessing Policy Scenarios in the CTEF Update (**NatureServe Canada**, 2025)
- R Training for Forensic Geomorphometric Analyses (**E. Cuerrier-Richer**, 2025)
- Addressing Impacts of COVID-19 in Venezuela and Colombia (**Queens University**, 2024–2026)
- Convergent and Divergent Patient and Provider Experiences in the Emergency Department (**Queens University**, 2024–2026)
- Examining Gender-based Violence Patterns and Risks in South Sudan/Sudan's Repeated Cross-Border Displacement (**Queens University**, 2024–2025)
- Scope Requirements and Strategy for Proposed Production Shiny Application (**Yukon Finance**, 2023)
- R Coding and Data Analytics Support, Retainer Contract (**Yukon Environment** and **Yukon Finance**, 2022–2023)
- Macrobenthos Data Entry, Summary and Reporting Application (**Michael Baker International**, 2021–2023)

- Yukon Climate Analog Explorer Application for Forestry (**Nadele Flynn**, 2020)
- Application to Visualize and Report Temporal Trends in Survey Data (**Team Elements**, 2017, 2020–2021)
- New Zealand Department of Conservation budget exploration application rapid prototype (**NZDOC**, 2019–2020)
- NEPA Solutions Design Sprint (**Sand County Foundation**, **Walton Family Foundation**, 2018–2020)
- Automated collection and reporting of water resources information for National Wildlife Refuges (**USFWS**, 2019–2020)
- Preliminary Data Analysis of Disturbance Features in Eagle Plains (**YLUPC**, 2018)
- Bayesian Belief Networks for Adaptive Management of Wetlands (**Missouri DOC**, 2017)
- Application to Automate Leadership Survey Data Analysis and Reporting (**Onfoot Consulting**, 2017)
- Generalized Additive Models for Wetland Delineation (**Honestat**, 2016)
- Recovery Prioritization Data Visualization and Decision Support Tool (**ASU**, 2016)
- Recovery Action Prioritization Tool Refinement and Deployment (**NCSU/USFWS**, 2016–2017)

RESEARCH GRANTS

- Strategic Decision Planning for Threatened and Endangered Species Recovery in Puerto Rico (co-PI with J. Collazo, **USFWS**, 2014–2015)
- Collaborative Conservation Design Project: Science Support for the South Atlantic Landscape Conservation Cooperative Conservation Blueprint (co-PI with J. Collazo, **USFWS**, 2013–2015)
- Assessment of South Atlantic Landscape Conservation Cooperative Terrestrial Indicators (co-PI with J. Collazo, **USFWS**, 2013–2014)
- Vertebrate Biodiversity of Agricultural Fields: A Database and Metrics to Facilitate Conservation Partnerships in Productive Landscapes (co-PI with J. Collazo, **NC Wildlife Resources Commission**, 2013–2016)
- Modeling Impacts of Biomass Production on Landscapes and Wildlife (co-PI with J. Costanza, J. Collazo, R. Abt, R. Gonzalez, **Biofuels Center of NC**, 2012–2013)
- Developing an Outcome-Based Biodiversity Metric in Support of the Field to Market Project (co-PI with A. McKerrow, J. Collazo, **Keystone Institute** & **TNC**, 2010–2011)
- Hierarchical Landscape Models for Endemic Unionid Mussels: Building Strategic Habitat Conservation Tools for Mussel Recovery in the South Atlantic Landscape Conservation Collaborative (co-PI with T. Kwak, G. Cope, T. Augsburger, **USFWS**, 2011–2015)
- Designing Manatee Protection Areas in Puerto Rico (co-PI with Jaime Collazo, **USFWS**, 2010–2011)
- Linking Site Occupancy, Reproductive Success, and Management Outcomes for Strategic Habitat Conservation of King Rail (co-PI with J. Collazo, **USFWS**, 2010–2011)
- Field Validation of King Rail Habitat Models in the Roanoke-Tar-Neuse-Cape Fear Ecosystem (co-PI with J. Collazo, **USGS**, 2007–2009)

PUBLICATIONS

Text Books

Perera AH, Drew CA, Johnson CJ (eds) (2012) *Expert Knowledge and its Application in Landscape Ecology*. Springer, New York.

- Perera AH, Drew CA, Johnson CJ: Experts, expert knowledge and their roles in landscape ecological applications (Chapter 1)
- Drew CA, Collazo J: Expert knowledge as a foundation for management of secretive species and their habitat (Chapter 5)
- Johnson CJ, Drew CA, Perera AH: Elicitation and use of expert knowledge in landscape ecological applications: a synthesis (Chapter 14)

Drew CA, Wiersma Y, Huettmann FH (eds) (2011) *Predictive Species and Habitat Modeling in Landscape Ecology: Concepts and Applications*. Springer, New York.

- Wiersma Y, Drew CA, Huettmann FH: Landscape modeling of species and their habitats: history, uncertainty, and complexity (Chapter 1)

- Laurent E, Drew CA, Thogmartin W: The role of assumptions in predictions of habitat availability and quality (Chapter 5)
- Drew CA, Perera AH: Expert knowledge as a basis for landscape ecological predictive models (Chapter 12)
- Drew CA, Wiersma Y, Huettmann FH: The state of habitat and species modeling today (Chapter 15)

Hess GR, Drew CA (2004) Inquiry-guided learning through collaborative research in a graduate course. Chapter 11 in Lee VS (ed) *Teaching and learning through inquiry: a guidebook for institutions and instructors*. Stylus Press, Sterling, Virginia.

Research Publications

Bartels S, Lang E, Hoffe S, Purkey E, Rang L, de Wit K, McDonough L, Drew CA, Walker M (In Prep) Bridging the Gap: A Qualitative Analysis of Divergent Patient and Provider Experiences. *Canadian Journal of Emergency Medicine*

Bartels SA, Purkey E, Hoffe S, de Wit K, Rang L, Drew CA, Walker M (In Review) Seeing the same encounter differently: A paired mixed-methods study of patient and provider perspectives in emergency department care. *BMC Emergency Medicine*.

Avery-Gomm S, Iacona GD, Drew CA, Maloney RF, Possingham HP, Rumpff L, Rogers AD, Gerber LR, Runge MC (In Review) How robust are conservation prioritization decisions to data uncertainty? A case study using the Project Prioritization Protocol. *PeerJ*

Bartels S, Gallardo Perez E, Collier A, Drew CA, Romero C, Camino Z, De Gouveia JÁ, Aldersey HM, Pritchard J (In Press) Left out and left behind during the COVID-19 pandemic: A Sensemaking study on exclusion, inequality, and resilience among members of equity-deserving groups in Colombia and Venezuela. *International Journal for Equity in Health*

Chandiru Drama J, Elizeo Abdalla B, Lindrio PI, Oneka RS, Sule Mazira L, Loyda OG, Drew CA, Tasker H, Lee S, Bartels SA (2025) 'This caused our journey': the relationship between sexual and gender-based violence and cross-border Sudan to South Sudan migration. *Conflict and Health* 19:58. https://doi.org/10.1186/s13031-025-00699-5

Iacona G, Avery-Gomm S, Maloney RF, Brazill Boast J, Crouse D, Drew CA, Epanchinn-Niell R, Hall S, Maguire L, Male T, Newman J, Possingham H, Rumpff L, Runge MC, Weiss K, Wilson R, Zablan M, Gerber LR (2022) Hurdles to developing quantitative decision support for Endangered Species Act resource allocation. *Frontiers in Conservation Science*, Volume 3 - 2022.

Gerber LR, Runge MC, Maloney RF, Iacona, GD, Drew CA, Avery-Gomm S, Brazil-Boast J, Crouse D, Epanchin-Niel RS, Hall SB, Maguire LA, Male T, Morgan D, Newman J, Possingham HP, Rumpff L, Weiss KCB, Wilson RS, Zablan MA (2018) Resources and recovery under the Endangered Species Act. *Science* 362 (6412): 284-286.

Drew CA, Eddy M, Kwak T, Cope WG, Augspurger (2018) Hydrologic characteristics of freshwater mussel habitat: novel insights from modeled flows. *Freshwater Science* 37(2):343-356.

Pickens B, Mordicai R, Drew CA, Alexander-Vaughn L, Keister A, Morris H, Collazo J (2017) Indicator-driven conservation planning across terrestrial, freshwater aquatic, and marine ecosystems of the South Atlantic, USA. *Journal of Fish and Wildlife Management* 8(1):219-233.

Rogers SL, Collazo JA, Drew CA (2013) Nest occurrence and survival of King Rails in fire-managed coastal marshes in North Carolina and Virginia. *Journal of Field Ornithology* 84:355-366

Drescher M, Perera AH, Johnson CJ, Buse LJ, Drew CA, and Burgman MA (2013) Toward rigorous use of expert knowledge in ecological research. *Ecosphere* 4(7):83.

Rogers, SL, Collazo JA, Drew CA (2013) Occupancy and abundance of King Rails in fire managed coastal marshes. *Waterbirds* 36(2):179-188

Hightower, JE, Harris JE, Raabe JK, Brownell P, Drew CA (2012) Habitat suitability models for American shad in southeastern rivers. *Journal of Fish and Wildlife Management* 3(2):184-198

Pijanowski B, Iverson L, Rhemtulla J, Wimberly M, Drew CA, Bartsch A, Bulley H, Peng J (2010) Addressing the interplay between poverty and landscapes: a grand challenge topic for landscape ecologists. *Landscape Ecology* 25:5-16

Drew CA, Eggleston DB (2008) Juvenile fish densities in Florida Keys mangroves correlate with landscape characteristics. *Marine Ecology Progress Series* 362: 233-243

Drew CA, Eggleston DB (2006) Currents, landscape structure, and recruitment success along a passive-active dispersal gradient. *Landscape Ecology* 21: 917-931

Hess GR, Rubino MJ, Koch FH, Eschelbach KA, Drew CA, Favreau JM (2006) Comparing the potential effectiveness of conservation planning approaches in central North Carolina, USA. *Biological Conservation* 128: 358-368

Favreau JM, Drew CA, Hess GR, Eschelbach KA, Rubino MJ, Koch FH (2006) Recommendations for assessing the effectiveness of surrogate species approaches. *Biodiversity and Conservation* 15: 3949–3969

Technical Reports & Book Reviews

Drew CA, Kwak TJ, Cope WG, Augspurger T (2015) Hierarchical Landscape Models for Endemic Unionid Mussels: Building Strategic Habitat Conservation Tools for Mussel Recovery in the South Atlantic Landscape Conservation Cooperative: Final Report. Prepared for the USFWS South Atlantic Landscape Conservation Cooperative, Raleigh, NC. 106 pp

Drew CA, Stocking J, Collazo JC (2015) Strategic Decision Planning for Endangered Species Recovery in Puerto Rico: Final Report. Prepared for the USFWS Caribbean Ecological Services Field Office, Puerto Rico by the USGS - North Carolina Cooperative Fish and Wildlife Research Unit, North Carolina State University. 12 pp + Supplements

Alexander-Vaughn LB, Collazo JA, Drew CA (2014) Strategic Conservation Planning for the Eastern North Carolina/Southeast Virginia Strategic Habitat Conservation Team. Technical Bulletin 337, North Carolina Agricultural Research Service, College of Agriculture and Life Sciences, North Carolina State University 109 pp +Appendices

Drew CA, Collazo JA (2014) Bayesian Networks as a Framework to Step-down and Support Strategic Habitat Conservation of Data-poor Species: A case study with King Rail (*Rallus elegans*) in Eastern North Carolina and Southeastern Virginia. Prepared for the USFWS Region 4, Raleigh Field Office, North Carolina by the USGS - North Carolina Cooperative Fish and Wildlife Research Unit, North Carolina State University. 105 pp +Appendices

Drew CA, Alexander-Vaughn LB, Collazo JA, McKerrow A, Anderson J (2013) Developing an Outcome-based Biodiversity Metric in Support of the Field to Market Project. Technical Bulletin 334, North Carolina Agricultural Research Service, College of Agriculture and Life Sciences, North Carolina State University. 28 pp +Appendices

Costanza, JK, Abt R, Drew CA, Gonzales R, Collazo JC (2013) Modeling Impacts of Biomass Production on Landscapes and Wildlife: Final Report to the Biofuels Center of NC. 64 pp.

Drew CA, Alexander-Vaughn LB, Collazo JA, Reid JP, Slone DH (2012) Science Summary in Support of Manatee Protection Area (MPA) Design in Puerto Rico. Technical Bulletin 330, North Carolina Agricultural Research Service, College of Agriculture and Life Sciences, North Carolina State University. 63 pp.+Appendices.

Guenard B, Drew CA (2011) Ant Species of MacKay Island and Back Bay National Wildlife Refuges: Results of Opportunistic Sampling in Diverse Habitats in July 2010. Prepared for Back Bay and Mackay Island National Wildlife Refuges, U. S. Fish and Wildlife Service.

Drew CA, Guenard B (2009) Collection of *Crematogaster atkinsoni* (Wheeler) on Mackay Island National Wildlife Refuge, Knotts Island, North Carolina. Prepared for Mackay Island National Wildlife Refuge, U. S. Fish and Wildlife Service.

Drew CA (2008) Book Review: 'Age of Complexity' offers opportunity for the multidisciplinary perspective of landscape ecologists. *Landscape Ecology* 23: 629-631

Drew CA, McKerrow AJ, Earsom S (2006) Stepping down regional habitat and population objectives to individual national wildlife refuges: A pilot project in the Roanoke-Tar-Neuse-Cape Fear (RTNCF) Ecosystem. *Gap Analysis Bulletin* 14: 53-61

Hess GR, Drew CA (2004) Inquiry-guided learning through collaborative research. *Natural Resources and Environmental Issues*: 12:Article 25

Drew CA, Hess GR (2003) Online publication enhances integration of current research in the classroom. *Conservation Ecology* **7**(1): r12

Horne CA, Ethier AE (1998) Pre-Field Planning Report for Kaipit Lake Drainage Fish and Fish Habitat Reconnaissance Inventory. Prepared for Canadian Forest Products Ltd., Englewood Division, Woss, BC

Ethier AE, Kashino R, Horne CA (1997) A Reconnaissance Survey of the Gordon River and Tributaries, Volumes I & II. Prepared for Ministry of Environment, Lands and Parks, Fisheries Inventory Program, Vancouver Island

Blyth CA, McDonald JW, Canessa RR, Horne CA, Kashino R (1997) Shellfish Culture Capability Appraisal for Johnstone Strait. Prepared for BC Ministry of Agriculture, Fisheries & Food

TEACHING EXPERIENCE

Professional Development Workshops

- Introduction to git for scientists (Transmitting Science, 2026)
- Automated Reports with R (The Nature Conservancy, 2023)
- R for Fish and Wildlife Biologists (Yukon DoE, 2021)
- Spatial Data in R (Environment Canada and others; 2020–present)
- R Tidyverse (Transmitting Science, 2018–present)
- R for Fisheries Science (DFO Canada, 2017 and 2026)
- Water Quality Data and Statistics with R (Environment Yukon, 2017)
- Introduction to R and R Studio (Transmitting Science and others; 2016–present)
- Data Visualization with R's ggplot2 (2016–present)
- Interactive Data Visualization and Application Development with R Shiny (Transmitting Science and others; 2016–present)

Graduate Courses

- Climate Change and Conservation Planning (NCSU, 2009)
- Hierarchical Species-Habitat Analysis and Conservation (NCSU, 2007 & 2008)
- Landscape Ecology (NCSU, 2002)

Undergraduate Courses

- Natural Resource Measurements (NCSU, 2003)