

## EDWARD A. MARTINKO

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### PROFILE

State Biologist & Director, Kansas Biological Survey and Kansas Applied Remote Sensing Program, University of Kansas (80% FTE). Administers resources of non-regulatory state agency to provide scientific expertise and support to Kansas agencies and the Kansas Legislature. Develops, implements, and conducts biological and interdisciplinary research programs on ecological and environmental issues important to the State of Kansas.

Professor, Department of Ecology and Evolutionary Biology (20% FTE). Teaches and advises undergraduate and graduate students in the Division of Biological Sciences and the Environmental Studies Program, University of Kansas.

### EDUCATION

Ph.D., University of Kansas, 1976. Entomology (Ecology)	Lawrence, KS
M.A., University of Colorado, 1970. Physiology	Boulder, CO
B.S., College of Emporia, 1967. Chemistry; Biology	Emporia, KS

### PROFESSIONAL EXPERIENCE

#### Current

The University of Kansas Lawrence, KS

#### **Kansas Biological Survey**

*State Biologist, Director, 1983-present*

- Conceives, develops, and oversees mission-oriented research programs
- Administers budget in excess of \$2.5 million annually
- Provides leadership for and supervision of 34 scientists (17 Ph.D.s, 17 professionals), 30 graduate research assistants, and 3 administrative staff
- Scientific leadership and research development focuses on aquatic research, natural and scientific areas, and applications of remote sensing and geographic information systems for agriculture, wildlife, and natural resources management
- Develops scientific and financial partnerships with private corporations to conduct research and commercialize new products

### **Kansas Applied Remote Sensing Program**

*Director, 1983-present*

- Develops and directs interdisciplinary research on the applications of satellite remote sensing and geographic information systems technology

### **Department of Ecology and Evolutionary Biology**

*Professor, 2000-present*

- Teaches ecosystem management, environmental impact assessment, and indicators of ecological change
- Advises undergraduate and graduate students in biology, ecology, and environmental studies

## **OTHER PROFESSIONAL EXPERIENCE**

NASA Great Plains Regional Earth Science Applications Center (RESAC)

Lawrence, KS

1999-2003

*Director and Principal Investigator, 1999-present*

- Provides scientific leadership for the development of remote sensing applications research addressing issues of global climate change, agricultural and grassland productivity, and wildlife management
- Facilitates technology transfer to the public and private sectors
- Guides and stimulates the development of new commercial remote sensing products in response to end user needs

U.S. Environmental Protection Agency

Washington, DC

1991-1994 Intergovernmental Personnel Agreement (IPA) Leave

### **Office of Research and Development**

*Director, Environmental Monitoring and Assessment Program (EMAP)*

- Senior Executive Service (SES-4)
- Administered \$42,000,000 annual budget
- Supervised staff of 18 national directors and coordinators, as well as 65 employees in 9 national laboratories
- Initiated strategic planning and budgeting process for long-term monitoring and assessment
- Coordinated scientific peer reviews and planned new research initiative
- Co-developed new long-term ecological research strategy
- Reorganized and refocused landscape ecology/characterization program

1998 Consultant

*Chairperson, National Search Committee for Director, Environmental Sciences Division, National Exposure Research Laboratory, U.S. EPA, Las Vegas.*

2001 Consultant

*Chairperson, Scientific Peer Review Panel, Research Programs of the Ecological Exposure Research Division, National Exposure Research Laboratory, U.S. EPA, Cincinnati.*

National Aeronautics and Space Administration  
Washington, DC

**NASA Earth Science Enterprise**

*Lead Reviewer*

- 1999 Remote Sensing Applications Research in Agriculture, Forestry, and Range Resources Management (AGNRA) Scientific Review Panel

The University of Kansas

- Professor, 2000-present
- Associate Professor, 1988-2000
- Assistant Professor, 1982-1988

**Environmental Studies Program**

- Director, 1982-1985; Advisory board, 1990-present

**Kansas Applied Remote Sensing Program**

- Associate Director, 1980-1983
- Project Coordinator, 1975-1980

**Department of Entomology and Department of Geography**

- Courtesy Professor, present
- Courtesy Professor, present

**HONORS AND AWARDS**

*Wally and Marie Steeples Faculty Award for Outstanding Service to the People of*

*Kansas, College of Liberal Arts and Sciences, University of Kansas, 1999.*

*Outstanding Service Award, U.S. Environmental Protection Agency, 1991-1994.*

*Outstanding Performance Certificate of Recognition, State of Kansas, 1987.*

Faculty Summer Institute, Argonne National Laboratory, 1979.

Dr. Raymond H. Beamer Memorial Award, University of Kansas, 1974.

Society of Sigma Xi, 1974.

Graduate School Research Award, University of Kansas, 1973.

Ecology and Evolutionary Biology Award, University of Kansas, 1971.

Systematic Biology Research Award, University of Kansas, 1971.

National Science Foundation Predoctoral Traineeship, 1967-1968.

Who's Who Among Students in American Colleges and Universities, 1966.

Phi Mu Alpha Sinfonia (National Honorary Music Society), 1964.

Merit Scholarship, College of Emporia, 1963-1967.

## **RESEARCH INTERESTS**

- Applications of remote sensing and geographic information systems technology
- Community, ecosystem, and landscape ecology  
Natural and anthropogenic changes in communities and ecosystems; spatial and temporal dimensions of change as an intellectual framework for the analysis of applied problems; human impacts on the environment and national biological diversity as they relate to habitat quality, land use change, and natural resource and ecosystem management; insect community ecology.

## **PROFESSIONAL ASSOCIATIONS**

American Association for the Advancement of Science  
American Institute of Biological Sciences  
Society for Conservation Biology  
American Society of Naturalists  
American Society of Photogrammetry and Remote Sensing  
Entomological Society of America  
Ecological Society of America  
Kansas Academy of Science  
Kansas Entomological Society, President, 1979-1980  
National Geographic Society  
Society for Range Management  
Society of Sigma Xi

## **UNIVERSITY AND PUBLIC SERVICE**

### **Courses Taught**

Principles of Biology  
Introduction to Environmental Studies  
Environmental Impact Assessment – Graduate Level  
Air Pollution  
Global Habitability  
Contemporary Environmental Issues  
Biological Indicators of Ecological Change  
Ecosystem Management

### **Departmental Service**

#### Committees:

Ecology & Evolutionary Biology Promotion and Tenure Committee; Ecology & Evolutionary Biology Graduate Committee; Systematics & Ecology Graduate Committee; Kansas Biological Survey Promotion and Tenure Committee; Entomology Curriculum; Entomology Graduate Committee; Field Facilities Committee; Systematics & Ecology Professional Master's in Applied Ecology Committee; Internship in Environmental Studies Committee.

**Search Committees:**

Environmental Studies Program Director; Ecosystem Ecologist; Remote Sensing Scientist; Geographic Information Systems Scientist; Aquatic Ecologist; Herpetologist; Fungal Biologist; Atmospheric Remote Sensing Physicist.

**Faculty Mentor:**

Ecology and Evolutionary Biology

**Advising:**

Undergraduate student advisor for Environmental Studies majors. Advising activities include course selection, career development, and job placement counseling. Established Environmental Studies Newsletter and Career Guide.

**Students:**

Chair/Co-Chair: 2 Ph.D. and 10 M.A. students; Committee member for 22 Ph.D. and 44 M.A. students.

**University Service**

KU Center for Research, Inc., Board of Trustees, 2000-present.

KU Center for Research, Inc., Executive Committee, 2002-present.

Research Directors' Council, 1983-present.

Research Center Director's Review Committee, 1997.

Scientific Misconduct Review Committee, 1996.

Government-University-Industry Research Roundtable, 1996.

University Committee on Remote Sensing/GIS, 1988-1989.

Center for Research, Inc., Board of Trustees, 1984-1988.

Center for Research, Inc., Executive Committee, 1984-1986.

University Judiciary Committee, 1984-1987.

Center for Research, Inc., Coordinating Committee, 1979-1984.

**Public Service**

Kansas Geographic Information System Policy Board, 1989-present.

Kansas Nature Conservancy Stewardship Committee, 1996-present.

Kansas Natural and Scientific Areas Advisory Committee  
Chairperson, 1985-present.

Kansas Council of Water Directors, 1990-present.

Kansas Water Office Stream Team, 1998-2001.

Kansas Nature Conservancy Board of Trustees, 1989-1991.

Kansas Water Research Steering Committee, 1987-1990.

Kansas Earth Day Steering Committee, 1989-1990.

Kansas Non-game Wildlife Advisory Council, 1983-1991;  
Chairperson, 1986-1988.

Kansas Plant Pest Survey and Detection Advisory Committee, 1983-1991.

Kansas Commission on Applied Remote Sensing, 1984-1987.

Conservation Issues Forum Steering Committee, 1985-1987.

Kansas Water Quality Task Force, 1983-1984.

Kansas Interagency Task Force on Applied Remote Sensing,  
Chairperson, 1982-1983.

## TECHNOLOGY TRANSFER INITIATIVES

One of my ongoing efforts has been the reorganization and development of research programs of the Kansas Biological Survey and the Kansas Applied Remote Sensing Program to address significant biological and ecological issues in Kansas. As part of this endeavor it became evident that the transfer of technology and the dissemination of the products of our research activities are of paramount importance. Some of the major accomplishments of these initiatives include:

- The first statewide land use/land cover digital database for the State of Kansas.
- A satellite mosaic of Kansas portraying natural vegetation and physiographic regions of the state.
- Development of a new private company, TerraMetrics, Inc., to provide services in the areas of aquatic ecology, including experimental ecosystem-level studies, traditional field work, and taxonomy; remote sensing and geographic information systems; and terrestrial ecology of Great Plains ecosystems, including field surveys, taxonomy, and wetland mitigation.
- The *GreenReport*<sup>™</sup>, a new commercial satellite remote sensing product that provides near real-time crop and vegetation condition; prepared weekly and distributed through a network of more than 300,000 subscribers.
- The establishment of the NASA Great Plains Regional Earth Science Applications Center (Great Plains RESAC), to conduct research and stimulate the development of commercial remote sensing products. The Great Plains RESAC, one of seven regional NASA applications centers of excellence, resulted from a national competition.
- The formation of a new company, Agrimetrix, a joint venture of The Farm Journal (Philadelphia, PA), Strategic Weather Services (Wayne, PA), and TerraMetrics, Inc. (Lawrence, KS). Agrimetrix represents the convergence of satellite-based crop/soil sensing technology and reliable commercially proven long-range weather forecasts, creating an unprecedented understanding of the future impact of worldwide weather on all facets of agriculture and its supporting businesses.
- Currently in the patent and planning process, the development of another joint venture company, Aquametrix, to provide comprehensive strategic planning and remediation services for water resources management. Aquametrix represents the convergence of proven long-range weather forecasts, aquatic and remote sensing research data, and remediation technologies.
- The establishment in KBS of the Central Plains Center for BioAssessment, a U.S. EPA funded center to provide scientific expertise, collaboration on scientific studies, facilitate the exchange of information, and bring together scientists, government officials, and the public on issues of water quality.

## GRANTS AND CONTRACTS

### Research Grants and Contracts

*Total Awards: 67 awards totaling \$13,167,770; PI=\$8,093,411; CO-PI=\$5,071,359.*

U.S. Environmental Protection Agency. Watershed Classification System for Tiered Diagnosis of Biological Impairments: A Scalable, Central Plains Focus with National Applicability. E.A. Martinko, P.I., J. Thorp, M. Jakubauskas, D. Huggins, J. Whistler, F. deNoyelles, J. Dobson, P. Liechti, and K. Price, Co-P.I.s. 03/03/03 – 03/02/06. Total Support: \$1,149,266.

Kansas Department of Administration. Kansas Satellite Images Database. D.L. Peterson, T.J. Crooks, K.P. Price, S.L. Egbert, E.A. Martinko, and J.L. Whistler. 07/01/03 – 06/30/04. Total Support: \$58,489.

National Science Foundation EPSCoR, State of Kansas. Planning for the Establishment of a Center for Groundwater Based Economics. E.A. Martinko, P.I. 02/01/03 – 03/31/04. Total Support: \$3,000.

National Aeronautics and Space Administration. Linking Remote Sensing, Land Use, and Carbon Sequestration: Insights from Leaf to Landscape Scales in America's Heartland. K.P. Price, P.I., E.A. Martinko, S.L. Egbert, M.E. Jakubauskas, T. Crooks, J.L. Whistler, B. Foster, C. Martin, K. Kindscher, D. Kettle, and H. Tian, Co-P.I.s. 06/01/01 – 05/31/04. Total Support: \$997,800.

National Aeronautics and Space Administration. Research in the Incubation of Commercial Remote Sensing Products. K.P. Price, P.I., E.A. Martinko, S.L. Egbert, and F. deNoyelles, Co-P.I.s. 03/01/02 – 02/28/03. Total Support: \$150,000.

National Science Foundation. Great Plains Network Workshop: Network Resources for Enabling and Enhancing Research in the Earth Systems Science Community. E.A. Martinko, P.I., T.J. Crooks and R.R. Summerhill, Co-P.I.s. 04/01/02 – 03/31/04. Total Support: \$24,961.

Kansas Department of Wildlife and Parks. Supporting Kansas Department of Wildlife and Parks Natural Resource Management Objectives Using Geographic Information Systems (GIS) and Remote Sensing Technologies. K.P. Price, P.I., E.A. Martinko, Co-P.I. 07/15/01 – 07/14/02. Total Support: \$50,000.

National Science Foundation. Long-term Studies of Population and Community Ecology in an Experimentally Fragmented Landscape. E.A. Martinko, P.I., R.D. Holt, B.L. Foster, K.P. Price, P.M. Rich, and N.A. Slade, Co-P.I.s. 07/01/00 – 06/31/04. Total Support: \$308,662.

State of Kansas Water Office, GIS Policy Board. Landsat 7 Satellite Imagery Database. J.L. Whistler, P.I., S.L. Egbert, K.P. Price, E.A. Martinko, A.M. Stewart, and D. Peterson, Co-P.I.s. 07/01/02 – 06/30/03. Total Support: \$59,850.

National Fish and Wildlife Foundation. Wetland and Wet Meadow Restoration on the Robinson Tract. E.A. Martinko, P.I., J. deNoyelles and S. Campbell, Co-P.I.s. 06/28/00 – 06/28/30. Total Support: \$10,000.

National Aeronautics and Space Administration. Research in the Incubation of Commercial Remote Sensing Products. K. Price, P.I., E.A. Martinko, F. deNoyelles and S. Egbert, Co-P.I.s 2000-2001. Total Support: \$100,000.

National Aeronautics and Space Administration. The Great Plains Regional Earth Science Applications Center (GP-RESAC): A Consortium to Transfer Remote Sensing Products and Technology to Support the Great Plains Agroecosystem. E.A. Martinko, P.I., K.P. Price, S.L. Egbert, J.L. Whistler, J.M. Stiles, and M.E. Jakubauskas, Co-P.I.s. 1999-2003. Total Support: \$2,050,000 (\$1,550,000 NASA; \$500,00 Private Sector).

National Aeronautics and Space Administration. Remote Sensing-Based Geostatistical Modeling for Coniferous Forest Inventory and Characterization. M. Jakubauskas, P.I., K.P. Price and E.A. Martinko, Co-P.I.s. 04/01/99 – 03/31/02. Total Support: \$560,000.

National Science Foundation. FSML: Planning Activities for the Further Development of the Kansas Ecological Reserves. E.A. Martinko, P.I. 1999-2000. Total Support: \$14,500.

State of Kansas Water Office, GIS Policy Board. Kansas Land Cover GIS Database Update. K.P. Price, P.I., E.A. Martinko and S.L. Egbert, Co-P.I.s. 1999-2000. Total Support: \$64,210.

Earth Remote Sensing Data Analysis Center (ERSDAC) of Japan. An Evaluation of ASTER Data for Mapping Irrigated Agricultural Crops in a Great Plains (USA) Agro-Ecosystem. S.L. Egbert, P.I., K.P. Price and E.A. Martinko, Co-P.I.s. 1999-2000. Total Support: \$2,375.

El Salvador ProCafe. Assessment of Multi-Date Landsat TM Imagery for Characterization of Vegetation Biodiversity in El Salvador: A Prototype Study. K.P. Price, P.I., E.A. Martinko, Co-P.I. 1999-2000. Total Support: \$17,001.

U.S. Environmental Protection Agency. Landscape Analysis and Characterization to Support Regional Environmental Assessment. E.A. Martinko, P.I., J.L. Whistler and F. deNoyelles, Co-P.I.s. 1997-2000. Total Support: \$174,595.

National Aeronautics and Space Administration. Research in the Incubation of Commercial Remote Sensing Products. K. Price, P.I., E.A. Martinko, F. deNoyelles and S. Egbert, Co-P.I.s. 1998-2000. Total Support: \$300,000.

State of Kansas GIS Policy Board. Kansas Land Cover GIS Database: Vegetation Alliances. K.P. Price, P.I., E.A. Martinko and S.L. Egbert, Co-P.I.s. 1998-1999. Total Support: \$57,854.

Kansas Department of Wildlife and Parks. Modeling Wildlife Population Dynamics Using Plant Phenology Metrics Derived from Multi-Temporal AVHRR Satellite Imagery. K.P. Price, P.I., E.A. Martinko, Co-P.I. 1998-2000. Total Support: \$40,000.

U.S. Department of Interior. Land Cover Classification for the Kansas Gap Analysis Project. E.A. Martinko, P.I., K. Price and C.L. Lauver, Co-P.I.s. 1996-1999. Total Support: \$93,020.

Resource21 and ProExporter Network. Development and Testing of Corn Yield Models for Iowa: The 1998 Growing Season Using Multi-Temporal Remotely Sensed Data. K.P. Price, P.I., E.A. Martinko, Co-P.I. 1998-1999. Total Support: \$19,921.

University of Kansas Research Development Fund. Development of a Water Balance Model for Evaluating Crop Status and Productivity. J.J. Feddema, P.I., D.A. Bennett, K.P. Price, and E.A. Martinko, Co-P.I.s. 01/10/99 – 06/10/00. Total Support: \$40,578.

Kansas Water Resources Research Institute. The Kansas Water Institute: An Electronic Community of Knowledge. R.W. Buddemeier, P.I., E.A. Martinko and J.K. Koelliker, Co-P.I.s. 03/01/99 – 02/28/00. Total Support: \$25,000.

Kansas Department of Wildlife and Parks. Gap Analysis in Kansas. E.A. Martinko, P.I., K. Price, Co-P.I. 1996-1999. Total Support: \$135,000.

National Aeronautics and Space Administration. An Interdisciplinary Center of Excellence in Environmental Remote Sensing at the University of Kansas. K. Price, P.I., S.L. Egbert, E.A. Martinko, J.L. Whistler, F. deNoyelles, and R.W. McColl, Co-P.I.s 1997-1998. Total Support: \$363,200.

National Aeronautics and Space Administration. Development of a Land Use Mapping and Monitoring Protocol for the Great Plains Region: A Multitemporal Remote Sensing Application. K. Price, P.I., E.A. Martinko, F. deNoyelles and S. Egbert, Co-P.I.s. 1997-1998. Total Support: \$140,431.

State of Kansas GIS Policy Board. Kansas Land Cover GIS Database. Vegetation Alliances. K. Price, P.I., E.A. Martinko, Co-P.I. 1997-1998. Total Support: \$55,959.

U.S. Environmental Protection Agency. Development of a Land Cover Map at the Vegetation Alliance Level for the State of Kansas. K. Price, P.I., E.A. Martinko, Co-P.I. 1996-1998. Total Support: \$90,000.

- State of Kansas Department of Agriculture. Mapping Agricultural Land Cover: A Study Using a Multidate Landsat TM Image Classification Approach. E.A. Martinko, P.I., K. Price, S. Egbert, and J. Whistler, Co-P.I.s. 1996-1997. Total Support: \$251,764.
- National Aeronautics and Space Administration. Development of a Land Use Mapping and Monitoring Protocol for the Great Plains Region: A Multitemporal Remote Sensing Application. K. Price, P.I., E.A. Martinko and J. deNoyelles, Co-P.I.s. 1996-1997. Total Support: \$146,956.
- State of Kansas Department of Agriculture. Mapping Agricultural Land Cover—A Pilot Study Using a Multidate Landsat Image Classification Approach. E.A. Martinko, P.I., K. Price, Co-P.I. 1996. Total Support: \$94,814.
- State of Kansas Department of Wildlife and Parks. An Inventory of Lesser Prairie Chicken Habitat in Southwestern Kansas—A Satellite Remote Sensing and GIS Approach to Rangeland Classification. K. Price, P.I., E.A. Martinko, Co-P.I. 1995-1996. Total Support: \$9,260.
- U.S. Environmental Protection Agency. Technical Assistance for the Environmental Monitoring and Assessment Program. E.A. Martinko, P.I. 1991-1994. Total Support: \$221,807.
- U.S. Environmental Protection Agency. A Regionalized Assessment of the Influence of Rural Nonpoint Source Pollution on the Ecological Integrity of Stream Ecosystems and an Evaluation of Associated Pollution Management. E.A. Martinko, P.I., D. Huggins and M. Johnson, Co-P.I.s. 1991-1992. Total Support: \$1,250,000.
- U.S. Environmental Protection Agency. Evaluation of Environmental Impact (EIS) Mitigation Measures. E.A. Martinko, P.I. 1991-1994. Total Support: \$38,579.
- State of Kansas Water Office. The Development of a Land Use/Land Cover Database for Kansas. E.A. Martinko, P.I., J. Whistler, Co-P.I. 1990-1991. Total Support: \$83,650.
- U.S. Environmental Protection Agency. Research on Remote Sensing and GIS-Based Assessment of Agricultural Nonpoint-Source Pollution and Development of an Environmental Quality Index. E.A. Martinko, P.I., J.W. Merchant, Co-P.I. 1988-1990. Total Support: \$132,988.
- Springborn Life Sciences, Inc. Aquatic Mesocosm Study in the Environmental Hazard Assessment of a Pesticide. F. deNoyelles, P.I., E.A. Martinko, Co-P.I. 1987-1990. Total Support: \$852,475.
- U.S. Environmental Protection Agency. A Wetland Inventory, Assessment and Restoration Pilot Study. E.A. Martinko, P.I. 1989-1990. Total Support: \$7,500.
- State of Kansas Department of Wildlife and Parks. Development of a Canoe Trail and Recreation in S.E. Kansas. E.A. Martinko, P.I. 1989-1990. Total Support: \$30,491.

State of Kansas. Patterns in Food Chains and Food Webs in a Midwestern Stream. E.A. Martinko, P.I. 1988-1989. Total Support: \$2,194.

U.S. Department of Agriculture/Kansas State University. Enhancement and Utilization of Remote Sensing Related Technology in Agriculture. E.A. Martinko, P.I., J.W. Merchant, Co-P.I. 1985-1990. Total Support: \$539,196.

State of Kansas Department of Wildlife and Parks. Habitat Analysis of Lesser Prairie Chicken in the Sandsage Ecosystem of Southwest Kansas: An Indicator Species. E.A. Martinko, P.I. 1988. Total Support: \$6,500.

State of Kansas/The Nature Conservancy. Kansas Natural Heritage Program. E.A. Martinko, P.I. 1986-1988. Total Support: \$222,340.

State of Kansas Department of Commerce. An Environmental Assessment of the Superconducting Super Collider. E.A. Martinko, P.I. 1987-1988. Total Support: \$28,980.

National Aeronautics and Space Administration. Research on Enhancing the Utilization Landsat Thematic Mapper Data and Geographic Information Systems in Global Habitability Studies. E.A. Martinko, P.I., J.W. Merchant, Co-P.I. 1984-1987. Total Support: \$293,833.

U.S. Environmental Protection Agency/Kansas Department of Health and Environment. Development and Implementation of a Groundwater Quality Protection Program for Kansas. E.A. Martinko, P.I. 1985-1986. Total Support: \$149,994.

State of Kansas and Kansas Fish and Game Commission. An Environmental Assessment of Cheyenne Bottoms Waterfowl Management Area. E.A. Martinko, P.I. 1985-1986. Total Support: \$148,000.

Stinson, Mag, and Fizzell. Biological Assessment of Selected Water Quality Parameters of Prairie Creek and Associated Contact Springs. D.G. Huggins, P.I., E.A. Martinko, Co-P.I. 1985-1986. Total Support: \$30,000.

Kansas Department of Health and Environment. Remote Sensing of Physical and Hydrolic Properties. E.A. Martinko, P.I. 1985-1986. Total Support: \$7,500.

Kansas Fish and Game Commission. Remote Sensing Research on Ruffed Grouse Habitat. E.A. Martinko, P.I. 1984-1986. Total Support: \$14,000.

American Farmland Trust. Survey of Automated Geographic Information Systems Techniques for Farmland Preservation and Conservation Planning in Counties. E.A. Martinko, P.I. 1984-1985. Total Support: \$49,990.

National Aeronautics and Space Administration. Applications of Remote Sensing to Resource Management and Environmental Quality Programs in Kansas. B.G. Barr, P.I., E.A. Martinko, Co-P.I. 1977-1983. Total Support: \$840,000.

U.S.D.A. Soil Conservation Service. Development of a Soil Survey Data Base. E.A. Martinko, P.I. 1982. Total Support: \$15,000.

National Aeronautics and Space Administration. An Inventory of Natural Resources Information Systems. E.A. Martinko, P.I. 1982. Total Support: \$50,000.

National Aeronautics and Space Administration. Crop Phenology and Landsat Inventory in the High Plains. E.A. Martinko, P.I. 1981. Total Support: \$30,050.

Missouri River Basin Commission. A Study of Land Use along the Missouri River. E.A. Martinko, P.I. 1981. Total Support: \$50,000.

Farmland Industries, Inc. Analysis of Vertical Photography for Selected Crop Studies. E.A. Martinko, P.I. 1981. Total Support: \$4,971.

U.S. Fish and Wildlife Service. A Study of Land Use for the Proposed Pine Ford Lake. E.A. Martinko, P.I. 1980. Total Support: \$4,931.

U.S.D.A. Soil Conservation Service. A Study of Land Use in Pony and Roy's Creek Watersheds. E.A. Martinko, P.I. 1979. Total Support: \$6,487.

National Aeronautics and Space Administration. Remote Sensing Short Courses in Kansas. E.A. Martinko, P.I. 1979-1980. Total Support: \$42,148.

U.S. Environmental Protection Agency. Pesticide Use Reduction through Integrated Control of Musk Thistle. E.A. Martinko, P.I., J.L. Hamrick, Co-P.I. 1977-1981. Total Support: \$211,700.

North Central Regional Planning Commission. A Study of Land Use Changes in North Central Kansas. E.A. Martinko, P.I. 1976. Total Support: \$3,000.

Douglas County Commission. Development of Douglas County Land Use Map. E.A. Martinko P.I. 1976. Total Support: \$6,000.

### **Program and Facilities Development**

*Total Awards: \$6,888,351*

National Aeronautics and Space Administration. An Interdisciplinary Center of Excellence in Environmental Remote Sensing at the University of Kansas. K. Price, P.I., S.L. Egbert, E.A. Martinko, J.L. Whistler, F. deNoyelles, and R.W. McColl, Co-P.I.s. 1997-1998. (This grant also listed in Grants and Contracts Section). Total Support: \$363,200.

Satellite downlink, computer and related research equipment (included in various grants listed in Grants and Contracts Section). 1980-2000. \$707,554.

#### State of Kansas

*Through my coordination and administrative efforts, I secure baseline funding from the Kansas Legislature as an addition to the University of Kansas budget for the following programs:*

Kansas Applied Remote Sensing Program. 1984-2004. \$2,720,751.

Kansas Natural Heritage Program. 1988-2004. \$4,823,846.

#### **PAPERS AND POSTERS PRESENTED AT PROFESSIONAL MEETINGS**

*Total: 90 papers presented*

Moskal, L.M., M.D. Dunbar, M.E. Jakubauskas, J.E. Dobson, K.P. Price, and E.A. Martinko. 2002. Geostatistical forest inventory characterization in Yellowstone National Park based on remotely sensed imagery. *EnviroMount Conference on Geographic Information Systems and Remote Sensing in Mountain Environment Research*. Zakopane, Poland. September 2002.

Moskal, L.M., M.E. Jakubauskas, H. McCulley, E.A. Martinko, and K.P. Price. 2002. Application of geostatistics and remotely sensed imagery for forest inventory mapping in Greater Yellowstone Area. *MidAmerica GIS Consortium*. Kansas City, MO. April 2002.

Dunbar, M.D., L.M. Moskal, M.E. Ramspott, M.E. Houts, K.P. Price, M.E. Jakubauskas, and E.A. Martinko. 2002. High-resolution digital multispectral data acquisition system for forestry and rangeland applications. *Kansas Academy of Science Annual Meeting*, Fort Hays, KS. April 2002.

Lauver, C.L., D.L. Peterson, A.M. Stewart, S.L. Egbert, E.A. Martinko, and K.P. Price. 2002. The challenge of mapping grasslands: assessing the accuracy of the Kansas Gap Analysis Land Cover Map. *Society for Range Management Annual Meeting*. Kansas City, MO. February 2002.

Dunbar, M.D., L.M. Moskal, M.E. Jakubauskas, J.E. Dobson, K.P. Price, and E.A. Martinko. 2002. Forest inventory visualization in Yellowstone National Park based on remotely sensed imagery. *EnviroMount Conference on Geographic Information Systems and Remote Sensing in Mountain Environment Research*. Zakopane, Poland. September 2002.

Jakubauskas, M.E., L.M. Moskal, H. McCully, E.A. Martinko, and K.P. Price. 2001. GeoFusion: Geostatistical fusion of forest inventory and remotely sensed data. *Proceedings, 3<sup>rd</sup> International Forestry and Agriculture Remote Sensing Conference and Exhibition*. Denver, CO. November 2001.

- Jakubauskas, M.E., E.A. Martinko, K.P. Price, and L.M. Moskal. 2001. Regional forest inventory by geostatistical integration of satellite imagery and field sampled data. *Proceedings, ASPRS Annual Conference*. St. Louis, MO. April 2001.
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- Stewart, A.M., K.P. Price, C.L. Lauver, and E.A. Martinko. 1999. Comparison of an expert system classification with a supervised classification for differentiating grassland types in northeastern Kansas. *ASPRS Annual Meetings*. Portland, OR. May 1999.
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- Egbert, S.L., J.L. Whistler, C.F. Blodgett, K.P. Price, and E.A. Martinko. 1999. Mapping Kansas from space: Twenty-five years of mapping Kansas land cover with satellite imagery. *Kansas Academy of Science Annual Meetings*. Manhattan, KS. April 1999.
- Lee, R., K.P. Price, D. Kastens, and E.A. Martinko. 1999. Modeling crop condition and production using multi-date advanced very high resolution radiometer (AVHRR) and vegetation phenology metrics. *Kansas Academy of Science Annual Meetings*. Manhattan, KS. April 1999.
- Ellis, E., C. Blodgett, S.L. Egbert, C.L. Lauver, E.A. Martinko, K.P. Price, A. Stewart, S. Kennedy, J. Riffer, and S. Park. 1999. A two-stage, multi-temporal approach to mapping Kansas' natural vegetation with satellite imagery. *Kansas Academy of Science Annual Meetings*. Manhattan, KS. April 1999.

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- Kennedy, S.S., K.P. Price, S.L. Egbert, and E.A. Martinko. 1998. Mapping crop types and irrigation status in Haskell County, Kansas, using multi-seasonal Landsat Thematic Mapper data. Abstracts, Annual Meetings, *Great Plains/Rocky Mountain Regional Division of the Association of American Geographers*, Lawrence, KS. September 1998.
- Peterson, D.L., K.P. Price, and E.A. Martinko. 1998. The effects of grazing on spectral characteristics of warm and cool season grasslands in Douglas County, KS. *Great Plains/Rocky Mountain Regional Division Meetings, Association of American Geographers Annual Meeting*, Lawrence, KS. September 1998.
- Kastens, D.L., K.P. Price, E.A. Martinko, and T.L. Kastens. 1998. Assessing wheat conditions in Kansas using biweekly AVHRR datasets and crop phenological indices. *Great Plains/Rocky Mountain Regional Division Annual Meeting, Association of American Geographers*, Lawrence, KS. September 1998.
- Lauer, C.L., C.F. Blodgett, S.L. Egbert, E.A. Martinko, K.P. Price, E. Ellis, J. Riffer, and S. Kennedy. 1998. Mapping the natural vegetation of Kansas. *Great Plains/Rocky Mountain Regional Division Annual Meeting, Association of American Geographers*, Lawrence, KS. September 1998.
- Blodgett, C.F., C.L. Lauer, S.L. Egbert, E.A. Martinko, K.P. Price, E. Ellis, and J. Riffer. 1998. A supervised approach to mapping the natural vegetation of Kansas. *8<sup>th</sup> Annual National Gap Analysis Program Meeting*. Santa Barbara, CA. July 1998.
- Price, K.P., E.A. Martinko, and A.J. Tuyahov. 1998. A model for developing and transferring remote sensing technologies and products to the commercial sector. *1<sup>st</sup> International Conference on Geospatial Information in Agriculture and Forestry*, Disney's Coronado Springs Resort, June 1998. (Poster Paper).

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- Riffer, J., C.F. Blodgett, S.L. Egbert, E.A. Martinko, K.P. Price, and E. Ellis. 1998. A multi-seasonal approach to mapping Kansas' natural vegetation with satellite imagery. Abstract. *Kansas Academy of Science Annual Meetings*, Wichita, KS. April 1998.
- Price, K.P., E.A. Martinko, and A.J. Tuyahov. 1998. Applied remote sensing and its role in the transfer of technology and products to the commercial sector. *93<sup>rd</sup> Annual Meeting Association of American Geographers (AAG)*, Boston, MA. March 1998. (Poster Paper).
- Blodgett, C.F., S.L. Egbert, E.A. Martinko, K.P. Price, C.L. Lauver, A.M. Stewart, M. Ortega-Huerta, and R. Boyce. 1997. A multi-seasonal approach to mapping Kansas' natural vegetation. *7<sup>th</sup> Annual Meeting, National Gap Analysis Program*. August 1997.
- Boyce, R.P., K.P. Price, E.A. Martinko, and R. Rodgers. 1997. Multitemporal analysis of Landsat remotely sensed data to identify Lesser Prairie Chicken habitat in southwest Kansas. *92<sup>nd</sup> Annual Meeting of the Association of American Geographers*. April 1997. (Poster Paper).
- Price, K.P., E.A. Martinko, and A.J. Tuyahov. 1997. A model for developing and transferring remote sensing technologies and products to the commercial sector. *92<sup>nd</sup> Annual Meeting, Association of American Geographers (AAG)*. April 1997.
- Boyce, R.P., K.P. Price, E.A. Martinko, and R. Rodgers. 1997. Multitemporal analysis of Landsat remotely sensed data to identify Lesser Prairie Chicken habitat in southwest Kansas. *Annual Meeting of the American Society for Photogrammetry and Remote Sensing*. April 1997. (Poster Paper).
- Price, K.P., E.A. Martinko, and A.J. Tuyahov. 1997. A model for developing and transferring remote sensing technologies and products to the commercial sector. *Kansas Academy of Sciences*. April 1997.
- Price, K.P., E.A. Martinko, and D.C. Rundquist. 1996. Relationships between multitemporal spectroradiometer measurements and biophysical characteristics of prairie treatments. *Annual Meeting of the American Society for Photogrammetry and Remote Sensing*. April 1996.
- Price, K.P., E.A. Martinko, and D.C. Rundquist. 1996. Relationships between multitemporal spectroradiometer measurements and biophysical characteristics of prairie treatments. *Annual Meeting of the American Association of Geographers*. April 1996.
- Price, K.P., E.A. Martinko, and D.C. Rundquist. 1996. Relationships between multitemporal spectroradiometer measurements and biophysical characteristics of a prairie under

- different land management practices. *Pecora 13: Meeting of the William T. Pecora Memorial Remote Sensing Symposium*. August 1996.
- Whistler, J.L., S.L. Egbert, M.E. Jakubauskas, E.A. Martinko, D.W. Baumgartner, and R.Y. Lee. 1995. The Kansas State Land Cover Mapping Project: Regional scale land use/land cover mapping using Landsat Thematic Mapper data. *Proceedings, American Society of Photogrammetry and Remote Sensing Annual Convention and Exposition*.
- Price, K.P., V.C. Varner, E.A. Martinko, D.C. Rundquist, and J.S. Peake. 1993. Influences of land management and weather on plant biophysical and hyperspectral response patterns of tallgrass prairies in northeastern Kansas. *Pecora 12: Meeting of the William T. Pecora Memorial Remote Sensing Symposium*. August 1993.
- Price, K.P., V.C. Varner, E.A. Martinko, D.C. Rundquist, and J.S. Peake. 1993. Analysis of multitemporal narrow-band spectroradiometer measurements from six prairie treatments in Kansas. *American Society of Photogrammetry and Remote Sensing 1993 Annual Convention and Exposition*. February 1993.
- Varner, V.C., K.P. Price, E.A. Martinko, and D.C. Rundquist. 1992. Analysis of multitemporal measurements of prairie bioproductivity indicators and their influence on hyperspectral reflectance patterns. *Great Plains/Rocky Mountain Division Annual Meeting, Association of American Geographers*. October 1992.
- Price, K.P., V.C. Varner, E.A. Martinko, and D.C. Rundquist. 1992. Analysis of 252 band spectroradiometer data to spectrally characterize selected prairie types in Kansas. *Kansas and Space Symposium, 124<sup>th</sup> Annual Meeting of the Kansas Academy of Science*. March 1992.
- Price, K.P., V.C. Varner, E.A. Martinko, and D.C. Rundquist. 1992. Analysis of multitemporal narrow-band spectroradiometer measurements from six prairie treatments in Kansas. *American Society of Photogrammetry and Remote Sensing 1992 Annual Convention and Exposition*. March 1992.
- Martinko, E.A., L.T. McKinney, and L.M. Caron. 1987. The evaluation and modeling of pronghorn antelope in Kansas. *Pecora 11 Memorial Symposium*. May 1987. (Poster Paper).
- Martinko, E.A. and E.R. Kipp. 1982. Landsat image date selection for an irrigated lands inventory over a large geographical area using general crop phenology and irrigation management data. *48<sup>th</sup> Annual Meeting of American Society of Photogrammetry*. March 1982.
- Martinko, E.A. and L.M. Caron. 1981. A spatial analysis of antelope habitat in Kansas. *43<sup>rd</sup> Midwest Fish and Wildlife Conference*. December 1981.

- Martinko, E.A. 1981. Monitoring agricultural growth for pronghorn antelope habitat. *Pecora 7 Memorial Symposium*. October 1981.
- Martinko, E.A. 1980. Remote sensing and integrated pest management. *Soil Conservation Society of America Conference "Remote Sensing for Resource Management."* October 1980 (Poster Paper).
- Martinko, E.A. 1975. Seasonal changes in the trophic structure of a grassland insect community. *Entomological Society of America Annual Meeting*. December 1975.
- Martinko, E.A. 1974. Insect species diversity in three adjacent successional areas. *Entomological Society of America Annual Meeting*. December 1974.
- Martinko, E.A. 1972. Cockroach aggregation pheromones: Analysis of aggregation tendency and species specificity (Orthoptera: Blattidae). *48<sup>th</sup> Annual Meeting of the Central States (Kansas) Entomological Society*. May 1972.

## **INTERNATIONAL ACTIVITIES**

- The Utilization of Remote Sensing in the Development of the Water Resources of Chihuahua, Mexico. Consultant to the government of Chihuahua, Mexico, July 1980.
- Environmental Monitoring and Assessment: A Partnership of Research, Monitoring, and Assessment. Session Chairman and Invited Presentation, ECOINFORMA-92, 2<sup>nd</sup> International Congress and Exhibition on Environmental Information and Communication. Bayreuth, Germany, September 1992.
- Perspectives from an Experimental Study of Habitat Fragmentation in an Agroecosystem. Participant and Co-author of paper read by G.R. Robinson, 13<sup>th</sup> Long Ashton International Symposium, Bristol, United Kingdom, September 1993.
- Defining Ecosystem Health. Invited Participant and Rapporteur, NATO Advanced Research Workshop "Evaluating and Monitoring the Health of Large-Scale Ecosystems," Montebello, Quebec, Canada, October 1993.
- Comprehensive National Environmental Monitoring and Assessment in the United States. Chairman, Expert Consultant, and Invited Presentation, United Nations Environmental Program Expert Consultation on "Chemical Issues Critical at the Global Level," Geneva, Switzerland, December 1993.
- Toxic Chemical Priority Selection in the United States. Invited Presentation and Expert Consultant, United Nations Environment Program Expert Consultation on "Chemical Issues Critical at the Global Level," Geneva, Switzerland, January 1995.

The Applications of Remote Sensing and Geographic Information Systems Technology for the Management of Natural Resources in a Developing Country. Invited Presentation, Government of Zambia, Africa, September 1995.

International Programmatic Research Initiatives, Kansas Applied Remote Sensing (KARS) Program. Over the last four years, I have supported and participated in the development of a wide variety of international remote sensing initiatives with the following results:

- National Science Foundation funding for research in China and Mexico.
- ProCafe funding for biodiversity research in El Salvador.
- A Memorandum of Understanding with the Minister of Natural Resources and the Rector of the University of El Salvador.
- A Memorandum of Understanding with the University of Beijing, China.
- Two Memorandums of Understanding with the Inner Mongolia University, China.
- The only non-Zambian Cooperating Partner on the Committee for the Establishment of a National Remote Sensing Centre (NRSC) in Zambia.

## **INVITED PRESENTATIONS**

*Invited Presentations: 45*

Martinko, E.A. 2003. Ecosystem and Landscape Characterization of Biophysical Parameters with Satellite Remote Sensing Systems. 12th Annual Kling L. Anderson Memorial Lecture, Kansas State University, Manhattan, KS. May 2003.

Martinko, E.A., J.L. Whistler, F. deNoyelles, J. Griffith, and D. Peterson. 2001. EPA Region VII R-EMAP Project: Landscape Analysis and Characterization to Support Regional Environmental Assessment (LACRA). Central Plains BioAssessment Workshop on Stream Reference Conditions and Landscape-Scale Bioassessment, Lawrence, KS. April 2001.

Martinko, E.A. 2001. Regional Earth Science Applications Center (RESAC) Research and Outreach Conference: NASA Investigator's Workshop. St. Louis, MO. April 2001.

The NASA Great Plains Regional Earth Science Applications Center (RESAC): The Interface Between Science and Commercialization. NASA Stennis Space Center. May 2000.

The NASA Great Plains Regional Earth Science Applications Center (RESAC): Commercialization and Product Development. 2<sup>nd</sup> International Conference on Geospatial Information in Agriculture and Forestry. January 2000.

Martinko, E.A., K.P. Price, S.L. Egbert, M.E. Jakubauskas, and J.L. Whistler. 2000. Development of the NASA Great Plains Regional Earth Science Applications Center (GP-RESAC). *Kansas Academy of Sciences Annual Meeting*, Hutchinson, KS. April 2000. Vol. 19:33-34. (Oral Presentation and Abstract).

The NASA Great Plains Regional Earth Science Applications Center (RESAC): Fundamental Science and Commercialization. RESAC Investigators Meeting, NASA Headquarters. November 1999.

The NASA Great Plains Regional Earth Science Applications Center (RESAC). University of Kansas Center for Research, Inc. Annual Board of Trustees Meeting. December 1998.

The Nonpoint Education for Municipal Officials (NEMO) Project: Can the New England Model Be Adapted to Kansas? Sixth Annual Nonpoint Source Pollution Management Workshop: Building Clean Water Communities. March 1998.

Earth Systems Science Initiatives on the Great Plains Network. Kansas Statewide EPSCOR Conference. February 1998.

Direct Downlink Data Needs to Support Research and Commercialization in Kansas. NASA EOS Direct Broadcast Conference. December 1997.

The GreenReport: A Satellite Derived Commercial Product for the Agribusiness. NSF/AAAS Earth System Science Conference. November 1997.

The Development of a Statewide Land Use/Land Cover Digital Database for Kansas. NASA Regional Validation Center Workshop, Mission to Planet Earth Program. September 1997.

Landscape Analysis and Characterization for Regional Environmental Assessment. Regional Environmental Monitoring and Assessment Workshop, U.S. EPA Region VII. April 1997.

Ecological Risk Assessment in Environmental Decision-Making. 47th Annual Environmental Engineering Conference. February 1997.

Assessment and Monitoring at the National Scale: The EPA EMAP Program. American Society of Mammalogists. June 1994.

Enriching Our Ability to Provide Land Information from Space. Pecora 12 Memorial Symposium. August 1993.

EMAP: A New Paradigm for Research, Monitoring, and Assessment. University of Kansas Department of Systematics and Ecology. December 1992.

A Convergence of New Policy Paradigms with New Science Paradigms. Association of Ecosystem Research Centers. November 1992.

The State of the Global Environment. Kansas Environmental Education Spring Retreat. April 1991.

Technology and its Relationship to the Environment. Kansas Conference on Economic Development. June 1990.

Biological Resources and Conservation Issues Related to Geographic Information Systems. Mid-America GIS Symposium. May 1990.

The Kansas Biological Survey: 30 or Something. University of Kansas Department of Systematics and Ecology. September 1988.

Mapping Activities of the Kansas Biological Survey and Applied Remote Sensing Program. Kansas Academy of Sciences. April 1988.

Damsels, Daisies, and Dragons: The Kansas Biological Survey. University of Kansas Department of Entomology. November 1987.

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## **MANUSCRIPTS IN PREPARATION**

*Manuscripts in Preparation: 2; First-draft manuscript completed for each paper listed and currently in revision*

Kastens, D.L., K.P. Price, E.A. Martinko, and T.L. Kastens. Estimating pre-harvest wheat yields from time-series analysis of remotely sensed data. (To be submitted to *International Journal of Remote Sensing*).

Peterson, D.L., K.P. Price, and E.A. Martinko. Investigating grazing intensity and range condition gradients in native warm season and non-native cool season grasslands using multitemporal Landsat Thematic Mapper data. To be submitted to *Journal of Range Management*).

## **POSTERS AND MAPS**

### **Authored Posters and Maps**

Kastens, D.L., K.P. Price, E.A. Martinko, and T.L. Kastens. Assessing Wheat Conditions in Kansas Using Bi-Weekly AVHRR Datasets and Crop Phenological Indices.

Peterson, D.L., K.P. Price, and E.A. Martinko. The Effects of Grazing on Spectral Characteristics of Warm and Cool Season Grasslands in Douglas County, Kansas.

Lee, R.Y., K.P. Price, and E.A. Martinko. Estimating 1998 Iowa Corn Yields Using Multitemporal AVHRR NDVI Imagery. Three Poster Series.

## **Program Posters and Maps**

*These posters and maps were prepared and distributed under my directorship.*

“Cornbelt Vegetation Index Greenness Map, Period 13, 1996” – Two Poster Series

“Cornbelt Vegetation Growth Patterns, 1998”

“End of Vegetation Greenness from 1982-1991 in Central Asia”

“Great Plains Regional Earth Science Applications Center (GP RESAC): A Consortium to Transfer Remote Sensing Products and Technology to Support the Great Plains Agroecosystem”

“Kansas Gap Vegetation” – Four Poster Series

1. “Field Sites”
2. “Natural Vegetation/Cultivated”
3. “TM Scenes, one classified”
4. “TM Scenes, three classified”

“Kansas Landcover Patterns”

“Kazakhstan AVHRR NDVI Map” – Twenty Map Series

“Normalized Difference Vegetation Index (NDVI) Derived from AVHRR Satellite Image of Zambia and Surrounding Areas”

“Onset of Vegetation Green Up from 1982 to 1991 in Central Asia”

“Potential Lesser Prairie Chicken Habitat in Southwest Kansas” – Sixteen Poster Series

“Sandsage Prairie Landcover, Southwest Kansas”

“Satellite View of Kansas”

“Selected Vegetation Phenology Metrics (VPM) for the Central United States”

“Vegetation Index Greenness Map, Period 13, 1996” – Four Poster Series

“Year-to-Year Variation in the Onset of Greenness Date in Kansas, 1989-1998”

“Zambia: A Country of Many Resources”