

KIMIORA L. WARD

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CAREER OBJECTIVE

To enrich habitat conservation and restoration programs by combining a foundation in rigorous ecological and genetic theory with practical experience in natural resource management.

SKILLS AND ABILITIES

- Strong foundation in design and implementation of independent research.
- Proficient in data management and analysis using Geographic Information Systems (ArcGIS, ArcView), relational databases (Access, Paradox), statistical software (SAS, Statview), and spreadsheets (Excel).
- Expertise with taxonomic keys and with the use of plant association keys to classify local vegetation.
- Ability to effectively train and lead field ecology crews, coordinating projects from the planning phase through implementation to communication of results.
- Strong organization skills, with ability to prioritize projects and consistently meet tight deadlines.
- Skilled in oral and written communication with scientists, restoration practitioners, native plant producers, and the general public.

CURRENT POSITION

Research Associate III, Program Manager – Dept. of Entomology, University of California - Davis 4/10 – present
One Shields Avenue, 380 Briggs Hall, University of California – Davis, Davis, CA 95616

- Manage ten ongoing research projects with a \$521,000 annual budget on developing methods and testing the effectiveness of pollinator habitat restoration efforts in California and other key regions nationally.
- Authored and coauthored successful grants totaling \$683,000 from a variety of federal and private sources.
- Oversee six permanent and seven temporary staff in establishing, maintaining and monitoring the ecological functioning of 17 habitat restoration plantings annually; develop monitoring protocols, train in collecting and analyze original data from three experimental test sites in Yolo County; quantify floral resources, sight-identify, collect and procure native bee and other insect floral visitors, conduct vacuum sample surveys of pests and beneficial insects.
- Establish and maintain experimental plantings using agronomic cultivation techniques.
- Conduct floral surveys of all native and weedy vegetation surrounding target crops, classify and digitize habitat types in ArcGIS for landscape analysis.
- Supervise four volunteer and paid assistants, overseeing and prioritizing their workloads to meet reporting deadlines.
- Manage two grant budgets and ensure university and grantor administrative requirements are met.
- Prepare technical progress reports for granting agency.

RELEVANT PROFESSIONAL EXPERIENCE

Noxious Weed Specialist – King County Noxious Weed Control Program

4/08 – 4/10

201 S. Jackson St, Suite 600, Seattle, WA 98122

- Coordinated management of invasive riparian weeds on a watershed scale along seven river systems, collaborating with all local stakeholders and conservation organizations to maximize efficiency.
- Administered eight grant-funded projects with a \$200,000 annual budget, ensuring deliverables and financial and progress reporting requirements were met.
- Conducted long-range project planning: developed scope of work, determined funding requirements, coordinated with existing funding agencies; identified and successfully pursued new funding opportunities to better meet program goals.
- Educated private landowners, conservation organizations and government agencies to develop effective weed management plans on private and publicly owned lands.
- Conducted field surveys for noxious weeds, mapping their location using GPS and aerial photographs.
- Developed and maintained spatial and relational data management systems in ArcGIS and Access.

Seed Program Manager, Plant Conservation Biologist – Native Seed Network

4/06 – 4/08

Institute for Applied Ecology, PO Box 2855, Corvallis, OR 97339

- Managed a large, ecoregion-wide seed collection and agricultural production program to develop locally appropriate and genetically diverse native plant materials for twenty species important in prairie restoration.
- Identified habitat requirements of rare butterflies and bees; expanded program to include important resources for these species.
- Developed promotional materials for Native Seed Network's national program; promoted the regional seed increase approach among the local restoration community and at professional conferences.
- Collaborated with diverse stakeholders to develop widely acceptable seed movement guidelines. Conducted common garden research to validate these guidelines from an ecological genetics perspective.
- Researched native plant cultivation requirements and provided guidelines to local seed farmers.
- Developed and maintained Access database to track source locations of accessions and seedlots; calculated seed purchase and grow-out needs for creation of specific microhabitats in the restoration of 600 acres across 11 sites in the Willamette Valley.
- Hired and supervised seasonal and permanent staff responsible for identifying and mapping seed source locations, collecting and processing seed, tracking germplasm provenance, and conducting research to inform seed movement guidelines.

Botanist – PNW Albicaulis Project, USDA Forest Service

4/05 – 10/05

PNW Genetic Resource Program, Olympic National Forest, 1835 Black Lake Blvd SW, Olympia, WA 98512

- Coordinated an interagency effort to develop a conservation strategy for whitebark pine; outlined key components of the plan to focus discussion and identify research needs.
- Wrote a report summarizing the ecology, genetics and current status of the species in WA & OR.
- Initiated a cone collection program for gene conservation and restoration of whitebark pine; planned and implemented collections, managed budget and established cone collection guidelines.
- Conducted stand health assessments documenting the incidence of disease and insect attack.

Botanist – Mt. Baker-Snoqualmie National Forest

4/01 – 3/06

Skykomish Ranger District, 74920 NE Stevens Pass Hwy, PO Box 305, Skykomish, WA

- Conducted botanical inventories of vascular plants, bryophytes and lichens in a wide variety of habitats and terrains, specifically targeting rare species. Collected and documented long term monitoring data.
- Mapped locations of rare species and noxious weeds using ArcGIS and ArcView. Tracked associated data in relational databases using Access and PARADOX. Created metadata for botany program files and developed and maintained an system for multiple users to locate and track many GIS data sources.
- Established partnerships with local government and conservation organizations for collaborative management of invasive species.
- Analyzed effects of proposed land use activities on populations of sensitive species; prepared biological evaluations and environmental analyses.
- Developed and presented educational displays for the public.
- Planned and implemented a large wildlife survey project, leading a crew of 10 people. Developed and gave a training program on species identification and adherence to sensitive species survey protocol; compiled existing information into a species identification guide relevant for local taxa. Coordinated field data collection, organization of raw data, and data entry. Summarized and communicated results to collaborators.
- Coordinated volunteer native plant revegetation project. Recruited and trained 15 volunteers.

Box 351800, University of Washington, Seattle, WA 98195

- Researched plant-pollinator interactions and the evolutionary dynamics of plant adaptation using a population genetics approach. Identified study sites, established experimental methods, and collected field data on plant-pollinator interactions in CA, UT and CO; conducted greenhouse and laboratory studies including development of microsatellite markers.
- Trained and supervised assistants in data collection and analysis.
- Tailored complex statistical analyses to unique experimental design, manipulated extensive data sets, and wrote macros for automation of data analysis.
- Successfully acquired funding through grants, managed project budgets.
- Taught labs and lectured in seven introductory and advanced courses in general biology, evolution, plant ecology, plant classification and systematics.

EDUCATION

2000	M.S. in Botany	University of Washington, Seattle, WA
1999	Certificate, Conservation Biology Policy	University of Washington, Seattle, WA
1996	Graduate Course in Tropical Ecology	Organization for Tropical Studies, Costa Rica
1992	B.S. in Zoology, <i>cum laude</i>	University of Washington, Seattle, WA

GRANTS, FELLOWSHIPS AND AWARDS

2015	The Xerces Society for Invertebrate Conservation Research Agreement (\$54,760) with UC Davis for “Research monitoring plan for establishment and functioning of pollinator habitat” in 2016-2019
2015	USDA Natural Resources Conservation Service State Conservation Innovation Grant (\$74,952) to UC Davis for “Supporting honey bees and native almond pollinators through improved forage mixes: testing of establishment methods and strategic native plant selection” in 2015-2018
2013	Outstanding Citation for Excellence in Service, University of California at Davis Staff Assembly
2013	Project Apis m. Research Agreement (\$70,976) with UC Davis for “Assessing performance of regional wildflower mixtures to support honey bees for almond pollination” in 2013-2015
2013	Sacramento Area Flood Control Agency Research Agreement (\$44,591) with UC Davis for “Planting wildflowers for pollinators: optimizing establishment and maintenance of native wildflowers in California prairie restoration” in 2013-2016
2012	USDA Natural Resources Conservation Service Conservation Innovation Grant Subaward (\$93,966) for UC Davis research component of The Xerces Society for Invertebrate Conservation grant, “Next steps in pollinator conservation: Operations and maintenance, organic habitat restoration, expanding seed mix choices, and assessing conservation effectiveness” in CA, 2012-2016, (coauthored with Claire Kremen)
2010	USDA Natural Resources Conservation Service Conservation Innovation Grant (\$343,884) to UC Davis for “Development and Validation of Protocols for Assessing Functioning of Pollinator Habitat Plantings for Agricultural Settings” in CA, MI and NJ in 2010-2013 (coauthored with Neal Williams)
2010	U.S. Environmental Protection Agency, Region 10 Puget Sound Watershed Management Assistance Program grant to King County Noxious Weed Control Program (\$651,555) for “Protection and Enhancement of Riparian Buffers in WRIA 7 through Restoration and Stewardship” in 2010-2013
2010	U.S. Fish and Wildlife Service Aquatic/Riparian Restoration and Recovery Projects grant to King County Noxious Weed Control Program (\$25,000) for noxious weed removal and riparian corridor restoration in the Skykomish watershed in FY 2010
2008	U.S. Fish and Wildlife Service grant to Institute for Applied Ecology (\$53,000) for seed collection and increase of Threatened and Endangered species and butterfly resource plants in 2008
2002	Certificate of Merit, Mt. Baker-Snoqualmie National Forest, Snoqualmie Ranger District
2001	Certificate of Appreciation for Leadership, Mt. Baker-Snoqualmie National Forest
2000	Charlotte Cornell Crary Award for Excellence in Teaching Introductory Biology
1997	University of Washington Botany Department Field Research Award
1997	Sigma Xi Grant in Aid of Research: evolution of plant-pollinator interactions
1995	National Science Foundation Graduate Fellowship

- 1995 Achievement Rewards for College Scientists Fellowship
1992 Sigma Xi Grant in Aid of Research: physiological ecology of short-horned lizards

PUBLICATIONS

- Kleijn, D., R. Winfree, I. Bartomeus, L.G. Carvalheiro, M. Henry, R. Isaacs, A.M. Klein, C. Kremen, L.K. M'Gonigle, R. Rader, T.H. Ricketts, N.M. Williams, et al. (including **K.L. Ward**). 2015. Delivery of crop pollination services is an insufficient argument for wild pollinator conservation. *Nature Communications* 6:7414
- Williams, N.M., **K.L. Ward**, N. Pope, R. Isaacs, J. Wilson, E.A. May, J. Ellis, J. Daniels, A. Pence, K. Ullmann and J. Peters. 2015. Native wildflower plantings support wild bee abundance and diversity in agricultural landscapes across the United States. *Ecological Applications* 25: 2119-2131.
- Wilkerson, M.L., **K.L. Ward**, N.M. Williams, K.S. Ullmann, and T.P. Young. 2014. Diminishing returns from higher density restoration seedings suggest trade-offs in pollinator seed mixes. *Restoration Ecology* 22:782–789.
- Kay, K.M., **K. Ward**, L.R. Watt and D.W. Schemske. 2010. Plant speciation on serpentine soils. In: S. Harrison and N. Rajakaruna (Eds.). *Serpentine: the Evolution and Ecology of a Model System*. Pp. 71-95. University of California Press.
- Miller, S.A., A. Bartow, M. Gisler, **K. Ward**, A.S. Young and T. Kaye. 2010. Can an ecoregion serve as a seed transfer zone? Evidence from a common garden study with five native species. *Restoration Ecology*, no. doi: 10.1111/j.1526-100X.2010.00702.x
- Ward, K.**, M. Gisler, R. Fiegener and A. Young. 2008. The Willamette Valley Seed Increase Program: developing genetically diverse germplasm using an ecoregion approach. *Native Plants Journal* 9: 335-350.
- Huey, R.B., G.W. Gilchrist, **K. Ward**, L. Maves, D. Pepin, and D. Houle. 2003. Mutation accumulation, performance, fitness. *Journal of Integrative and Comparative Biology* 43: 386-395.
- Ward, K.** 2000. Quantitative genetic differentiation among adjacent populations of *Linanthus parviflorus* (Polemoniaceae): Natural selection or genetic drift? MS thesis, University of Washington, Seattle.

WHITE PAPERS

- Ward, K.**, T. MacLaren, S. Baker. 2009. Weed survey and knotweed control implementation plan for King County-owned flood management facilities and properties. On file with: King County Department of Natural Resources and Parks. 201 S. Jackson St, Suite 600, Seattle, WA 98104.
- K. Ward.** 2008. Contract specifications for development of local native plant materials for elk forage enhancement revegetation on the Mt. Baker-Snoqualmie National Forest. Prepared by the Native Seed Network for the Mt. Baker-Snoqualmie National Forest. On file with: Institute for Applied Ecology, PO Box 2855, Corvallis, OR 97339.
- Ward, K.** and T. Fuentes. 2008. Revegetation effectiveness monitoring for road decommissioning projects on the Mount Baker-Snoqualmie National Forest. Prepared by the Native Seed Network for the Mt. Baker-Snoqualmie National Forest. 38 p. On file with: Institute for Applied Ecology, PO Box 2855, Corvallis, OR 97339
- Ward, K.** and R. Fiegener. 2007. Focus list for the Olympic National Forest: Recommended species and their collection and propagation methods for development of a native plant materials program for revegetation of forested lands. Prepared by the Native Seed Network for the USDA Forest Service, Olympic National Forest. 54 p. On file with: Institute for Applied Ecology, PO Box 2855, Corvallis, OR 97339
- Fuentes, T.L., L.L. Potash, A. Risvold, **K. Ward**, R.D. Leshner, J.A. Henderson. 2007. Non-native plants on the Mt. Baker-Snoqualmie National Forest. In: Harrington, T. B. and S.H. Reichard (eds.), *Meeting the Challenge: Invasive plants in Pacific Northwest Ecosystems*. USDA Forest Service General Technical Report PNW-GTR-694. p. 95 – 116.
- Ward, K.** 2006. Species fact sheets prepared for development of Conservation Strategies for rare lichens. Prepared for the USDA Forest Service/USDI Bureau of Land Management Interagency Special Status/Sensitive Species Program. Available: <http://www.fs.fed.us/r6/sfpnw/issssp/planning-documents/species-guides.shtml>
- Ward, K.** and R. Shoal. 2006. Whitebark pine in Washington and Oregon: Synthesis of current information and historical data. USDA Forest Service Pacific Northwest Region PNW Albicaulis Project. 22 p. Available: <http://www.fs.fed.us/r6/genetics/publications/albicaulis-project>.
- Ward, K.** and R. Shoal. 2005. Whitebark pine cone collection guidelines. USDA Forest Service Pacific Northwest Region PNW Albicaulis Project. 20 p. Available: <http://www.fs.fed.us/r6/genetics/publications/detail/pub0603>

Bailey, A., **K. Ward** and T. Manning. 1993. A field guide for characterizing habitats using a marine and estuarine habitat classification system for Washington state. Washington State Department of Natural Resources, Division of Aquatic Lands.

PRESENTATIONS

- Ward, K.L.** 2016. Restoring habitat for pollinators: evaluating success and improving practice. (Invited Lecture). USGS Restoration Assessment and Monitoring Program, Department of Biological Sciences, Northern Arizona University, Flagstaff, AZ.
- Williams, N.M., **K.L. Ward**, C.A. Brittain, S. Peterson, T. Pitts-Singer, D. Artz and G. Wardell. 2015. Boosting forage for bees in three regions of California almond production. (Poster). Almond Board of California Annual Conference, Sacramento, CA.
- Ward, K.L.** 2015. Establishing habitat for bees. (Oral presentation). Alfalfa IPM and Crop Pollinator Workshop, Woodland, CA.
- Ward, K.L.**, D. Cariveau, R. Isaacs, E. May, R. Winfree and N.M. Williams. 2015. Choosing plants for pollinators: Research on ecological functioning of pollinator habitat restorations can inform native plant materials development. (Oral presentation). National Native Seed Conference, Santa Fe, NM.
- Ward, K.L.** and J.W. Burt. 2015. Optimizing establishment of native pollinator habitat in a large-scale levee improvement project. (Oral presentation). California Native Plant Society Conservation Conference, San Jose, CA.
- Williams, N.M., **K.L. Ward**, C.A. Brittain, S. Peterson, T. Pitts-Singer, D. Artz, and G. Wardell. 2014. Wildflowers to support bees for almond pollination. (Poster). Almond Board of California Annual Conference, Sacramento, CA.
- Ward, K.L.**, E.A. May, R. Isaacs, D. Cariveau, R. Winfree and N.M. Williams. 2014. Assessing functioning of pollinator habitat plantings for agricultural settings. (Poster). Ecological Society of America Annual Meeting, Sacramento, CA.
- Williams, N.M., **K.L. Ward**, C.A. Brittain, S. Peterson, T. Pitts-Singer, D. Artz, and G. Wardell. 2013. Wildflowers to support bees for almond pollination. (Poster). Almond Board of California Annual Conference, Sacramento, CA.
- Ward, K.L.**, C. A. Brittain, N.M. Williams. 2013. How to build it so they come – identifying key floral resources and designing effective seed mixes for pollinator habitat in agricultural landscapes of California. (Poster). International Conference on Pollinator Biology, Health and Policy, State College, PA.
- Williams, N.M., **K.L. Ward**, R. Isaacs, E. May, K. Mason, J. Wilson, J. Daniels, J.D. Ellis, J.A. Pence, J. Peters, J. Overmyer. 2013. Operation Pollinator: Evaluation of flowering plant mixtures for supporting pollinator biodiversity in agricultural systems. (Poster). International Conference on Pollinator Biology, Health and Policy, State College, PA.
- Ward, K.L.**, C. Brittain, L. Rowe and N.M. Williams. 2013. Wildflowers for honey bees: identifying native plants that support honey bees in agricultural landscapes of California. (Oral presentation). Honey Bee Health Summit, St. Louis, MO.
- Ward, K.L.**, K. Ullmann and N.M. Williams. 2013. Identifying key floral resources for pollinators in agricultural landscapes of Central California. (Poster). National Native Seed Conference, Santa Fe, NM.
- Gisler, M., **K.L. Ward**, R. Fiegenger, T. Kaye, P. Moore. 2013. Species recovery through large scale production and introduction on public and private lands. (Oral presentation). National Native Seed Conference, Santa Fe, NM.
- Ward, K.L.**, M. Wilkerson, K. Ullmann and N.M. Williams. 2012. Restoring key floral resources for native pollinators in agricultural landscapes. (Oral presentation). California Society for Ecological Restoration Annual Conference, Davis, CA.
- K. Ward**, M. Gisler, R. Fiegenger, A. Bartow, S. Miller, A. Young and T. Kaye. 2010. Restoration germplasm in a changing world: how local is too local? (Invited oral presentation). Northern California Botanists Annual Symposium, Chico, CA.
- Ward, K.**, M. Gisler and R. Fiegenger. 2007. The Willamette Valley Seed Increase Program: developing genetically diverse germplasm using an ecoregion approach. (Oral presentation). Fourth Pacific Northwest Native Plant Conference, Eugene, OR.

Ward, K., M. Gisler and R. Fiegenger. 2007. An ecoregion-based approach to development of genetically diverse germplasm for native Willamette Valley prairie species. (Poster). Native Wildflower Seed Production Research Symposium, Orlando, FL.

OUTREACH

Ward, K.L., D. Cariveau, E.A. May, M. Roswell, M. Vaughan, N.M. Williams, R. Winfree, R. Isaacs. 2015. Habitat for bees and beneficials: documenting successful function. Fact sheet for USDA NRCS Conservation Innovation Grant Agreement number 69-3A75-10-163, <https://pollneaters.files.wordpress.com/2015/06/factsheet-cig2010-2015-07-01.pdf>

Ward, K.L., D. Cariveau, E.A. May, M. Roswell, M. Vaughan, N.M. Williams, R. Winfree, R. Isaacs and K. Gill. 2014. Streamlined bee monitoring protocol for assessing pollinator habitat. 16 pp. Portland, OR: The Xerces Society for Invertebrate Conservation.

Ward, K.L. 2015. Enhancing habitat in almonds and almond pollination. (Oral presentation). Colusa Farm Show, Colusa, CA.

Ward, K.L., J.K. Cruz, A. Stine. 2014. Bee monitoring and habitat assessment. (Oral presentation, full-day training session). Monitoring pollinator habitat: counting bees to document restoration success, USDA NRCS training session at Lockeford Plant Materials Center, Lockeford, CA.

PROFESSIONAL DEVELOPMENT

- Attended the Bee Course in Portal, AZ, a 10 day native bee identification field course organized by the American Museum of Natural History (2011)

PROFESSIONAL MEMBERSHIPS

- Society for Conservation Biology
- Society for Ecological Restoration
- Northwest Association of Environmental Professionals
- Washington Native Plant Society
- Oregon Native Plant Society
- California Native Plant Society
- California Native Grasslands Association
- California Invasive Plants Council