

Jeffrey A. Hart, Ph.D.

Hart Restoration, Inc.

P.O. Box 439

Walnut Grove, CA 95690

Phone (916) 775-4021

Fax (916) 775-4022

E-mail hartrestoration@mac.com

Web site: [www//hartlandnursery.com](http://www.hartlandnursery.com)

About Hart Restoration

We are a design/build habitat restoration company located on a 10-acre farm near Walnut Grove, California. Our native plant nursery (Hartland Nursery) includes extensive plant propagation facilities, including potting shed, greenhouse, shadehouses, irrigated container plant areas, willow cuttings nursery, and specialized wetland propagation water beds which are sourced from genetic materials of the Delta and surrounding region. Our corporate yard includes several buildings and storage containers that serves our fleet of vehicles, boats, irrigation, weeding, spraying and planting needs. The office houses our computer, bookkeeping, management, administrative and scientific activities. With a staff of 10-15, we provide quality restoration and landscaping services to carefully selected clients.

Education

Ph.D., Biology - Plant Systematics, Harvard University, 1983.

M.S., Botany - Ethnobotany. University Montana, 1974.

B.A., Environmental Biology. University of Montana, with honors, 1971.

Experience

Consulting services include:

- Restoration ecology and habitat improvement
- Habitat restoration design
- Riparian systems analysis and restoration
- Bioengineering and erosion control
- Landscape ecology studies

- Geographical information systems, (GIS), GPS, computer aided design (CAD), and image analysis
- Botany and plant systematics
- Conservation solutions, resource management, environmental planning and mitigation
- Wetland delineation, restoration and creation
- Arboricultural consulting, arborist, reports and tree inventories, mitigation plans, installation and maintenance
- Printing services, including large formats, color maps, drawings, plans, and illustrations.
- Ecotourism boat services throughout the Delta

Licenses/Other Qualifications

- C-27 landscaping contactors license (#763504)
- Qualified applicators pesticide license (#QL 38146)
- Arborist license #502 not currently active

Recent Consulting, Research & Restoration Projects

Brannan – Andrus Reclamation District. 2007-Present. Design and implementation of habitat features associated with nearly 5,000 linear feet of bank protection.

Sacramento City, Maintenance Department. 2006 to 2008. Working as consultant to survey natural areas within the City park properties, develop restoration and maintenance guidelines, and conduct public workshops.

City of Roseville, Planning Department. January, 2007. Conduct survey of city properties for suitability for oak mitigation, planting guidelines, etc.

Technical Advisory Committee, Cache Creek, Yolo County. 1998-2007. I serve alongside an engineer and fluvial geomorphologist in assisting Yolo County with a variety of resource issues affecting Cache Creek. Meeting approximately once per month, we review bank protection and habitat improvement proposals, monitor water quality, and various policy issues.

Sacramento Tree Foundation Oak Tree Mitigation Project. 2005 to present. Developed oak tree mitigation plan and followed up with planting more than 2000 oak trees at Brannan Island State Park.

Sacramento Area Flood Control Agency. 1997-present. Habitat restoration and maintenance contracts for restoration sites along Lower American River.

Sustainable Restoration Technologies for Delta Tidal Marsh and Riparian Habitats. California Bay Delta Authority, 2003 - 2006 (\$1,800,000). Restoration,

erosion control and monitoring in selected environments through the Sacramento / San Joaquin Delta.

SRP-9, SRP-10, 7-11; MJ Ruddy Reaches, Tuolumne River. CalFed/Turlock Irrigation District/HDR Engineering, 2000-2003. Involvement with design, plant propagation, and installation of plants for these habitat development projects.

In-Channel Islands Project. CalFed/ABAG. 2001-2002. Involved with design and implementation of innovative biotechnical treatments designed to halt erosion and recreate habitat on endangered in channel islands in the Sacramento – San Joaquin Delta.

Grayson Ranch. Friends of the Tuolumne River. 2000-2002. Involved with various aspects of design, plant propagation, installation and monitoring of this CalFed sponsored habitat restoration project.

Bobcat Flat. Friends of the Tuolumne River. 2002. Assisting Friends of the Tuolumne River with the design of riparian habitat along a several hundred acre site of the Tuolumne River.

Sustainable Restoraion Technologies for Bay/Delta Tidal Marsh and Riparian Habitat Contract with CalFed, 2002-2004. With this contract we will extend our biotechnical and restoration methods from the north Delta area to Suisun Marsh.

East Delta Habitat Corridor (Georgiana Slough). Contract with CalFed, 1999-2003 (\$1,100,000). This contract involves revegetation and biotechnical bank protection along Georgiana Slough, immediately south of Walnut Grove, Sacramento County.

Lower American River, maintenance of sites 4.2L and 7.6R. Under contract with the Sacramento Area Flood Control Agency, Hart Restoration has been involved with general maintenance activities of approximately 3,000 linear feet of riverside bank plantings.

Lower American River Parkway Weed Removal/Restoration. Contract with Ducks Unlimited. This contract will enable H.A.R.T. to remove *Arundo donax* and other alien species from portions of the Parkway and replant these areas with native species.

Little Stoney Creek Restoration Project. Contract with Ducks Unlimited. Project involves planting native trees along Stoney Creek, east of Maxwell, Colusa County.

Canal Ranch (Beaver Slough). MBK Engineers, 1999. Work agreement that involved the restoration of approximately 1,000 linear feet of embankment along Beaver Slough, east of Thornton, in San Joaquin County.

Grizzly Slough Habitat Plan and Restoration. 1998 to present. Project involves tree planting and maintenance on property owned by DWR.

Plant Propagation for Tuolumne River Restoration Project. \$68,000 contract with HDR Engineering to propagate plants at the H.A.R.T. nursery. The plants will be used for the Tuolumne River Restoration project.

Tyler Island Levee Protection and Habitat Restoration Plan & Implementation. CalFed awarded contract, 1998-2001 (\$890,000). This contract will involve the application of biotechnical erosion control measures to simultaneously provide for levee and bank protection and enhancing shaded riverine aquatic and wetland habitat conditions. A research / monitoring program is built into the project that will: 1) document the relationship between different erosion control measures, plant community types, geomorphic river reaches, and the erosion/depositional processes; 2) plant survivorship; 3) shaded riverine habitat improvement in terms of structure, aquatic invertebrate relationships, and fisheries use.

Tyler Island Levee Protection and Habitat Restoration Project. A work agreement with KSN Engineers. This project is funded by AB360 through California Department of Water Resources. This project involves habitat restoration of 2,000 linear feet of revetment along the North Fork of the Mokelumne River on Tyler Island.

Tuolumne River Habitat Restoration Plan. 1998-present. As a subcontractor to HDR Engineering, I am developing the design components of the riparian habitat restoration plan for this CalFed funded Project. More than 60 acres of habitat is being designed. Other responsibilities include the contract growing of the plants at the H.A.R.T. nursery.

Decker Island Habitat Restoration Plan. 1998-present. As a subcontractor to DWR, I am involved with the design, growing of the plants, and restoration implementation of this 10-acre site.

Coyote Creek Grassland/Vernal Pool Management and Monitoring Plan. U.S. Environmental Protection Agency. 1997-present. My role in this project is to provide outside, scientific peer review of a management plan written by Simpson Timber Company, and to develop a scientific monitoring program of Simpson's management activities.

Revetment Mitigation Plantings. 1997-present. Sacramento Area Flood Control Agency. This restoration project involves the use of biotechnical bank protection and restoration plantings to improve shaded riverine habitat along nearly 3,000 linear feet of the Lower American River.

Cache Creek Technical Advisory Committee. Yolo County, 1997-present. This 3-person technical advisory committee consists of a geologist, hydrologist, and a riparian biologist (myself). We make recommendations to Yolo County regarding proposed projects and will be involved with creek monitoring activities.

North Stone Lakes National Wildlife Refuge Grassland Management Plan. U.S. Fish & Wildlife Service. 1997-present. The use of prescribed burning and grazing is being explored for the purposes of rejuvenating grasslands for enhanced wildlife habitat and biodiversity values.

Lower American River Floodway Management Plan. 1997-1998. Under contract with the Sacramento Area Flood Control Agency, I am assisting in the development of a floodway management plan for the Lower American River. Tasks include resource surveys, updating the river's GIS system, and recommendations of management options for the floodway.

Blue Oak, Ione Chaparral and Foothill Riparian Studies. 1995-1997. Under contract with The Nature Conservancy, I conducted a resource analysis in the Cosumnes River watershed, emphasizing geobotanical interactions (species diversity, blue oak regeneration), with the goal of developing a conservation plan using GIS technology and field-based investigations.

Survey of 1997 Flood Damages, Sacramento River Area. 1997. Under contract with Montgomery Watson, I helped in assessing 1997 flood damages to levees, and made recommendations regarding erosion control and/or mitigation measures. This was a COE funded project.

Upper Truckee River/Cove East Wetland Restoration Project. Phase I, 1995. Worked with a team of consultants (Global Environmental) on early project planning, resource surveys, design and written report regarding restoration opportunities for the Cove East project site.

Lower Beach Lake Riparian Mitigation Plan/ Implementation. 1995-1998. Under contract with Ducks Unlimited (\$140,000), I was responsible for designing, and now implementing, a 30-acre riparian mitigation project for the California Department of Transportation.

North Stone Lakes Riparian Restoration: Lewis Property. 1996-present. Under contract with Ducks Unlimited, I designed and am now implementing the restoration of more than 50 acres of riparian habitat for the U.S. Fish & Wildlife Service.

Biotechnology Studies. 1996-1997. Under contract for the Sacramento Area Flood Control Agency (SAFCA), I pursued several areas of research relating to river bank protection and restoration: (1) rooting characteristics of several riparian species and their capacity for soil strength improvement; (2) bank stability characteristics of various plant/fabric combinations; (3) feasibility studies of various pre-grown coir blankets for stream bank erosion control.

SAFCA Mitigation Restoration: Implementation. 1996-1997. I served in the capacity of design coordinator and occasional foreman with a SAFCA sponsored community work/study program that is responsible for implementing nearly 100 acres restoration/mitigation projects.

2L Mitigation Plan. 1995-present. Under contract with the Sacramento Area Flood Control Agency, I developed a wetland and riparian habitat mitigation plan for a 60-acre site that is jointly serving borrow needs for local levee improvements.

Middle Cosumnes Resource Inventory and Conservation Plan. 1995. Sponsored by the Nature Conservancy, I researched and helped to develop a resource plan based on botanical, wildlife, hydrology, land use and threats analyses. The study made extensive use of GIS analytical methods in formulating the plan.

Flood Inundation Tolerance Studies. 1995. Under contract for the Sacramento Area Flood Control Agency, I conducted research regarding flooding tolerance of several species of plants. The study involved submerging numerous replicates of typical California chaparral plants in various flooding depths and durations.

Urban Streams Restoration Program, Dry Creek. 1994-1995. Under contract with Sacramento County Department of Public Works and California State Department of Water Resources, I developed a restoration program which involved bank stabilization, using biotechnical measures, tree planting, and development of by-pass channels for a small stream in northern Sacramento County.

American River Parkway Restoration Plan. 1994-1996. Working for the Sacramento Area Flood Control Agency, I developed a restoration plan for riparian and wetland creation, mitigation banking, and conjunctive use of borrow areas for a 160-acre site within the American River Parkway.

Lower American River Biotics Survey. 1993-present. Sponsored by the Sacramento Area Flood Control Agency, I conducted biotic surveys of the Lower American River, including GIS mapping.

Trail of Trees Landscape Plan. 1993. I developed a landscaping plan, using native trees, shrubs, and grasses, for the bufferlands portion of the Sacramento Regional Waste Water Treatment Plant.

Twelve Bridges Golf Course Mitigation Plan. 1993. I conducted a biotic survey and developed a restoration plan and guidelines for compatible development of golf, nature, aesthetics and environmental values.

Buckeye Ranch Resource Plan. 1993. I conducted a biotic survey and developed a restoration plan and guidelines for compatible development of golf, nature, aesthetics and environmental values.

Preliminary Biotic Survey and Analysis of Related Site Development Potential. 1993 Thomas J. Lipton Company. I conducted an analysis of a 3-acre coastal site for potential development and biotic impact. Included biotic surveys of wetland and riparian habitats.

Materials Conveyor Line Reclamation Study. 1992. I conducted biotic surveys and vegetation analysis, and developed restoration plan along a conveyor line at a mine quarry site for the Lonestar Company in Davenport, California.

Granite Bay Golf Course Restoration and Management Plan. 1992. This project involved a biotic survey and that led to a restoration plan and guidelines for compatible development of golf, nature, aesthetics and environmental values.

Resource Inventory of the proposed Dry Creek Parkway. 1992. This survey used GIS computer technology to document riparian resources along Dry Creek, Sacramento County.

Stone Lakes Restoration and Management Plan. 1991-2. I worked closely with Fish and Wildlife Service and Ducks Unlimited to develop a complete restoration and management plan for a new wildlife refuge. The first phase of the riparian restoration component has already been successfully completed. Wetland components planned for completion in 1996.

Cherry Island Golf Course Restoration Plan. 1989. I developed restoration and management plan for natural areas adjacent to and intermingled with the golf course. The restoration plan included grassland, blue oak woodland, vernal pool and riparian communities. Was responsible for implementation of all restoration work.

Teaching

Sacramento State University, Sacramento, CA
Department of Biology

- Restoration Ecology. Emphasizing the ecological, hydrological, and soils / geological basis of restoration, this course covers numerous themes, such as: the relationship between plant successional theory and ecosystem development to the application of human directed restoration; particular habitat and ecosystem types, including wetlands, riparian, oak woodland, grassland restoration; and specialized topics such as biotechnical and erosion control techniques in river restoration.

University of California, Davis.
Office of Continuing Education.

- Introductory Botany/Horticulture. 1996. A basic course in botany, horticulture, with emphasis of propagation.

- Environmental Restoration. 1997. An introductory course on environmental restoration, with an emphasis on the ecological, soils, and hydrological bases of natural systems restoration.

Harvard University

Department of Evolutionary and Organismal Biology, (teaching fellow):

- Introductory Biology, 1988 (spring). Principals of biology, emphasizing molecular mechanisms, genetics, and the structural and functional organization of cells; course stressed cells as evolved systems for the capture and transformation of energy and processing of information. Assisted in laboratory and discussion sections.
- Introductory Biology, 1981-84. A functional and evolutionary approach to plant and animal organ level biology, including population and community dynamics, principals of population genetics and evolutionary theory. Assisted in labs covering plant and animal anatomy, morphology and physiology; led review sections.
- Taxonomy of Seed-bearing Plants, 1983. An introduction to the classification, systematic relationships and evolution of seed-bearing plants; emphasis on plant families of the world. Assisted in laboratory sections.
- Evolutionary Biology, 1978, 1979. A basic course on the principals of evolutionary theory, genetics, classification, ecology and behavior; a phylogenetic synopsis of major groups of organisms; comparative physiology with reference to adaptation to the environment; origins of human social behavior. Led weekly review sections.
- Ecology, 1979, 1980. A basic course in ecology; topics included adaptations of organisms to the physical environment, concept of niche, competition, population dynamics, predator-prey interactions, herbivory, community structure, and ecosystem ecology. Led discussion sections covering course material and organized field trips.
- Man's Impact on the Environment, 1982-83. A multi-disciplinary overview of the interaction between human activities and the natural environment. Topics included risk benefit analysis; ecology, resilience and stability; water quality, acid rain, etc. Led discussion group and developed special section on human ecology.

- Plants and Human Affairs, 1978, 1979, 1984. A course dealing with plants useful to humans, including topics in origins and history, roles in prehistoric cultures and modern societies; the origins of agriculture; the effects of the invention of agriculture on the human uses of the plant kingdom; the potential for development of new economic species; new techniques for crop improvement. Assisted in laboratory and led review sections.

*Harvard University
Extension School:*

- Plants and Humans: an evolutionary and ecological perspective. (Instructor) 1984. A course covering plant use in hunting-gathering societies; origins of agriculture; the evolution and domestication of plants; survey of major economic plants; ecological effects of agriculture in early civilizations; human migrations and dispersal of crops, pests, and weeds; ecological strategies for the future; philosophical considerations of human-nature relationships. Taught entire course.

*University of Montana
Department of Botany:*

- Cultural Botany (instructor), 1975. Taught course covering ethnobotany and the interaction of plants and people.
- General Botany (teaching fellow), 1973, 1974. Morphology of vascular and non-vascular plants. Taught lab sections.
- Local Flora (teaching fellow), 1973. Identification of local flowering plants. Taught lab section.

Miscellaneous Teaching:

- Tutor, Dudley House, Harvard University, 1977-1984. Advised students in academic affairs and served as counselor for personal needs.
- Conservation Education Officer, Bureau of Land Management, Missoula, Montana, 1971. Developed conservation program for high school students; activities included leading hikes and presenting evening slide programs.

- Park Ranger and Naturalist, U.S. National Park Service, Glacier National Park, Montana, 1969. Conducted illustrated slide lectures and led nature walks.
- Visitor Information Specialist (Naturalist), U.S. Forest Service, Superior N. F., Ely, Minnesota, 1970. Gave slide lectures, developed slide-tape programs, and worked at the information desk.

Papers in Preparation

1. Fabric and Vegetation Facilitate Deposition within Riverine Revetment.
2. Role of Geological Substrate in Blue Oak Regeneration Patterns.
3. The Use of GIS in the Study of Root Architecture and Distribution.
4. Tolerance of Plants to Deepwater Flooding.

Journal Publications

1. Rust fungi/Host plant coevolution: do primitive hosts harbor primitive parasites? *Cladistics* 4: 339-366. 1988.
2. A cladistic analysis of conifers: preliminary results. 1987. *Journal of the Arnold Arboretum*. 68: 269-307.
3. Peripheral isolation and the origin of diversity in *Lepechinia* (Lamiaceae). 1985. *Systematic Botany* 10: 134-146.
4. Evolution of dioecism in *Lepechinia* (Lamiaceae). *Systematic Botany* 10: 147-154.
5. A new species of *Lepechinia* (Lamiaceae). 1985. *Botanical Museum Leaflets*. 30: 85-87.
6. Systematics and Evolution in the genus *Lepechinia* (Lamiaceae). Ph.D. dissertation, Harvard University, 1983.

7. The ethnobotany of the Northern Cheyenne Indians of Montana. 1981. *Journal of Ethnopharmacology* 4: 1-55.
8. The ethnobotany of the Flathead Indians of Western Montana. 1979. *Botanical Museum Leaflets*. 27: 261-307.
9. Native plants and early peoples. 1976, 1992, and 1996. Helena, Montana: Montana Historical Society. 75 pp.
10. Plant taxonomy of the Salish and Kootenai Indians of Western Montana. 1974. MA Thesis, University of Montana.

References

- Wilton Fryer, Turlock Irrigation District, (209) 883-8316
- Tim Washburn or Peter Buck, Sacramento Area Flood Control Agency
(916) 874-8732, -4581
- Rudy Rosen, Fritz Reid, Ducks Unlimited (916) 852-2000