

TECHNICAL LIBRARY

February 10, 2007

Current Journal Contents
of the
OSM-WR Technical Library
1999 Broadway, Suite 3410
P.O. Box 46667
Denver, CO 80201-6667

This is the current compilation of the table-of-contents pages for journals received during the month of January in the Library. Individuals may have copies of specific articles by notifying the librarian either by phone, e-mail, or regular mail service. **(If you have more than one or two articles you want, please send a written or e-mail request.)**

Deborah K. McGinnis, Librarian
FAX (303) 844-1545

Tele: (303) 844-1436
E-mail: dmcginni@osmre.gov

OSM Library Catalog: <http://www.wrcc.osmre.gov/glas/>

NOTICE OF WARNING CONCERNING COPYRIGHT RESTRICTIONS

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted material.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specific conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of copyright law.

2007 JAN 17 11:05

Special Submissions

The articles in this section are from the symposium, "Progress in Radiation and Energy Balance Measurement Systems" held 2 Nov. 2004 at the ASA annual meeting in Seattle, WA.

- 238-239 **Introduction to the Symposium "Progress in Radiation and Energy Balance Measurement Systems"** *Thomas J. Sauer and Paul J. Pinter, Jr.*
- 240-254 **Upscaling Flux Observations from Local to Continental Scales Using Thermal Remote Sensing** *Martha C. Anderson, William P. Kustas, and John M. Norman*
- 255-271 **Using Lidar Remote Sensing for Spatially Resolved Measurements of Evaporation and Other Meteorological Parameters** *W.E. Eichinger and D.I. Cooper*
- 272-284 **An Advanced Method for Deriving Latent Energy Flux from a Scanning Raman Lidar** *D.I. Cooper, W.E. Eichinger, J. Archuleta, L. Hipps, C.M.U. Neale, and J.H. Prueger*
- 285-296 **Spatial and Temporal Variation of Energy and Carbon Fluxes in Central Iowa** *J.L. Hatfield, J.H. Prueger, and W.P. Kustas*
- 297-303 **Calibration of Shielded Net Radiometers** *Leo J. Fritschen and Charles L. Fritschen*
- 304-310 **Soil Heat Flux Plates: Heat Flow Distortion and Thermal Contact Resistance** *Thomas J. Sauer, Tyson E. Ochsner, and Robert Horton*
- 311-319 **Soil Heat Storage Measurements in Energy Balance Studies** *Tyson E. Ochsner, Thomas J. Sauer, and Robert Horton*

Biofuels

- 1-11 **Current and Potential U.S. Corn Stover Supplies** *R.L. Graham, R. Nelson, J. Sheehan, R.D. Perlack, and L.L. Wright*

Turfgrass

- 99-106 **Influence of Nitrogen Rate and Form on Quality of Putting Greens Cohabited by Creeping Bentgrass and Annual Bluegrass** *Maxim J. Schlossberg and John P. Schmidt*

- 133-140 **'SeaIsle 2000' Paspalum Putting Surface Response to Mowing Height and Nitrogen Fertilizer** *David M. Kopec, James L. Walworth, Jeffrey J. Gilbert, Gregory M. Sower, and Mohammad Pessarakli*

- 141-147 **Phosphorus and Sediment in Runoff after Core Cultivation of Creeping Bentgrass and Perennial Ryegrass Turfs** *Gordon L. Kauffman III and Thomas L. Watschke*

Spatial Variability

- 12-17 **Can Topographical and Yield Data Substantially Improve Total Soil Carbon Mapping by Regression Kriging?** *A.N. Kravchenko and G.P. Robertson*

Modeling

- 148-157 **Evaluating the CROPGRO Soybean Model for Predicting Impacts of Insect Defoliation and Depodding** *J. Timsina, K.J. Boote, and S. Duffield*
- 158-165 **Estimating Grain and Straw Nitrogen Concentration in Grain Crops Based on Above-ground Nitrogen Concentration and Harvest Index** *Armen R. Kemanian, Claudio O. Stöckle, and David R. Huggins*

Instrumentation

- 166-173 **Evapotranspiration Measurement in Controlled Environment Chambers: A Comparison between Time Domain Reflectometry and Accumulation of Condensate from Cooling Coils** *Dennis Timlin, David Fleisher, Soo-Hyung Kim, Vangimalla Reddy, and Jeffrey Baker*

Soils

- 18-26 **Management Practice Effects on Surface Soil Total Carbon: Differences along a Textural Gradient** *X. Hao and A.N. Kravchenko*

Nitrogen Management

- 27-35 **Use of Nitrogen-15 Isotopic Techniques to Estimate Nitrogen Cycling from a Mustard Cover Crop to Potatoes** *H.P. Collins, J.A. Delgado, A.K. Alva, and R.F. Follett*

Cover: Intensive daily culture and use of golf course putting greens make nutrient availability a critical component of their management. Light, frequent applications of water-soluble N fertilizer forms facilitate recovery, while primarily ammonium forms significantly enhanced growth and P and Mn concentration of putting green shoots. See "Influence of Nitrogen Rate and Form on Quality of Putting Greens Cohabited by Creeping Bentgrass and Annual Bluegrass," by Schlossberg and Schmidt (99-106). Photo showing putting green fertility trial at Gulph Mills C.C. (Philadelphia, PA) by Max Schlossberg.

36-42

Effects of a Grass-Selective Herbicide in a Vetch-Rye Cover Crop System on Nitrogen Management *A.J. Clark, J.J. Meisinger, A.M. Decker, and F.R. Mulford*

P. 2 of 2

43-48

Effects of a Grass-Selective Herbicide in a Vetch-Rye Cover Crop System on Corn Grain Yield and Soil Moisture *A.J. Clark, J.J. Meisinger, A.M. Decker, and F.R. Mulford*

49-58

Winter Triticale Response to Nitrogen Fertilization when Grown after Corn or Soybean *Lance R. Gibson, Carasella D. Nance, and Douglas L. Karlen*

174-183

Pre-Sidedress Nitrate Test and Other Crop-Based Indicators for Fresh Market and Processing Sweet Corn *B.L. Ma, K.D. Subedi, and T.Q. Zhang*

Waste Management

184-194

Lint Yield and Fiber Quality of Cotton Fertilized with Broiler Litter *H. Tewolde, K.R. Sistani, D.E. Rowe, A. Adeli, and J.R. Johnson*

Soil & Crop Management

59-65

Tillage System, Preceding Crop, and Nitrogen Fertilizer in Wheat Crop: I. Soil Water Content *Rafael J. López-Bellido, Luis López-Bellido, Jorge Benítez-Vega, and Francisco J. López-Bellido*

66-72

Tillage System, Preceding Crop, and Nitrogen Fertilizer in Wheat Crop: II. Water Utilization *Rafael J. López-Bellido, Luis López-Bellido, Jorge Benítez-Vega, and Francisco J. López-Bellido*

Cropping Systems

73-79

Self-Seeding Winter Cereal Cover Crops in Soybean *Jeremy W. Singer, Keith A. Kohler, and Paul B. McDonald*

Forages

195-202

Structural Composition, Growth Stage, and Cultivar Affects on Kentucky Bluegrass Forage Yield and Nutrient Composition *Johnathon D. Holman, Carl Hunt, and Donn Thill*

203-210

Livestock Use as a Non-Thermal Residue Management Practice in Kentucky Bluegrass Seed Production Systems *Johnathon D. Holman, Carl Hunt, Jodi Johnson-Maynard, Larry VanTassell, and Donn Thill*

Integrated Agricultural Systems

80-87

Tillage and Compost Effects on Corn Growth, Nutrient Accumulation, and Grain Yield *Jeremy W. Singer, Sally D. Logsdon, and David W. Meek*

211-219

Nutrient Management Behavior on Wisconsin Dairy Farms *J.M. Powell, D.B. Jackson-Smith, D.F. McCrory, H. Saam, and M. Mariola*

Wheat

88-98

Hard Red Winter Wheat Cultivar Responses to a pH and Aluminum Concentration Gradient *S.K. Kariuki, H. Zhang, J.L. Schroder, J. Edwards, M. Payton, B.F. Carver, W.R. Raun, and E.G. Krenzer*

Statistics

220-228

Yield Stability of Maize Hybrids Evaluated in Multi-Environment Trials in Yunnan, China *Xing-Ming Fan, Manjit S. Kang, Hongmei Chen, Yudong Zhang, Jing Tan, and Chuxia Xu*

Pasture Management

107-112

Herbage and Animal Responses to Management Intensity of Continuously Stocked Bahiagrass Pastures *R.L. Stewart Jr., L.E. Sollenberger, J.C.B. Dubeux Jr., J.M.B. Vendramini, S.M. Interrante, and Y.C. Newman*

Disease Management

113-121

Planting Date and Nitrogen Effects on Fusarium Head Blight and Leaf Spotting Diseases in Spring Wheat *K.D. Subedi, B.L. Ma, and A.G. Xue*

Site-Specific Analysis & Management

229-237

Hillslope Variability in Corn Response to Nitrogen Linked to In-Season Soil Moisture Redistribution *John P. Schmidt, Nan Hong, Adam Dellinger, Doug B. Beegle, and Henry Lin*

Pulse Crops

122-126

Dry Bean Production in Zero and Conventional Tillage *Robert E. Blackshaw, Louis J. Molnar, George W. Clayton, K. Neil Harker, and Toby Entz*

Notes & Unique Phenomena

127-132

Allelopathic Potential of Various Plant Species on Downy Brome: Implications for Weed Control in Wheat Production *Stephen Machado*

Other Items

iv-v

Instructions to Authors

319

ASA Statement of Ethics

320-321

Letter from the Editor

Coal Age

FEATURE ARTICLES

- 24 Stop Walking Through the Maintenance Mine Field with Your Eyes Closed
The financial justification for a CM/PDM program
- 36 Stickler Takes the Helm at MSHA
New agency director inherits responsibility for implementing the MINER Act amidst one of the U.S. coal industry's most unsafe periods
- 53 Hose Pumps Provide an Alternative Option for Abrasive Applications
- 57 Bucyrus Buys DBT

COAL IN THE NEWS

- 4 Mine Safety and Technology Commission releases report
- 4 High methane levels idle Utah coal mine
- 8 U.S. advances \$1 billion for clean coal projects
- 9 NRP enters into agreement with The Cline Group
- 9 Record year detailed in new edition of *Railroad Facts*
- 12 MSHA makes new emergency mine evacuation rules permanent
- 14 Peabody Energy enters into agreement to supply coal to TVA
- 16 China Coal & Mining Expo to celebrate its 20th anniversary
- 20 Aracoma widows sue Massey Energy
- 21 Coal-to-liquid fuel plant planned in West Virginia

WORLD NEWS

- 5 **Safety foundation** aims to educate Chinese coal industry
Mine explosion largest tragedy to strike Polish coal mining in years
- 8 McGuinty admits he made a bad call on Canadian coal plants
Indonesia lifts import duty, coal export tax
CVRD to start coal project in Mozambique in 2010
- 12 Peace River Coal begins production in Canada
Coal India plans to bid for overseas blocks
- 14 Total Coal and Xstrata Coal settle export arrangements
- 17 Koreans establish joint venture in China

OPERATING IDEAS/53



SUPPLIERS NEWS/57



STICKLER INTERVIEW/36



THIS ISSUE

This month Assistant Secretary of Labor for Mine Safety and Health, Richard E. Stickler, talks about his long- and short-term goals for the Mine Safety and Health Administration (MSHA). The cover shot is the clean coal silo at Arch Coal's Skyline mine near Scofield, Utah. (Cover photo: Lee Buchsbaum, www.lmbphotography.com)

DEPARTMENTS

- 2 Editorial
- 4 Coal in the News
- 5 World News
- 17 People
- 21 Calendar
- 48 Marketwatch
- 53 Operating Ideas
- 57 Suppliers News
- 59 Product News
- 68 Classified
- 72 Legally Speaking

Coal Age

RECEIVED
JAN 30 AM 10:05

FEATURE ARTICLES

- 18 U.S. Coal Market Softens
Operators table some near-term expansion plans; meanwhile long-term fundamentals look strong
- 26 Pardee Prep Plant Expansion
By adding a heavy-media vessel and improving the fine coal circuit, the plant increased raw feed capacity with minimal disruptions
- 30 Optimizing Cast Blasting Efficiency Using ANFO with Liners
- 36 The Communication Triangle: Elements of an Effective Warning Message

COAL IN THE NEWS

- 4 UMW ratifies new National Bituminous Coal Wage Agreement
- 4 Coal mine dials first underground wireless phone call
- 5 Mine roof fall raises final death toll to 47
- 5 Coal-to-Liquid Fuel Promotion Act of 2007 introduced
- 6 NRP signs agreements with Dingess-Rum to exchange units for properties in West Virginia
- 8 MSHA requires better training on SCSRs
- 10 Massey Energy announces purchase of Illinois Basin reserves
- 10 Congress extends mine cleanup program
- 12 Mining-related contaminants persist in some Appalachian regions
- 16 CONSOL demonstrates clean power generation technologies

WORLD NEWS

- 5 Xstrata, Rio Tinto both eye South African mine
G-Mex won't reopen Pasta de Conchos coal mine
- 6 Norway's Svalbard achieves record production
POSCO buys stake in Australian coal mine
Glencore eyes Chile's Isla Riesco coal auction
- 8 Philippines president inaugurates coal-fired power plant
Coalcorp adds Colombian reserves
- 12 Canada's Fording to complete royalty reorganization

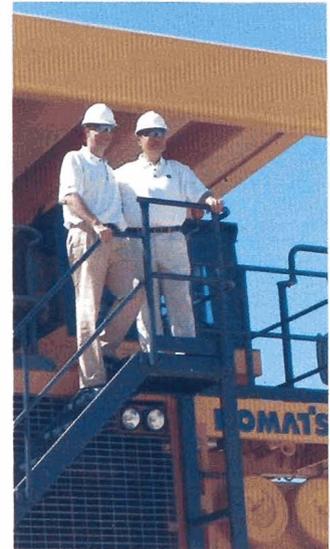
COAL PREP/26



PRODUCT NEWS/38



SUPPLIERS NEWS/35



THIS ISSUE

This month the Annual Forecast offers insight on the current U.S. coal market. On the cover, a Union Pacific unit train heads for Chicago, Ill. (Cover photo: Howard Ande, 630-483-8396, www.howardandephoto.com)

DEPARTMENTS

- 2 Editorial
- 4 Coal in the News
- 5 World News
- 10 People
- 16 Calendar
- 35 Suppliers News
- 36 Operating Ideas
- 38 Product News
- 44 Classified
- 48 Legally Speaking

FEATURES

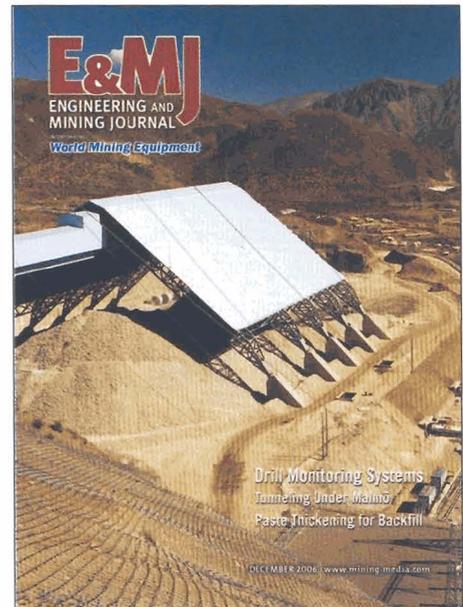
- DaimlerChrysler Builds a Mine-Duty Dodge Ram Truck**
Automotive and engine OEMs work together with mines to develop a diesel-powered underground vehicle that meets emissions standards40
- Drill Monitor Systems Tell the Hole Story**
On the surface or underground, monitor systems bore closer to the goal of high-performance, one-touch drilling with minimal operator input44
- Tunnel Miners Spearhead Swedish Rail Project**48
- New Boliden Builds a New Paste Plant**
To maximize the benefit of open stoping, New Boliden's Garpenberg mine in Sweden has built a paste fill prep plant—with a little help from their friends52

LEADING DEVELOPMENTS

- CVRD Transformed4
- Goldcorp Closes Glamis Acquisition8
- Casa Berardi Startup Makes Aurizon a Producer8
- South Korean Participation Brightens Ambatovy Outlook8
- Barrick Increasing Its Interest in Highland Gold10
- Silver Standard Advances Piquitas Development10

AROUND THE WORLD

- U.S. & Canada:**
Freeport and Phelps Dodge Plan Mega Merger14
- Latin America:**
Feasibility Study Supports \$2-Billion Agua Rica Project22
- Africa:**
First Quantum Initiates Frontier Construction26
- Asia:**
Tanjianshan Nears Startup28
- Australia/Oceania:**
Ramu Laterite Ni/Co Project Headed for Construction Start30
- Europe:**
Boliden Doubling Aitik Production33



Ore storage facility at Chile's Los Pelambres copper mine. Legal action threatens a \$580-million tailings project at the mine, which produces about 320,000 mt/y copper plus moly. For details, turn to p. 24. Photo courtesy of Siemens.

DEPARTMENTS

- Calendar38
- Classified Advertisements70
- Equipment Gallery64
- From the Editor2
- Markets72
- Operating Strategies56
- People20
- Processing Solutions62
- Suppliers Report60
- This Month in Coal34

COVER STORY

► **Images of the Year**

30 ENR's fifth annual construction photography contest drew a powerful field of entries, suggesting that interest in construction photography is growing and that advances in digital cameras are improving the odds for getting good shots.

FEATURE

► **Photo Management**

28 The dirty little secret of digital photography is that digital files multiply like rabbits. Photographers and companies talk about how they manage their collections.



Cover Photographer and Submitter: James Panter

"I took (the picture) for me and my crew so we'd have something to remember it by," says Panter, foreman of the line crew replacing a 230-kV conductor on the 6,300-ft Tacoma Narrows crossing in Washington state for Henkels & McCoy Inc. He framed the shot to show the background from the 475-ft-high tower.

► **Photographer and Submitter: Jeff Callow**

Callow, an engineer with Thornton Tomasetti Inc., caught ironworkers bolting the field splices of the upper 100 ft of a 300-ft-tall steel mast that sits on the 52-story New York Times Building in Manhattan. Callow gave up his Saturday to witness and record the Nov. 11 topping out of the giant taper, which is 8 ft in diameter at its base and 8 in. at its tip.

NEWS

► **Transportation**

- 10 Roads:** Transportation strategy is taking a toll on firms
- 12 Bridges:** Ohio River crossing designs unveiled as Kentucky ponders funding
- 15 Bridges:** New Florida crossing is braced for future hurricanes

► **Environment**

- 11 Waterways:** Corps report recommends closing Louisiana's 'Mr. Go.'
- 12 Legal:** California jury says Tutor-Saliba breached contract on tunnel

20 Water Treatment: Manure-effluent bath cuts perchlorate contamination

► **Buildings**

- 16 Airports:** Steel to replace concrete at failed concourse in Paris
- 18 Books:** How concrete frames can resist progressive collapse

23 Construction Economics

- 61 Products**
- 63 Pulse**
- 66 Official Proposals** (cont. on p. 67)
- 68 Editorials**

► **For subscriber services call:**
(877) 876-8208 or (515) 237-3681
► **GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.**

DEPARTMENTS

- 5 Update**
- 7 Construction Week**
- 9 Washington Observer**

enr.com/more/
ADDITIONAL CONTENT ONLINE

Engineering News-Record

The McGraw-Hill Companies

SERVING THE INDUSTRY SINCE 1874

editorial, circulation, advertising offices: Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President;

Howard Mager, Sr. VP., MH Construction; Nilo Ramos, Sr. Director, Finance. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of \$1.20 per copy for each article. ENR Construction Economics, Top Rankings and Sourcebooks available for a fee in downloadable PDF format at www.enr.com. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, \$82 per year (single copies \$5 in U.S.); Canada and Mexico, \$89 per year; outside North America, \$195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 5730, Harlan, IA 51593. If possible, attach address label from a recent issue. **Please contact customer service to change your name or address.** If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.

COVER STORY

► Management

10 Corporate social responsibility is moving beyond disaster relief, and industry firms are backing new efforts more than ever. Such actions are attracting clients, communities and much-coveted younger workers.

Cover photo and photo right of Rwanda water project courtesy of Engineers Without Borders/Evan Thomas



FEATURE

► Twisted Glass Skin

24 Precision in design and construction let crews successfully bend glass panels with their "bare" hands, as they skinned a 10-story office building in Manhattan, multi-curved to evoke a ship's wavy sails.



Curving glass by cold-bending stressed the team.

NEWS

► Environment

14 Clean Air: Appeals court strikes down EPA ozone regulation

► Buildings

14 Seismic Research: Test of wood-framed house shows costly damage

► Transportation

15 Bridges: As delayed job regroup, pontoons float into position

15 Tunnels: Los Angeles light-rail project makes breakthroughs

16 Roads: South American project stretches ocean to ocean

32 Pulse

40 Official Proposals (cont. on pp. 41-42)

EDITORIALS

25 The Top Newsmakers of 2006

44 In recognition of those who serve the best interest of the construction industry, ENR editors have chosen 25 individuals for their innovations and achievements featured in the magazine and ENR.com in 2006.

DEPARTMENTS

- 5** Calendar
- 7** Construction Week
- 9** Washington Observer
- 22** Products
- 28** Construction Economics

► For subscriber services call:

(877) 876-8208 or (515) 237-3681

► GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com/more/
ADDITIONAL CONTENT ONLINE

Engineering News-Record

The McGraw-Hill Companies

SERVING THE INDUSTRY SINCE 1874

N.Y. 10020. Founder: James H. McGraw (1860-1948). Executive, editorial, circulation, advertising offices: Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. Postmaster: Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enr_custserv@cdsfulfillment.com. Copyright, printing and reprinting: Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2007 by The McGraw-Hill Companies. All rights reserved. Officers of The McGraw-Hill Companies, Inc.: Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. McGraw-Hill Construction:

Norbert W. Young, Jr., FAIA, President; Howard Mager, Sr. VP., MH Construction; Nilo Ramos, Sr. Director, Finance. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of \$1.20 per copy for each article. ENR Construction Economics, Top Rankings and Sourcebooks available for a fee in downloadable PDF format at www.ENR.com. Send payment to CCC, ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. Printed in the USA. Subscription rates for individuals in the field of the publication: U.S. and possessions, \$82 per year (single copies \$5 in U.S.); Canada and Mexico, \$89 per year; outside North America, \$195 per year. Please allow four to six weeks for shipment. Subscriber service: (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 5730, Harlan, IA 51593. If possible, attach address label from a recent issue. Please contact customer service to change your name or address. If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.

COVER STORY

► Road Deicing

24 New technology and materials are giving road designers and maintenance crews smarter tools to fight the dangers of snow and ice on roads, but it takes planning and money.

Cover photo by AP/Wideworld; photo right courtesy of Cargill Inc.



NEWS

► Business & Economics

10 Telecommunications: Quake-cut cables have fleet scrambling



Cable-laying ships speed to Pacific break. Page 10

14 Petroleum: Trans-Alaska pipeline work hit by delays and rising costs

14 Licensing: ASCE will consider how to measure engineers' experience

15 Executive Pay: Shaw stockholder CalPERS objects to CEO severance

► Environment

13 Levees: Corps awards big, new contract for protecting Louisiana

16 Infrastructure: St. Louis is spending billions to shore up shaky system

► Transportation

12 States: Nevada Bets on New DOT Chief

13 Contracts: Tel Aviv's \$2-billion light-rail project signals start of network

► Power & Industrial

15 Alternative Energy: California utility proposes 1,500-MW wind farm

► Buildings

12 Roofs: Stadium with fabric-roof rip to reopen before month's end

18 Sustainable Buildings: Bahrain's wind-turbine trio sets record for a skyscraper



Turbines and towers. Page 18

DEPARTMENTS

5 Update

7 Construction Week

9 Washington Observer

17 People

20 News in Brief

21 Construction Economics

32 Products

35 Pulse

44 Official Proposals (cont. on p. 45)

48 Editorials

► For subscriber services call:

(877) 876-8208 or (515) 237-3681

► GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com/more/

ADDITIONAL CONTENT ONLINE

Engineering News-Record

The McGraw-Hill Companies

SERVING THE INDUSTRY SINCE 1874

N.Y. 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustomserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2007 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:**

ENR (Engineering News-Record), (ISSN 0891-9526). Published weekly except for one week in January, April, May, July, September, October and December; 46 weeks a year by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustomserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2007 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:**

Norbert W. Young, Jr., FAIA, President; Howard Mager, Sr. VP., MH Construction; Nilo Ramos, Sr. Director, Finance. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923. www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of \$1.20 per copy for each article. ENR Construction Economics, Top Rankings and Sourcebooks available for a fee in downloadable PDF format at www.ENR.com. Send payment to CCC, ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, \$82 per year (single copies \$5 in U.S.); Canada and Mexico, \$89 per year; outside North America, \$195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 5730, Harlan, IA 51593. If possible, attach address label from a recent issue. **Please contact customer service to change your name or address.** If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.

COVER STORY

► Stressing Water

24 A Southern California water district is constructing a 40-million-gallon prestressed-concrete water tank, the country's largest. Together with its 33.3-million-gallon companion tank, finished just six years ago, it will be buried in a hillside when completed.

Cover photo and photo right courtesy of DYK Inc.



NEWS

► Buildings

10 Sustainability: Going for the green in the nation's capital



New environmental law for D.C. buildings. Page 10

14 Manufacturing: Pharmaceutical firm halts half-built, \$400-million plant

► Environment

11 Levees: Engineer to lead regional board

► Business & Economics

12 Reconstruction: Bush seeks rebuilding shifts, plus 20,000 more troops

13 Acquisitions:

Consolidation trend in 2007 has started off with a bang in January

14 Public Works:

Governator wants more California bonds for the state's schools and jails

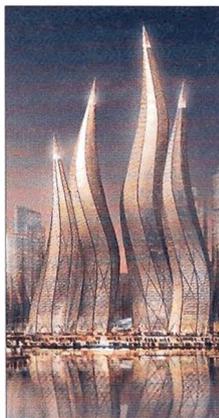
15 Tall Buildings:

Dubai Towers is the centerpiece of \$18-billion development

17 Lawsuits: Unions sue Nevada over plant hiring

► Transportation

13 Claims: HNTB says no mea culpa in pavement job



Dubai towers Page 15

DEPARTMENTS

- 5 Letters
- 7 Construction Week
- 9 Washington Observer
- 16 Equipment Tracks & Trends
- 18 Legal
- 20 People
- 21 Construction Economics
- 36 Products
- 38 Pulse
- 64 Official Proposals (cont. on p. 66)
- 68 Editorials

► For subscriber services call: (877) 876-8208 or (515) 237-3681
► GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com/more/

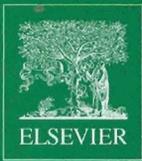
ADDITIONAL CONTENT ONLINE

Engineering News-Record
The McGraw-Hill Companies

SERVING THE INDUSTRY SINCE 1874

N.Y. 10020. Founder: James H. McGraw (1860-1948). Executive, editorial, circulation, advertising offices: Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. Postmaster: Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enr_custserv@cdsfulfillment.com. Copyright, printing and reprinting: Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2007 by The McGraw-Hill Companies. All rights reserved. Officers of The McGraw-Hill Companies, Inc.: Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. McGraw-Hill Construction:

ENR (Engineering News-Record), (ISSN 0891-9526). Published weekly except for one week in January, April, May, July, September, October and December; 46 weeks a year by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. Founder: James H. McGraw (1860-1948). Executive, editorial, circulation, advertising offices: Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. Postmaster: Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5730, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enr_custserv@cdsfulfillment.com. Copyright, printing and reprinting: Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2007 by The McGraw-Hill Companies. All rights reserved. Officers of The McGraw-Hill Companies, Inc.: Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. McGraw-Hill Construction: Norbert W. Young, Jr., FAIA, President; Howard Mager, Sr. VP., MH Construction; Nilo Ramos, Sr. Director, Finance. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923. www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of \$1.20 per copy for each article. ENR Construction Economics, Top Rankings and Sourcebooks available for a fee in downloadable PDF format at www.ENR.com. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. Printed in the USA. Subscription rates for individuals in the field of the publication: U.S. and possessions, \$82 per year (single copies \$5 in U.S.); Canada and Mexico, \$89 per year; outside North America, \$195 per year. Please allow four to six weeks for shipment. Subscriber service: (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 5730, Harlan, IA 51593. If possible, attach address label from a recent issue. Please contact customer service to change your name or address. If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.



Environmental Impact Assessment Review

EIA PROCEDURE

Environmental economic impact assessment in China: Problems and prospects
*Henrik Lindhjem, Tao Hu, Zhong Ma, John Magne Skjelvik, Guojun Song,
Haakon Vennemo, Jian Wu and Shiqiu Zhang*

1

Comparing the quality of draft environmental impact statements by agencies in
the United States since 1998 to 2004

26

Kelly Tzoumis

Terrestrial vertebrate fauna surveys for the preparation of environmental impact
assessments; how can we do it better? A Western Australian example

41

Graham G. Thompson

ASSESSMENT METHODS

Systematic comparative and sensitivity analyses of additive and outranking
techniques for supporting impact significance assessments

62

*Vicente-Agustín Cloquell-Ballester, Rafael Monterde-Díaz, Víctor-Andrés
Cloquell-Ballester and María-Cristina Santamarina-Siurana*

STRATEGIC ENVIRONMENTAL ASSESSMENT

A performance evaluation of strategic environmental assessment (SEA)
processes within the South African context

84

Francois Retief

HEALTH IMPACT ASSESSMENT

Validating health impact assessment: Prediction is difficult (especially about the
future)

101

Mark Petticrew, Steven Cummins, Leigh Sparks and Anne Findlay



THE
GEOLOGICAL
SOCIETY
OF AMERICA

BULLETIN

VOL. 119 • NO. 1/2

JANUARY/FEBRUARY 2007

The Geological Society of America Bulletin is a leading international journal for major scholarly research in all branches of the earth sciences. Published continuously since 1890.

T A B L E O F C O N T E N T S

VOLCANOLOGY

- 3-17 **Magmatic processes associated with caldera collapse at Ossipee ring dyke, New Hampshire**
Ben Kennedy and John Stix
- 18-30 **Double trouble: Paired ignimbrite eruptions and collateral subsidence in the Taupo Volcanic Zone, New Zealand**
D.M. Gravley, C.J.N. Wilson, G.S. Leonard, and J.W. Cole

SEDIMENTARY GEOLOGY - OTHER

- 31-48 **The Takena Formation of the Lhasa terrane, southern Tibet: The record of a Late Cretaceous retroarc foreland basin**
Andrew L. Leier, Peter G. DeCelles, Paul Kapp, and Lin Ding

PETROLOGY - IGNEOUS

- 49-64 **A Pliocene ignimbrite flare-up along the Tepic-Zacoalco rift: Evidence for the initial stages of rifting between the Jalisco block (Mexico) and North America**
Hollie M. Frey, Rebecca A. Lange, Chris M. Hall, Hugo Delgado-Granados, and Ian S.E. Carmichael

PRECAMBRIAN GEOLOGY

- 65-87 **Ironstone bodies of the Barberton greenstone belt, South Africa: Products of a Cenozoic hydrological system, not Archean hydrothermal vents!**
Donald R. Lowe and Gary R. Byerly

MARINE GEOLOGY

- 88-100 **Geochemical and age constraints on the formation of the Gorda Escarpment and Mendocino Ridge of the Mendocino transform fault in the NE Pacific**
J.M. Kela, D.S. Stakes, and R.A. Duncan

PALEONTOLOGY

- 101-115 **Impact and extinction in remarkably complete Cretaceous-Tertiary boundary sections from Demerara Rise, tropical western North Atlantic**
Kenneth G. MacLeod, Donna L. Whitney, Brian T. Huber, and Christian Koeberl

QUATERNARY GEOLOGY/GEOMORPHOLOGY

- 116-125 **Effects of sediment pulses on channel morphology in a gravel-bed river**
Daniel F. Hoffman and Emmanuel J. Gabet

- 126-139 **Late Holocene sedimentary environments and lake-level fluctuations at Walker Lake, Nevada, USA**
Kenneth D. Adams
- 140-156 **The impact of humans on continental erosion and sedimentation**
Bruce H. Wilkinson and Brandon J. McElroy
- 157-173 **Bedrock landscape development modeling: Calibration using field study, geochronology, and digital elevation model analysis**
Stephen B. DeLong, Jon D. Pelletier, and Lee Arnold

STRUCTURAL GEOLOGY

- 174-183 **Deformation and hydrofracture in a subduction thrust at seismogenic depths: The Rodeo Cove thrust zone, Marin Headlands, California**
Francesca Meneghini and J. Casey Moore
- 184-201 **Four magmatic fabrics in the Tuolumne batholith, central Sierra Nevada, California (USA): Implications for interpreting fabric patterns in plutons and evolution of magma chambers in the upper crust**
Jiří Žák, Scott R. Paterson, and Valbone Memeti

TECTONICS

- 202-220 **Crustal segmentation, composite looping pressure-temperature paths, and magma-enhanced metamorphic field gradients: Upper Granite Gorge, Grand Canyon, USA**
Gregory Dumond, Kevin H. Mahan, Michael L. Williams, and Karl E. Karlstrom
- 221-239 **The architecture of brittle postorogenic extension: Results from an integrated structural and paleomagnetic study in north Calabria (southern Italy)**
Francesca Cifelli, Federico Rossetti, and Massimo Mattei

NEOTECTONICS/PALEOSEISMICITY

- 240-256 **Late Quaternary slip rates along the Sierra Nevada frontal fault zone, California: Slip partitioning across the western margin of the Eastern California Shear Zone-Basin and Range Province**
Kimberly Le, Jeffrey Lee, Lewis A. Owen, and Robert Finkel

p 1 of 2

RECEIVED

JANUARY 2007

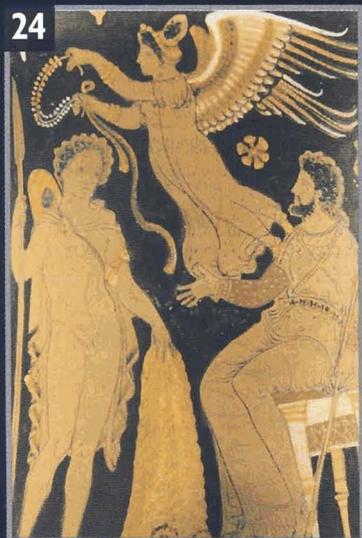
vol. 52 ■ no. 1

LOST WORLDS

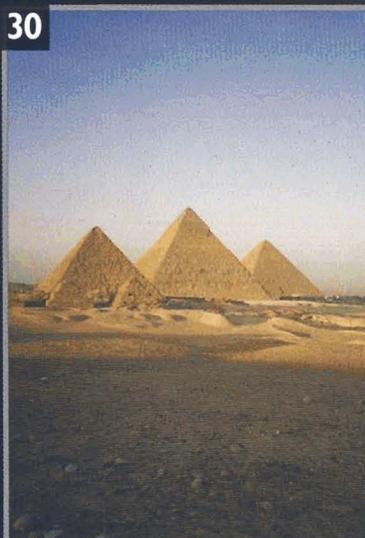
18



24



30



8



FEATURES

18 FINDING ITHACA

For years, people have wondered whether Homer's *Odyssey* is at all true. Now, geologists are helping to locate real-world sites in the epic poem, including Odysseus' homeland of Ithaca.

Megan Sever

24 BURIED BENEATH THE BLACK SEA: CITIES AND SHIPS SUBMERGED

An expedition to the Black Sea last summer led to some surprising discoveries found preserved under the waters, including ancient ships and submerged coastlines.

Carolyn Gramling

30 GEOPHYSICS IN THE VALLEY OF THE KINGS

Geophysical techniques and tools, such as ground penetrating radar and magnetometers, help rediscover Egypt's lost tombs.

Leanne Mallory

PLUS: NEW MAPS KEY TO PRESERVING OLD TOMBS

NEWS & VIEWS

8 NEWS NOTES

- Neanderthal DNA unraveled
- Hominid teeth reveal a broad palate
- Eruptive event caught red-handed
- The color of crinoids
- Tonga's newest island
- Meteorite pre-dates solar system
- Saturn surprises with southern storm
- "Dibs" in space
- Heat flow causes magnetic reversals
- Ice reveals polar temperature seesaw
- Arctic not a refuge for oil
- A look ahead at the 110th Congress

ON THE COVER

Odysseus, seen here from a museum located in the Villa of Tiberius, Sperlonga, Italy, was the Greek hero of the Trojan War during the Mycenaean Age. After a 10-year-long perilous journey, he returned home to his kingdom of Ithaca, which researchers have been trying to locate for millennia. See feature, p. 18. Photographed by Robert Bittlestone with the permission of the Soprintendenza per i Beni Archeologici del Lazio, Ministero per i Beni e le Attività Culturali, Roma.


Vol. 52, no. 1
p. 2 of 2
36 GEOPHENOMENA

National park awash with costly destruction

38 TRENDS & INNOVATIONS More Digging Ahead to Unlock Dinosaurs' Past

In the past two decades alone, paleontologists have described as many dinosaurs as have been described since 1824. Researchers suggest that another 1,300 genera may yet to be found.

David Williams
40 EDUCATION & OUTREACH Teachers Face Desert Heat of Spaceward Bound

A fifth-grade teacher relates his experiences with NASA's Spaceward Bound program in Chile's Atacama Desert.

Kathryn Hansen
42 ENERGY & RESOURCES

 Shiny outlook for greener aluminum production
 Did you know? U.S. oil consumption and reserves
 Mineral resource of the month: Kyanite

VIEWS

7 COMMENT International Collaboration in Global Science: Price or Prize?

The International Year of Planet Earth begins this month. It will challenge the world's geological community to seek solutions to some of the greatest geoscience-based problems of our age.

Edward Derbyshire
17 POLITICAL SCENE Diversity in the Geosciences — We Can Do Better

The geosciences are facing a recruitment predicament in education and the workforce.

Margaret Anne Baker
60 GEOLOGIC COLUMN Words, Words, Words

Geoscientists use lots of specialized words. Could you spell them all?

Lisa Rossbacher

DEPARTMENTS

4 FROM THE EDITOR
6 LETTERS: Perspectives from readers

34 WHERE ON EARTH?
44 GEOMEDIA
Movies: IMAX film storms into wetland issues: A review of *Hurricane on the Bayou*
Books: An earthquake — and fire and racism in the aftermath: A review of *Yokohama Burning*
On the Web: Web gets serious about Ceres

48 PROFILES

Max Mayfield: In the eye of the storm

49 BENCHMARKS

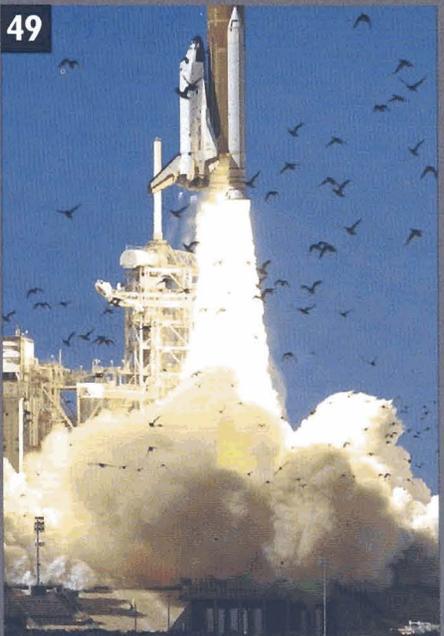
 January 28, 1986: The *Challenger* Disaster

50 GEOMARKETPLACE
51 CLASSIFIEDS: Career opportunities

40



49


 Want to attend a geoscience meeting? Visit the online Calendar at calendar.agiweb.org

34

WHERE ON EARTH?

Chicago has been called the Silicon Valley of infrastructure privatization.



MARIO ZUCCA

JANUARY 2007, VOL. 20, NO. 4

GOVERNING

www.governing.com

Features

p. 1 of 2

POLITICS 2007

22 **Blue Tide**

Democrats hold power now in places where they have been on the outside a long time. The question is what they will do with it. *By Josh Goodman*

30 **Issues to Watch**

From universal health insurance to immigration to global warming, 2007 promises to be a crucial year in state policy making. *By Zach Patton*

36 **Unloading Assets**

Cities and states are privatizing major pieces of infrastructure. Are they getting a sweet deal or selling out? *By Christopher Swope*

42 **Rights of Defense**

Poor people still don't get fair treatment in criminal court. But states are gradually waking up to the problem. *By Andrew Rachlin*

48 **"Stat" Fever**

The practice of collecting data to monitor and improve government performance continues to gain momentum. *By Ellen Perlman*

GLIMPSE

68 **Value-Added Tax**

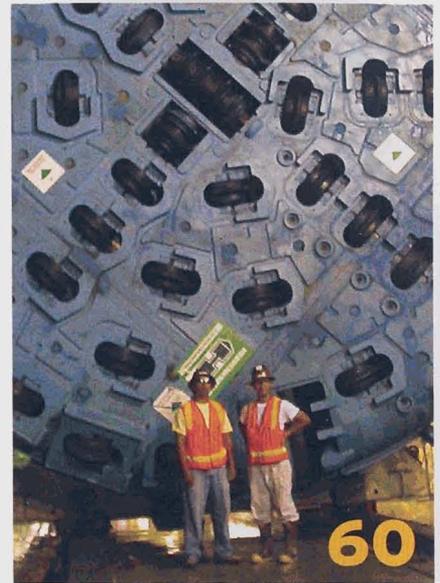
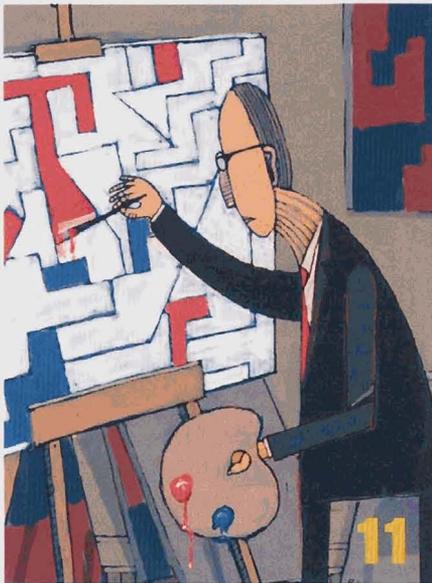
Sometimes transit and cab drivers' personal beliefs conflict with their jobs and passengers. *By Zach Patton*

(cont.)

COVER ILLUSTRATION BY CHRISTOPHER BUZZELLI

GOVERNING

The Magazine of States and Localities



Up Front

- 8 **Publisher's Desk**
- 11 **Assessments**
Alan Ehrenhalt on gerrymanders and the 2006 elections.
- 14 **Dialogue**
Letters from readers.
- 15 **Observer**
TABOR flameout, San Diego's tough choices, and a river dispute.
- 17 **Urban Notebook**
Boston's gang truce, public paychecks, and a new use for old parking meters.
- 19 **Player**
John Leopold: Lonesome leader.
- 20 **Potomac Chronicle**
Congress may increase the federal minimum wage. But it will mean more politically than economically.

The Business of Government

LEAD STORY

- 51 A growing number of states and cities are experimenting with merit pay plans for teachers.

TECHNOLOGY

- 52 Mark Stencil on successful transitions to open-source software.

HEALTH

- 54 Penelope Lemov on the impact of Wal-Mart's \$4 generic drugs on Medicaid.

ECONOMIC DEVELOPMENT

- 56 **Briefing:** San Jose capitalizes its own venture fund.

MANAGEMENT

- 58 Katherine Barrett and Richard Greene on the benefits of inventorying public assets.

ENVIRONMENT

- 60 **Briefing:** Mechanical problems delay Atlanta's sewer system overhaul.

FINANCE

- 62 John E. Petersen on the prospect of federal help in the next recession.

TRANSPORTATION

- 64 **Briefing:** Voters ante up to address traffic and transit woes.

Contents

JANUARY 2007 VOL. 39 NO. 1

"Government Executive"



KIM KOMENICH/CORBIS

32

FEATURES

Lessons Not Learned 32

Produced to assist commanders in Iraq, a new Army counterinsurgency manual fails to map a response to 21st century enemies.
By Greg Grant

Volatile Mix 42

Deadly chemicals and lax security are a dangerous combination, especially in the post-9/11 world.
By Katherine McIntire Peters

Escape from Lebanon 48

As Beirut was bombed, stranded Americans waited for their government to get them out.
By Kimberly Palmer

p. 1 of 2

ON THE COVER: An American citizen calms a child as they flee the U.S. Embassy in Beirut by helicopter to Cyprus last summer after Lebanon was bombed by Israel.

Cover photograph by Gunnery Sgt. James H. Frank/Defenselink

(cont.)



NEWS+ANALYSIS

Been There, Done That, Not Over It 13

We tried the Iraq Study Group's prescription already. It failed. By Greg Grant

p. 2 of 2

It's the Training Gain, Not the Game 16

Soldiers go online to stay alive in Iraq. By Anne Laurent

Money Maker 20

The supplier of U.S. currency paper faces little competition. By Kimberly Palmer

Known Unknowns 22

Defense's financial management problems defy easy fixes. By Katherine McIntire Peters

Deconstructing Reconstruction 26

Iraq contractors face increased scrutiny in the new Congress. By Katherine McIntire Peters

Multiple Award Maze 28

How GSA schedules really work—and how to stay out of trouble. By Kimberly Palmer

Storm Warning 30

Testing might not improve our ability to respond and recover from cyberattacks. By Daniel Pulliam

ADVICE+DISSENT

Cutting the Cord 57

Managing Technology WiMax could bridge the last mile to deliver wireless broadband access. By David Perera

Help Wanted: Boring Jobs 60

Management Matters Human resources offices need to spice up their vacancy postings. By Brian Friel

The British Are Coming! 61

Intelligence File Intelligence firm picks up former CIA chief George Tenet on its march into the U.S. market. By Shane Harris

One by One 63

Viewpoint From the ground up, the Coast Guard has built a culture of values-based leadership. By Adm. James M. Loy and Donald T. Phillips

A Last-Minute Save 65

Political World By rescuing the Medicare drug benefit, agency chiefs prevented 2006 from being even worse for the GOP. By Charles Mahtesian

IN EVERY ISSUE

Editor's Notebook 6

Talk about fiscal sanity in government is mere doggerel.

Letters 7

The Buzz 9

Dog walkers, pitching Future Combat Systems and selling civil service.

Outlook 66

Some civilian employees are eager to get into Iraq—if only their agencies would let them. By Tom Shoop



TOP TO BOTTOM: JAMES KEGLEY; ION KRAUSE; COAST GUARD

2007 JAN 16 AM 10:10

REVIEWS AND ANALYSES

1-16 **Passive Treatment of Acid Mine Drainage in Bioreactors using Sulfate-Reducing Bacteria: Critical Review and Research Needs** *Carmen-Mihaela Neculita, Gérald J. Zagury, and Bruno Bussière*

208-215 **Aerating Grasslands: Effects on Runoff and Phosphorus Losses from Applied Broiler Litter** *D.H. Franklin, M.L. Cabrera, L.T. West, V.H. Calvert, and J.A. Rema*

216-225 **Application of Two Organic Wastes in a Soil Polluted by Lead: Effects on the Soil Enzymatic Activities** *M. Tejada, M.T. Hernandez, and C. Garcia*

SHORT COMMUNICATIONS

17-22 **Phosphorus Leaching from Cow Manure Patches on Soil Columns** *W.J. Chardon, G.H. Aalderink, and C. van der Salm*

226-232 **Improving the Accuracy of Sediment-Associated Constituent Concentrations in Whole Storm Water Samples by Wet-Sieving** *William R. Selbig, Roger Bannerman, and George Bowman*

233-238 **Biosensing Paraoxon in Simulated Environmental Samples by Immobilized Organophosphorus Hydrolase in Functionalized Mesoporous Silica** *Chenghong Lei, Michelle M. Valenta, K. Prasad Saripalli, and Eric J. Ackerman*

TECHNICAL REPORTS

Atmospheric Pollutants and Trace Gases

23-30 **Organic Agriculture and Nitrous Oxide Emissions at Sub-Zero Soil Temperatures** *Rebecca L. Phillips*

Bioremediation and Biodegradation

239-244 **Phytoremediation of Polychlorinated Biphenyl (PCB)-Contaminated Sediment: A Greenhouse Feasibility Study** *K.E. Smith, A.P. Schwab, and M.K. Banks*

245-253 **Phytostabilization Potential of Quailbush for Mine Tailings: Growth, Metal Accumulation, and Microbial Community Changes** *Monica O. Mendez, Edward P. Glenn, and Raina M. Maier*

Ecological Risk Assessment

31-43 **Risk Assessment of Unsuitable Winter Conditions for Manure and Nutrient Application across Ontario** *D.J. Fallow, D.M. Brown, J.D. Lauzon, and G.W. Parkin*

254-261 **Transformation of a Landfill Covering Amended with Municipal Waste Compost, Perugia, Italy** *Mario Businelli, Rolando Calandra, Marcello Pagliai, Daniela Businelli, Giovanni Gigliotti, Olga Grasselli, Daniel Said-Pullicino, and Angelo Leccese*

Heavy Metals in the Environment

44-52 **Plant Availability of Zinc and Copper in Soil after Contamination with Brass Foundry Filter Dust: Effect of Four Years of Aging** *Isabel Hilber, Andreas Voegelin, Kurt Barmettler, and Ruben Kretzschmar*

53-60 **Single-Element and Competitive Metal Mobility Measured with Column Infiltration and Batch Tests** *Vasileios Antoniadis, John D. McKinley, and Wan Y.W. Zuhairi*

61-69 **Vertical Distribution and Speciation of Trace Metals in Weathering Flotation Residues of a Zinc/Lead Sulfide Mine** *Nele Schuwirth, Andreas Voegelin, Ruben Kretzschmar, and Thilo Hofmann*

70-79 **Potentially Toxic Elements Contamination in Urban Soils: A Comparison of Three European Cities** *M. Biasioli, H. Grčman, T. Kralj, F. Madrid, E. Díaz-Barrientos, and F. Ajmone-Marsan*

Landscape and Watershed Processes

80-90 **Denitrification in the Shallow Ground Water of a Tile-Drained, Agricultural Watershed** *Edward Mehnert, Hue-Hwa Hwang, Thomas M. Johnson, Robert A. Sanford, Will C. Beaumont, and Thomas R. Holm*

Continued . . .

Cover: Johnson Creek in Portland, OR. See Sonoda and Yeakley, "Relative Effects of Land Use and Near-Stream Chemistry on Phosphorus in an Urban Stream," p. 144-154. Image by Kazuhiro Sonoda.

(50001 - Feb. 2007)

91-100

Fire Effects on Stable Isotopes in a Sierran Forested Watershed *Laurel Saito, Wally W. Miller, Dale W. Johnson, Robert G. Qualls, Louis Provencher, Erin Carroll, and Peter Szameitat*

p. 2 of 2

Organic Compounds in the Environment

101-109

Adsorption of 2,4-Dichlorophenoxyacetic Acid by an Andosol *Syuntaro Hiradate, Akihiro Furubayashi, Natsuyo Uchida, and Yoshiharu Fujii*

110-119

Surface Seals Reduce 1,3-Dichloropropene and Chloropicrin Emissions in Field Tests *Sduan Gao and Thomas J. Trout*

120-127

Effects of Tree Root-Derived Substrates and Inorganic Nutrients on Pyrene Mineralization in Rhizosphere and Bulk Soil *Kevin E. Mueller and Jodi R. Shann*

128-134

Field History and Dissipation of Atrazine and Metolachlor in Colorado *Dale L. Shaner and W. Brien Henry*

262-271

Use of Ecosystem Information to Improve Soil Organic Carbon Mapping of a Mediterranean Island *Luigi P. D'Acqui, Carolina A. Santi, and Fabio Maselli*

272-279

Accidental Organochlorine Pesticide Contamination of Soil in Porriño, Spain *F.A. Vega, E.F. Covelo, and M.L. Andrade*

Plant and Environment Interactions

135-143

Influence of Decomposition on Chemical Properties of Plant- and Manure-Derived Dissolved Organic Matter and Sorption to Goethite *James F. Hunt, Tsutomu Ohno, Zhongqi He, C. Wayne Honeycutt, and D. Bryan Dail*

280-290

Time-Dependent Distribution of Surface-Applied Radionuclides and their Recovery in Maize during the Growing Season *T. Centofanti, E. Frossard, and H. Flübler*

Surface Water Quality

144-154

Relative Effects of Land Use and Near-Stream Chemistry on Phosphorus in an Urban Stream *Kazuhiro Sonoda and J. Alan Yeakley*

155-162

Ground Cover Impacts on Nitrogen Export from Manured Riparian Pasture *David M. Butler, Noah N. Ranells, Dorcas H. Franklin, Matthew H. Poore, and James T. Green, Jr.*

291-297

Assessment of Water Quality and Identification of Pollution Sources of Plateau Lakes in Yunnan (China) *Renqiang Li, Ming Dong, Yang Zhao, Lili Zhang, Qingguo Cui, and Weiming He*

Waste Management

163-174

Long-Term Effects of Poultry Litter, Alum-Treated Litter, and Ammonium Nitrate on Phosphorus Availability in Soils *P.A. Moore, Jr. and D.R. Edwards*

175-183

Five Year-Round Forage Systems in a Dairy Effluent Sprayfield: Phosphorus Removal *Kenneth R. Woodard, Lynn E. Sollenberger, Lewin A. Sweat, Donald A. Graetz, Stuart J. Rymph, and Yongsung Joo*

184-193

Evaluation of Zeolite for Control of Odorants Emissions from Simulated Poultry Manure Storage *Lingshuang Cai, Jacek A. Koziel, Yi Liang, Anh Thu Nguyen, and Hongwei Xin*

298-304

Influence of Soil pH and Application Rate on the Oxidation of Calcium Sulfite Derived from Flue Gas Desulfurization *Y.B. Lee, J.M. Bigham, W.A. Dick, F.S. Jones, and C. Ramsier*

305-315

Phosphorus Movement and Speciation in a Sandy Soil Profile after Long-Term Animal Manure Applications *G.F. Koopmans, W.J. Chardon, and R.W. McDowell*

316-323

Long-Term Phosphorus Immobilization by a Drinking Water Treatment Residual *Sampson Agyin-Birikorang, George A. O'Connor, Lee W. Jacobs, Konstantinos C. Makris, and Scott R. Brinton*

324-332

A Model for Phosphorus Transformation and Runoff Loss for Surface-Applied Manures *P.A. Vadas, W.J. Gburek, A.N. Sharpley, P.J.A. Kleinman, P.A. Moore, Jr., M.L. Cabrera, and R.D. Harmel*

Wetlands and Aquatic Processes

194-207

Substrate Organic Matter to Improve Nitrate Removal in Surface-Flow Constructed Wetlands *Michael R. Burchell II, R. Wayne Skaggs, Charles R. Lee, Steven Broome, George M. Chescheir, and Jason Osborne*

333-342

Denitrification Potential and Organic Matter as Affected by Vegetation Community, Wetland Age, and Plant Introduction in Created Wetlands *Maria E. Hernandez and William J. Mitsch*

ALSO IN THIS ISSUE

iv-ix

This Issue in *Journal of Environmental Quality*

The Journal of Explosives Engineering
Published by International Society
of Explosives Engineers

30325 Bainbridge Road
Cleveland, Ohio 44139
www.isee.org

Publisher

International Society of Explosives Engineers

Editor

Dede Manross
explo@comcast.net

Contributing Writers

R.B. Hopler
S. S. "Bud" Jenkins
Larry C. Schneider

Board of Directors

President

Lawrence E. Gilmore

Vice President Administration

Jerry R. Wallace

Vice President, Technical

Ron J. Elliott

Treasurer

John E. Capers

Secretary

James H. Redyke

Past President

Dale L. Ramsey

Directors

James P. Daley
Charles H. Dowding
Jack W. Eloranta
Kenneth K. Eltschlager
Phyllis E. Hassler
Michael J. Koehler
Randall S. May
George Plaschke
Roger N. Prescott
David K. Saunders
Roger G. Sprague
Alastair C. Torrance

Executive Director & General Counsel
Jeffrey L. Dean, CAE

Assistant to the Executive Director
Arlene Chafe

Publications Manager
Liz Mikhaylov

Meetings & Conference Manager
Lynn Mangol

Assistant Manager, Meetings
Gloria Eppich

Communications Manager
Dede Manross

Webmaster
Debbie Kapes

Membership Manager
Jenny LeBrun

Assistant Manager, Membership
Lauren Creneti

Office Coordinator
Mary Spena-Bosch

The Journal of www.isee.org



EXPLOSIVES ENGINEERING

Volume 24 Number 1 January/February 2007

Table of Contents

FEATURES

- 6 Kaiser Plant Demolition**
Smokestack Demolition at Port of Tacoma, Washington.
- 10 The Benefits and Challenges of Implementing a Computerized Blast and Inventory Management System**
How can the explosives industry transition its workforce and business systems to respond to pressures for improved inventory and records management? This article covers the benefits and challenges of implementing a computerized system for inventory and blast management.
- 36 You Be the Judge**
An ethical dilemma. What would you do?
- 38 Who Moved My Explosives Cheese?**
A commentary on the state of the explosives industry.
- 40 Spotlight on SAFEX International**
A report from an ISEE International affiliate, SAFEX.
- 42 Give Us Your Best Shot**
A 2006 honorable mention winner - A True Wagon Drill.

DEPARTMENTS

- 4 From the Executive Director**
A tribute to Don Matthews, an ISEE founder and former President. Also, a tribute to Emery Gray, an ISEE founder.
- 20 Industry News**
News about people, companies, events, and new products.
- 24 Calendar of Events**
A list of upcoming events in the explosives industry.
- 26 Chapter News**
Fall Chapter Meetings. News from New Mexico Rio Grande, Lake Superior, Heartland, Mississippi Valley, Ozark, University of Mo-Rolla, New England, Western Canada, and Potomac.
- 28 Explosives, 100 Years Ago, More or Less**
A 1907 blasting accident near Chattanooga, TN. Thawing Dynamite.
- 32 Standards Committee**
A request for comments on proposed standard draft Field Practice Guidelines for Blasting Seismographs.



On the Cover: A smokestack demolition at the Port of Tacoma, Washington. See story on page 6.

Copyright ©2007 Society of Explosives Engineers, Inc., dba International Society of Explosives Engineers

The Journal of Explosives Engineering, published six times per year, is the official publication of the International Society of Explosives Engineers. The Society is not responsible for opinions expressed and statements made by authors in articles or advertisements published in the Journal. ISEE assumes no responsibility for the completeness, accuracy, or conclusions reached in any of the articles or items published in this Journal.

Since the information is unique and because each job site is different, information presented in this Journal may not apply to your specific field situation. Readers are cautioned to carefully consider ideas presented and decide for themselves if the procedures described are safe and appropriate for the intended use. The International Society of Explosives Engineers cannot be responsible for the specific application of the information presented. Also, remember to always consult the manufacturer of the product(s) you are using for recommended practices.

Mention in this publication of a commercial or proprietary product does not constitute an endorsement or recommendation for its use. Registered names, trademarks, logos, artwork, photographs, etc., used in this publication, even without specific indication thereof, are to be considered protected by law.

Yearly subscription rates: \$55 U.S.A., \$70 all others (International Air Mail). All members of the Society receive a complimentary subscription.

All correspondence should be directed to: International Society of Explosives Engineers,
30325 Bainbridge Road, Cleveland, Ohio 44139. Telephone: (440) 349-4400. Fax: (440) 349-3788
E-mail: isee@isee.org WebSite: www.isee.org

JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION

AMERICAN WATER RESOURCES ASSOCIATION

VOLUME 42

DECEMBER 2006

NUMBER 6

TABLE OF CONTENTS

ENHANCING THE CAPACITY FOR SUSTAINABLE WATERSHED MANAGEMENT

JASON K. LEVY, JAMES E.T. MONCUR, AND KAORU TAKARA – GUEST EDITORS

FEATURED COLLECTION

- Introduction: Enhancing the Capacity for Sustainable Watershed Management
– Jason K. Levy, James E.T. Moncur, and Kaoru Takara1437
- Evaluating Interdependent Watershed Conservation and Ground Water Management Reforms
– Basharat A. Pitafi and James A. Roumasset1441
- Reducing the Risk of Fishery Resource Disasters: A Bioeconomic Approach to Sustainable Resource Management
– Jason K. Levy, D. Marc Kilgour, and Keith W. Hipel1451
- Water Allocation Policy Modeling for the Dong Nai River Basin: An Integrated Perspective
– Claudia Ringler, Nguyen Vu Huy, and Siwa Msangi1465
- The Importance of Institutional Structure in Controlling Agricultural Runoff
– Eric C. Schuck, Gareth P. Green, Janet Clements, and W. Marshall Frasier1483
- Effects of Cropping Systems on NO₃-N Losses to Tile Drain
– Rameshwar S. Kanwar1493
- Development of Nutrient Submodules for Use in the Gridded Surface Subsurface Hydrologic Analysis (GSSHA) Distributed Watershed Model
– Billy E. Johnson and Terry K. Gerald1503
- Real-Time Soil Water Monitoring for Optimum Water Management
– Ali Fares, H. Hamdhani, Viktor Polyakov, A. Dogan, and Hector Valenzuela1527
- Multicomponent Geochemical Transport Modeling Using HYDRUS-1D and HP1
– Jirka Šimůnek, Diederik Jacques, Martinus Th. van Genuchten, and Dirk Mallants1537
- Bivariate Frequency Analysis of Floods Using Copulas
– Jenq-Tzong Shiau, Hsin-Yi Wang, and Chang-Tai Tsai1549

ADDITIONAL TECHNICAL PAPERS

- Watershed Level Best Management Practice Selection and Placement in the Town Brook Watershed, New York
– Margaret W. Gitau, Tamie L. Veith, William J. Gburek, and Albert R. Jarrett1565
- Economic Valuation of Riparian Buffer and Open Space in a Suburban Watershed
– Zeyuan Qiu, Tony Prato, and Gerry Boehm1297
- Modeling the Long Term Impacts of Using Rigid Structures in Stream Channel Restoration
– Sue L. Niezgoda and Peggy A. Johnson1597
- Flow Analysis of Landslide Dammed Lake Watersheds: A Case Study
– Kwan Tun Lee and Yi-Ting Lin1615
- Turbulence in Miramichi Bay: The Burnt Church Conflict Over Native Fishing Rights
– Amer Obeidi, Keith W. Hipel, and D. Marc Kilgour1629

Multitemporal Scale Hydrograph Prediction Using Artificial Neural Networks
 - Assefa M. Melesse and Xixi Wang1647

Multifractal Scaling of Daily Runoff Time Series in Agricultural Watersheds
 - Xiaobo Zhou, Naraine Persaud, Huaguo Wang, and Hangsheng Lin1659

Assessment of Methods for Measuring Embeddedness: Application to Sedimentation in Flow Regulated Streams
 - Kelly M. Sennatt, Nira L. Salant, Carl E. Renshaw, and Francis J. Magilligan.....1671

Lake Water Quality Assessment From Landsat Thematic Mapper Data Using Neural Network: An Approach to Optimal Band Combination Selection
 - K.P. Sudheer, Indrajeet Chaubey, and Vijay Garg1683

Runoff Event Impacts on a Water Supply Reservoir: Suspended Sediment Loading, Turbid Plume Behavior, and Sediment Deposition
 - Steven W. Effler, David A. Matthews, Josef W. Kaser, Anthony R. Prestigiacomo, and David G. Smith1697

Discussion - "Adapting Existing Models to Examine Effects of Agricultural Conservation Programs on Stream Habitat Quality," by F. Douglas Shields, Jr., Eddy J. Langendoen, and Martin W. Doyle
 - Xixi Wang, Assefa M. Melesse, Steve W. Kelsch, and Wanhong Yang.....1711

Reply to Discussion - "Adapting Existing Models to Examine Effects of Agricultural Conservation Programs on Stream Habitat Quality," by Xixi Wang, Assefa M. Melesse, Steve W. Kelsch, and Wanhong Yang
 - F. Douglas Shields, Jr., Eddy J. Langendoen, and Martin W. Doyle.....1715

Book Reviews 1717-1722

AWRA Institutional Members.....1723-1726

AWRA Corporate Members1727-1728

2007 AWRA Membership Plan.....1729

2007 AWRA Membership Application1730

Professional Services - AWRA Corporate Members1731-1732

TITLE INDEX TO VOLUME 42 - 2006.....1733-1741

AUTHOR INDEX TO VOLUME 42 - 2006.....1743-1746

P. 2 of 2

Message From the Editor of JAWRA ... Kenneth J. Lanfear, P.E. (editor@awra.org)

December 2006, will be the last JAWRA issue printed by our long-term printer, Allen Press. The good folks in Kansas have been with us through thick and thin, and we wish them the best as JAWRA enters a new era with Blackwell Publishers.

The AWRA Staff and Blackwell have been working to transfer all membership and subscription information, so you should see no break in service. We expect the February 2007 issue to be delivered on time. The AWRA website, www.awra.org, will have information about whom to contact in the unexpected event your copy is lost.

The "new" JAWRA will be very much like the one you know now: same cover, same size, same two-column format, etc. We are, however, taking the opportunity to implement some updates, such as including the AWRA logo in the article banner and making the abstract more prominent. A new paper stock is lighter for mailing, yet easy to read and shows figures clearly.

We have already begun testing our new ScholarOne Manuscript Central™ website. We expect to go "live" with the '07 series of papers. Reviewers will be notified by email and given the opportunity to update their profiles. We value our reviewers, and hope the new system will make their work easier.

Please Submit All Manuscripts Through <http://www.awra.org/jawra/instructionsforauthors.html>.
 All inquiries should be made to: Phone (540) 687-8390, Fax (540) 687-8395, or Email jawra@awra.org
 For AWRA Membership Information ... info@awra.org



Cover Photo: Swift River, Rocky Gorge Scenic Area, near Passaconaway, New Hampshire, USA. Digital Vision Collection: "North American Series," No 030516.

The Journal of Wildlife Management

Contents

p. 1 of 2

Volume 70, Number 6, December 2006

- 1495 Rediscovery and Recovery of the Ivory-Billed Woodpecker
Albert E. Bivings
- 1497 Model Selection, Hypothesis Testing, and Risks of
Condemning Analytical Tools
Robert J. Steidl
- 1499 Wildlife Survival Estimation: Recent Advances and Future
Directions
Dennis L. Murray and Brent R. Patterson
- 1504 Estimation of Demographic Parameters from Live-Encounter
Data: a Summary Review
Brett K. Sandercock
- 1521 Multistate Survival Models and Their Extensions in Program
MARK
Gary C. White, William L. Kendall, and Richard J. Barker
- 1530 On Improving Telemetry-Based Survival Estimation
Dennis L. Murray
- 1544 A Review of Methods to Estimate Cause-Specific Mortality in
Presence of Competing Risks
Dennis M. Heisey and Brent R. Patterson
- 1556 A Long-Term Age-Specific Survival Analysis of Female
White-Tailed Deer
*Glenn D. DelGiudice, John Fieberg, Michael R. Riggs, Michelle
Carstensen Powell, and Wei Pan*
- 1569 Bat Rabies in Indiana
John O. Whitaker Jr. and Louis R. Douglas
- 1574 Key Deer Impacts on Hardwood Hammocks Near Urban
Areas
Mark A. Barrett and Peter Stiling
- 1580 Patterns of Landscape Use by Female Brown Bears on the
Kenai Peninsula, Alaska
*Lowell H. Suring, Sean D. Farley, Grant V. Hilderbrand, Michael
I. Goldstein, Shay Howlin, and Wallace P. Erickson*
- 1588 Cougar Exploitation Levels in Utah: Implications for
Demographic Structure, Population Recovery, and
Metapopulation Dynamics
David C. Stoner, Michael L. Wolfe, and David M. Cboate
- 1601 Interpreting Resource Selection at Different Scales for
Woodland Caribou in Winter
*David D. Gustine, Katherine L. Parker, Roberta J. Lay, Michael P.
Gillingham, and Douglas C. Heard*
- 1615 The Effect of Road-Based Fatalities on the Viability of a Peri-
Urban Swamp Wallaby Population
Daniel Ramp and Dror Ben-Ami
- 1625 Estimating Site Occupancy and Detection Probability
Parameters for Meso- and Large Mammals in a Coastal
Ecosystem
*Allan F. O'Connell Jr., Neil W. Talancy, Larissa L. Bailey, John R.
Sauer, Robert Cook, and Andrew T. Gilbert*
- 1634 Discerning Biases in a Large Scale Mark-Recapture Population
Estimate for Black Bears
David L. Garshelis and Karen V. Noyce
- 1644 Effect of Embedded Lead Shot on Body Condition of
Common Eiders
Flemming R. Merkel, Knud Falk, and Sarah E. Jamieson
- 1650 Habitat Availability and Density Estimations for the Japanese
Hare by Fecal Pellet Counting
*Koji Shimano, Hitobo Yatake, Makoto Nashimoto, Saiko Shiraki,
and Rikyu Matsuki*
- 1659 Swift Fox Use of Black-Tailed Prairie Dog Towns in Northwest
Texas
*Kerry L. Nicholson, Warren B. Ballard, Brady K. McGee, James
Surlis, Jan F. Kamler, and Patrick R. Lemons*
- 1667 Demographic Parameters and Harvest-Explicit Population
Viability Analysis for Polar Bears in M'Clintock Channel,
Nunavut, Canada
*Mitchell K. Taylor, Jeff Laake, Philip D. McLoughlin, H. Dean
Cluff, and François Messier*
- 1674 Comparison of Two Double-Observer Point-Count
Approaches for Estimating Breeding Bird Abundance
*Greg M. Forcey, James T. Anderson, Frank K. Ammer, and Robert
C. Whitmore*
- 1682 Lesser Scaup Winter Foraging and Nutrient Reserve
Acquisition in East-Central Florida
Garth Herring and Jaime A. Collazo
- 1690 Measuring the Demographic and Genetic Effects of Pest
Control in a Highly Persecuted Feral Pig Population
*Brendan D. Cowled, Steven J. Lapidge, Jordan O. Hampton, and
Peter B. S. Spencer*
- 1698 Genetic Composition of Wild Turkeys in Kansas Following
Decades of Translocations
Emily K. Latch, Roger D. Applegate, and Olin E. Rhodes Jr.
- 1704 Horseshoe Crab Eggs Determine Red Knot Distribution in
Delaware Bay
*Sarah M. Karpanty, James D. Fraser, Jim Berkson, Lawrence J.
Niles, Amanda Dey, and Eric P. Smith*
- 1711 Small Mammal Responses to Thinning and Wildfire in
Ponderosa Pine-Dominated Forests of the Southwestern
United States
Sarah J. Converse, Gary C. White, and William M. Block
- 1723 Monitoring and Managing the Harvest of Tegu Lizards in
Paraguay
M. Margarita Mieres and Lee A. Fitzgerald
- 1735 Sciurid Habitat Relationships in Forests Managed Under
Selection and Shelterwood Silviculture in Ontario
Gillian L. Holloway and Jay R. Malcolm
- 1746 Effects of Zoonotic Disease Attributes on Public Attitudes
Towards Wildlife Management
M. Nils Peterson, Angela G. Mertig, and Jianguo Liu
- 1754 Habitat Use by Wintering Surf and White-Winged Scoters:
Effects of Environmental Attributes and Shellfish Aquaculture
*Ramūnas Žydelis, Daniel Esler, W. Sean Boyd, Deborah L.
LaCroix, and Molly Kirk*

(contents continued on inside back cover)

Contents

p. 2 of 2

(continued)

- 1763** Predicting Cerulean Warbler Habitat Use in the Cumberland Mountains of Tennessee
David A. Buebler, Melinda J. Welton, and Tiffany A. Beachy
- 1770** Modeling Movement and Fidelity of American Black Ducks
Nathan L. Zimpfer and Michael J. Conroy
- 1778** Florida Panther Habitat Use: New Approach to an Old Problem
John J. Cox, David S. Maehr, and Jeffery L. Larkin
- 1786** Dietary Conjugated Linoleic Acid to Control the Population of Wild Bird Species Considered a Pest
Rahim Aydin and Mark E. Cook
- 1789** Body Mass of Lesser Scaup During Fall and Winter in the Mississippi Flyway
Josh L. Vest, Richard M. Kaminski, Alan D. Afton, and Francisco J. Vilella
- 1796** Factors Affecting Flight Initiation Distance in American Robins
Perri K. Eason, Peter T. Sherman, Orwell Rankin, and Brian Coleman
- 1801** Captive Breeding of Wild Rabbits: Techniques and Population Dynamics
Antonio J. Arenas, Rafael J. Astorga, Ignacio García, Antonio Varo, Belen Huerta, Alfonso Carbonero, Rafael Cadenas, and Anselmo Perea
- 1805** Diurnal Versus Nocturnal Surveys for California Red-Legged Frogs
Gary M. Fellers and Patrick M. Kleeman
- 1809** Accuracy of Aerial Telemetry Locations in Mountainous Terrain
Glen F. Gantz, L. Charles Stoddart, and Frederick F. Knowlton
- 1813** A Darting Protocol in a Large Carinate, the Peacock
Adeline Loyau and Jarek Szczepaniak
- 1816** Editorial

For the Index, Table of Contents, and Reviewers for Volume 70, 2006, please visit www.wildlifejournals.org.

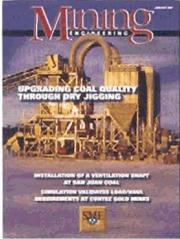
RECEIVED
2007 JAN 22 P
MAY 20 2007

MINING

ENGINEERING

VOL. 59, NO. 1 JANUARY 2007

COVER STORY



CONTENTS — Dry jigging coal has several advantages. Particulate emissions are nearly nonexistent because of the dust collectors on modern dry jig plants. It is also a good way to go at mines with limited water resources. And technological advances have made these plants more efficient. But this technology is not suitable for every application. Page 29.

Copyright 2007 by the Society for Mining, Metallurgy and Exploration, Inc. All rights reserved. MINING ENGINEERING (ISSN 0026-5187) is published monthly by the Society for Mining, Metallurgy, and Exploration, Inc., at 8307 Shaffer Parkway, Littleton, CO, 80127-4102. Phone 1-800-763-3132 or 303-973-9550. Fax: 303-973-3845 or e-mail: sme@smenet.org. Website: www.smenet.org. Periodicals postage paid at Littleton, CO and additional mailing offices. Canadian post: publications mail agreement number 0689688. **POSTMASTER:** Send changes of address to MINING ENGINEERING, 8307 Shaffer Parkway, Littleton, CO, 80127-4102. Article copies and back issues available on microfilm or microfiche from Linda Hall Library in Kansas City, Mo. Printed by Cummings Printing Co.

FEATURE ARTICLES

29
Advances in dry jigging improves coal quality
Richard Weinstein and Richard Snoby

35
Installation of a ventilation shaft at San Juan Coal
Stephen L. Bessinger, T. Arthur Palm and Alan Zeni

39
Simulation modeling validates load and haul requirements at Cortez Gold Mines
T.L. Dyer and W.L. Jacobsen

44
Carbonate minerals focus of 2006 Dreyer Conference
William R. Yernberg

38
TECHNOLOGY NEWS: Field device manager improves process automation

43
TECHNOLOGY NEWS: Software simulates chemical, physical processes

47
TECHNOLOGY NEWS: Catalyst helps cut diesel fuel costs

TECHNICAL PAPERS
(peer reviewed and approved)

49
Technique to assess hazards in underground stone mines: the roof fall risk index (RFRI)
A. T. Iannacchione, L.J. Prosser, G. Esterhuizen and T.S. Bajpayee

58
Roof bolting and mining: are your cycle times in tune?
E.B. Kroeger and M. McGolden

DEPARTMENTS

- 4** The drift of things
- 6** Washington survey
- 8** Coal economics
- 9** United Engineering Foundation
- 10** Letters to the editor
- 12** Industry newswatch
- 66** Coming events
- 68** New products
- 71** SME news
- 73** SME Foundation
- 74** GEM facts
- 75** Environmental Division news
- 77** Fine Grind
- 78** Obituaries
- 86** Classifieds
- 90** Professional services
- 96** Index of advertisers

Reproduction: More than one photocopy of an item from SME may be made for internal use, provided fees are paid directly to the Copyright Clearance Center, 27 Congress St., Salem, MA, 01970, USA. Phone 978-750-8400, fax 978-750-4470. Any other form of reproduction requires special permission from, and may be subject to fees by SME. SME is not responsible for any statements made or opinions expressed in its publications. Member subscription rate included in dues. Nonmember subscription rate, \$245; in Europe, \$275. Single copies \$25, July directory issue, \$150.

PAY DIRT

MAGAZINE

A Voice For Western Mining Since 1938

November 2006

- Cover Story: Freeport, Phelps Dodge plan merger** 3
Mining in the West 8
Mercator changes course to start milling at Mineral Park • New opinion confirms that grizzly, trout are protected at Rock Creek • Teck Cominco quits exploration at Monitor • Scandium found with gallium at Cordero • Canyon gets positive results at Reward • Lisbon Valley continues to ramp up copper output • Franconia gets positive study on Birch Lake • Millstream gets 50% of Uncle Sam Claims • New Jersey mill work 60% completed • Atlas applies for permit for larger area at Dragon • Queenstake cutting costs at Jerritt Canyon mines
- Energy** 17
Water inflow delaying development one year at Cigar Lake uranium mine • Group organizing against New Mexico uranium mining • Montana getting plant to turn coal into diesel
- Governments and Mining** 19
NMA asks for more effort on development • NMA backs Glamis in NAFTA challenge • NMA wants ESA to be more effective, useful • NMA wants exemption for mine transformers • NMA files amicus brief for Coeur Alaska mine • Supreme Court to hear mining-related cases • Supreme Court gives Cemex right to quarry
- Environment** 22
Canada's GHG plan doesn't mention Kyoto • EPA selects plan to clean Mid-night uranium mine
- The Business of Mining** 23
Phelps Dodge earnings hit \$888 million for third quarter • FCX earns \$350.7 million in 3Q with mining of high-grade • Rio Tinto to invest \$1.5 billion in giant Oyu Tolgoi project in Mongolia • Entree likes Rio Tinto investment in Ivanhoe

Commentary, 2; Ad Index, 8; Mexico, 10; Canada, 11; Latin America, 13; Chile, 14; World, 15; Western Briefs, 16; Metals, 25; Directory, 30; Safety, Health & Labor, 31; Low Grade, 32

On the Cover

Grasberg is Freeport McMoRan's only producer, but it's a giant, with the largest reserve of copper and gold of any mine in the world. Its mill is capable of processing some 230,000 mtpd of ore and more expansion is being planned. The ore that runs through the mill is 0.85 percent copper and 0.83 gpt gold, using figures from the most recent quarter, though a year earlier those grades were considerably higher. Mining is done in both the open pit and in underground operations. The mine has reserves of 40.3 billion pounds of copper and 43.9 million ounces of gold.

PAY DIRT Magazine

William C. Epler
Publisher and Editor
1968-1995

William B. Sullivan
Publisher
1995-1999

Gary Dillard
Editor

Dan Eyde • Ted Eyde

George Leaming
Clarence Ellis
Chug-A-Lug
Correspondents

Frank Barco
Production Manager

Lupe A. Silva
Adelina Espinoza
Rosina M. Hernandez
Production Staff

Caryl L. Larkins
Advertising Sales/Circulation

Mary Farrington
Office Staff

Doug Harris
Maintenance Manager

PAY DIRT (USPS 424-000)
P.O. Drawer 48, Copper Queen Plaza
Bisbee, AZ 85603
(520) 432-2244; FAX (520) 432-2247
E-mail: paydirt@cablone.net

PAY DIRT is published monthly by
Copper Queen Publishing Co. Inc.

Subscription Rates

Single copy	\$ 3.00
One year	\$30.00
Two years	\$55.00
Three years	\$75.00

Canadian subscriptions add \$10.00 per year;
foreign subscriptions add \$50.00 per year

Advertising Rates

For information call (520) 432-2244

Periodical postage paid at Bisbee, AZ 85603
Postmaster: Please send Form 3579 to:
PAY DIRT, P.O. Drawer 48, Bisbee, AZ 85603

PAY DIRT

MAGAZINE

A Voice For Western Mining Since 1938

December 2006

Cover Story: Sunshine mill renovation starts **3**

Mining in the West **6**

Western Goldfields orders \$67 million fleet for Mesquite mine • PolyMet reaffirms late-2008 start of commercial production • Aurelio to start drilling Courtland copper site • New Jersey to drive crosscut at Coleman • New Jersey acquires rights to Niagara deposit • Nevada Copper starts drilling 12,000 meters at Pumpkin Hollow • High-grade drill results from Cordero gallium • French Gulch testing moves on to mining • N.M. agency seeking old coal-mine maps • Augusta continues to hit copper at Rosemont • Lisbon Valley ramp-up is slower than expected • New gold zone is found at Copperstone in Arizona • Beartooth expands PGM mineralization • Gryphon delaying work at Borealis

Energy **15**

Remediation work gets under way at flooded uranium site • Energy Fuels considering new Colorado uranium mill • Permitting started for ISL mine in Texas

Governments and Mining **17**

NMA wants improved penalty-reform plan • Federal court limits states' damage claims • South Africa approves purchase of South Deep • Peabody, NMA reps named to Interior committee • Supreme Court to decide on whether EPA can regulate GHG • Dozens of projects on GHG are planned

Environment **19**

China GHG growth is faster than expected, U.S. is lower • Groups sue Corps over NovaGold's permit • BacTech technology wins award in China

The Business of Mining **21**

Newmont net more than doubles to \$568 million year to date • Barrick earns \$405 million; cash flow at record \$805 million • Codelco's income (before taxes) hits \$7.2 billion in nine months • Mercator reports record earnings as output, price increase • With strikes over, net for Grupo Mexico grows • Kinross, Bema seek to join as \$7.9 billion firm • Goldcorp net earnings hit \$59.5 million in third quarter • Quebec court approves Iamgold, Cambior deal • Iamgold sees earnings rise to \$13.4 million

Commentary, 2; Ad Index, 6; Canada, 9; Chile, 10; Mexico, 11; Latin America, 12; World, 13; Western Briefs, 14; Energy Briefs, 16; Metals, 22; Companies and Markets, 24; Earnings Briefs, 26, 27; Miners in the News, 28, 29; Directory, 30; Low Grade, 32

On the Cover

Historic and modern views of the surface infrastructure for the Sunshine mine in Idaho's Silver Valley. Sterling Mining is working to bring the big silver producer back on line. (All photos from Sterling Mining.)

PAY DIRT

Magazine

William C. Epler
Publisher and Editor
1968-1995

William B. Sullivan
Publisher
1995-1999

Gary Dillard
Editor

Dan Eyde • Ted Eyde
George Leaming
Clarence Ellis
Chug-A-Lug
Correspondents

Frank Barco
Production Manager

Lupe A. Silva
Adelina Espinoza
Rosina M. Hernandez
Production Staff

Caryl L. Larkins
Advertising Sales/Circulation

Mary Farrington
Office Staff

Doug Harris
Maintenance Manager

PAY DIRT (USPS 424-000)
P.O. Drawer 48, Copper Queen Plaza
Bisbee, AZ 85603
(520) 432-2244; FAX (520) 432-2247
E-mail: paydirt@cablone.net

PAY DIRT is published monthly by
Copper Queen Publishing Co. Inc.

Subscription Rates

Single copy	\$ 3.00
One year	\$30.00
Two years	\$55.00
Three years	\$75.00

Canadian subscriptions add \$10.00 per year;
foreign subscriptions add \$50.00 per year

Advertising Rates

For information call (520) 432-2244

Periodical postage paid at Bisbee, AZ 85603
Postmaster: Please send Form 3579 to:
PAY DIRT, P.O. Drawer 48, Bisbee, AZ 85603

Plains Anthropologist

CONTENTS

Articles

Beads and a Vision: Waking Dreams and Induced Dreams As a Source of Knowledge for Beadwork Making. An Ethnographic Account from Sioux Country.....	Hélène Wallaertt	3
The Technomechanics of Plains Indian Coiled Gambling Baskets.....	Edward A. Jolie	17
Women in War: Gender in Plains Biographic Rock Art.....	James D. Keyser, Linea Sundstrom, and George Poetschat	51
Drought or Development? Patterns of Paleoindian Site Discovery on the Great Plains of North America.....	John D. Seebach	71
Barbour Terrace Revisited: Ellison Orr's 1938 Survey in Modern Perspective.....	Michael J. Perry	89

Reports

Pedogenic Minerals As Artifact Antiquity Indicators.....	Calvin D. Howard	101
---	-------------------------	------------

Memorial

Lawrence Leon Tomsyck	Thomas D. Thiessen	105
------------------------------------	---------------------------	------------

Book Reviews

BETTY: Comanche Society: Before the Reservation.....	Joaquín Rivaya-Martínez	107
FLINT AND FLINT: Documents of the Coronado Expedition, 1539-1542: "They Were Not Familiar with His Majesty, nor Did They Wish to Be His Subjects."	Donna C. Roper	108
LA VERE: The Texas Indians	Thomas W. Kavanagh	110
PERTULLA: The Prehistory of Texas.....	Darrell Creel	112

Note from the President	1
Editor's Note	1
Mission Statement	50
Announcements	2, 16, 114, 120

On the cover: Crow hot dancer from the Joliet site (from "Women in War: Gender in Plains Biographic Rock Art" by James D. Keyser, Linea Sundstrom, and George Poetschat, Figure 5).

Plains Anthropologist Vol. 51, No. 197, 2006

Feb. 2006

Rangeland Ecology & Management

A Journal of the Society for Range Management

VOLUME 60

NUMBER 1

JANUARY 2007

Table of Contents

Research Articles

- 1 Integrated Ecological and Economic Analysis of Ranch Management Systems: An Example From South Central Florida
Hilary M. Swain, Patrick J. Bohlen, Kenneth L. Campbell, Laurent O. Lollis, and Alan D. Steinman
- 12 Integrating Ranch Forage Production, Cattle Performance, and Economics in Ranch Management Systems for Southern Florida
J. D. Arthington, F. M. Roka, J. J. Mullahey, S. W. Coleman, R. M. Muchovej, L. O. Lollis, and D. Hitchcock
- 19 Soil Phosphorus, Cattle Stocking Rates, and Water Quality in Subtropical Pastures in Florida, USA
John C. Capece, Kenneth L. Campbell, Patrick J. Bohlen, Donald A. Graetz, and Kenneth M. Portier
- 31 Effects of Cattle Stocking Rates on Nematode Communities in South Florida
Robert McSorley and George W. Tanner
- 36 Potential Outcomes and Consequence of a Proposed Grazing Permit Buyout Program
Mark S. Steinbach and Jack Ward Thomas
- 45 Utilizing Remote Sensing and GIS to Detect Prairie Dog Colonies
Timothy J. Assal and Jeffrey A. Lockwood
- 54 Evaluation of Low-Moisture Blocks and Conventional Dry Mixes for Supplementing Minerals and Modifying Cattle Grazing Patterns
Derek W. Bailey and G. Robert Welling
- 65 Diet Composition of Cattle Grazing Sandhills Range During Spring
Jerry D. Volesky, Walter H. Schacht, Patrick E. Reece, and Timothy J. Vaughn
- 71 Livestock Forage Conditioning Among Six Northern Great Basin Grasses
Dave Ganskopp, Lisa Aguilera, and Marty Vavra
- 79 Soil Water Content Dynamics Along a Range Condition Gradient in a Shortgrass Steppe
Eduardo Medina-Roldán, J. Tulio Arredondo Moreno, Edmundo García Moya, and F. Martín Huerta Martínez
- 88 Influence of 90 Years of Protection From Grazing on Plant and Soil Processes in the Subalpine of the Wasatch Plateau, USA
Richard A. Gill
- 99 Seed Shatter Dates of Antelope Bitterbrush in Oregon
G. R. Johnson and Paul C. Berrang

Research Notes

- 104 Monoterpene Production in Redberry Juniper Foliage Following Fire
E. S. Campbell and C. A. Taylor, Jr.
- 110 Brangus Cow-Calf Performance Under Two Stocking Levels on Chihuahuan Desert Rangeland
Milt Thomas, Jerry Hawkes, Godfrey Khumalo, and Jerry L. Holechek

Front Cover Photograph: Improved pastures in south Florida contribute significant nutrient loads to downstream water bodies, such as Lake Okeechobee. The cows grazing in a seasonal wetland were part of a 6-year integrated study on nutrient loads, cattle and forage production, and ranch economics. Photograph contributed by Patrick Bohlen.

RECEIVED
2007 JAN 24 AM 11:49
DENVER CO LIBRARY

SOIL SCIENCE

An Interdisciplinary Approach to Soils Research

DECEMBER 2006

CONTENTS

Vol. 171 No. 12

PREFIRE AND POSTFIRE EROSION OF SOIL NUTRIENTS WITHIN A CHAPARRAL WATERSHED	915
<i>Jason P. de Koff, Robert C. Graham, Ken R. Hubbert, and Peter M. Wohlgenuth</i>	
EFFECTS OF WETTING BY SPRAY ON CONCENTRATED FLOW EROSION AND INTAKE RATE	929
<i>Jian Yu, T. Lei, I. Shainberg, A. I. Mamedov, and G. J. Levy</i>	
CARBON AND NITROGEN POOLS IN SOIL AGGREGATES SEPARATED BY DRY AND WET SIEVING METHODS	937
<i>Upendra M. Sainju</i>	
USING EXPERIMENTAL AND GEOSPATIAL DATA TO ESTIMATE REGIONAL CARBON SEQUESTRATION POTENTIAL UNDER NO-TILL MANAGEMENT	950
<i>Zhengxi Tan, Rattan Lal, and Shuguang Liu</i>	
EFFECT OF IONIC STRENGTH AND SODIUM ADSORPTION RATIO ON THE FLOCCULATION/DISPERSION OF TWO SURFACE SOILS FROM EASTERN ARKANSAS	960
<i>Mohamed S. Alhammadi and David M. Miller</i>	
PREDICTING AND TESTING SITE-SPECIFIC POTASSIUM FERTILIZATION OF MAIZE IN SOILS OF THE TROPICS—AN EXAMPLE FROM THAILAND	968
<i>Russell Yost and Tasnee Attanandana</i>	
PEDOGENIC CARBONATE CONCRETIONS IN THE RUSSIAN CHERNOZEM	981
<i>Elena A. Mikhailova, Christopher J. Post, Kimberly Magrini-Bair, and James W. Castle</i>	
TO OUR MANUSCRIPT REVIEWERS	992

Soil Science is now accepting for publication announcements of appropriate meetings. Please send meeting announcements to: *Soil Science*, Lippincott Williams & Wilkins, 351 West Camden Street, Baltimore, MD 21201-2436. Announcements must include: date, name of conference, location, and contact address/phone/e-mail.

CONTENTS

Feature Articles

Association between fire return interval and population dynamics in four California populations of Tecate cypress (*Cupressus forbesii*). Roland C. de Gouvenain and Ali M. Ansary. 447

Vegetation of tephra deposits 50 years after the end of the eruption of the Parícutín Volcano, Mexico. Roberto Lindig-Cisneros, Sebastiana Galindo-Vallejo, and Sabina Lara-Cabrera. 455

Seed dispersal and germination of the epiphyte *Tillandsia brachycaulos* (Bromeliaceae) in a tropical dry forest, Mexico. Demetria C. Mondragon and Maria Calvo-Irabien L. 462

Vegetation-index models predict areas vulnerable to purple loosestrife (*Lythrum salicaria*) invasion in Kansas. Robert P. Anderson, A. Townsend Peterson, and Stephen L. Egbert. 471

Melanotrichus boydi (Heteroptera: Miridae) is a specialist on the nickel hyperaccumulator *Streptanthus polygáloides* (Brassicaceae). Michael A. Wall and Robert S. Boyd. 481

Genetic and environmental sources of variation in survival on nonnative host species in the generalist seed beetle, *Stator limbatus*. Charles W. Fox, David M. Gordon, and Pasano Bojang. 490

Distribution and abundance of the endangered killifish *Fundulus lima*, and its interaction with exotic fishes in oases of central Baja California, Mexico. Gorgonio Ruiz-Campos, Faustino Camarena-Rosales, Salvador Contreras-Balderas, Claudia A. Reyes-Valdez, José de la Cruz-Aguero, and Elias Torres-Balcazar. 502

Effects of artificial lighting and presence of *Menidia beryllina* on growth and diet of *Labidesthes sicculus*. Raul Ramirez, Eric R. Johnson, and Keith B. Gido. 510

Population dynamics of a threatened sand dune lizard. Cameron W. Barrows. 514

Effects of Old World bluestem (*Bothriochloa ischaemum*) on food availability and avian community composition within the mixed-grass prairie. Karen R. Hickman, Greg H. Farley, Rob Channell, and Jan E. Steier. 524

Annual cycles in body mass and reproduction of Chiricahua fox squirrels (*Sciurus nayaritensis chiricahuae*). Bret S. Pasch and John L. Koprowski. 531

Notes

Velvet ants (Hymenoptera: Mutillidae) of the Bitter Lake National Wildlife Refuge, New Mexico, with descriptions of new species. Donald G. Manley and William R. Radke. 536

Recent colonization of Midriff Islands, Gulf of California, Mexico, by feral honeybees, *Apis mellifera*. Thomas Bowen, Dan W. Bench, and Lawrence A. Johnson. 542

Cercyonis pegala texana (Lepidoptera: Nymphalidae: Satyrinae): new record from the state of Coahuila, Mexico. Armando J. Contreras-Balderas and Andrew D. Warren. 552

Eradication of spotted jewelfish, *Hemichromis guttatus*, from Poza San José del Anteojo, Cuatro Ciénegas Bolsón, Coahuila, Mexico. María de Lourdes Lozano-Vilano, Armando J. Contreras-Balderas, and María Elena García-Ramírez. 553

Diet of sympatric pattern classes C and E of the parthenogenetic whiptail lizard *Aspidoscelis tessellata* at Sumner Lake, De Baca County, New Mexico. Mark A. Paulissen, James M. Walker, and Harry L. Taylor. 555

Commensal foraging by a fan-tailed warbler (*Euthlypis lachrymosa*) with a nine-banded armadillo, (*Dasyus novemcinctus*) in southwestern Mexico. Richard R. Schaefer and Jesse F. Fagan. 560

California least tern chick predation by greater roadrunner. Adam W. Wheelchel and Kevin C. Lansford. 562

Karyotypes of three species of harvest mice (*Reithrodontomys*). Irma Urbina Sanchez, Ma. Angeles Aguilar Santamaria, Elizabeth Arellano, Francisco X. Gonzalez-Cozatl, and Duke S. Rogers. 564

Canid diversity in the Texas Panhandle. Jan F. Kamler and Warren B. Ballard. 569

Population density and habitat use of mule deer (*Odocoileus hemionus*) on Santa Catalina Island, California. Paul Stapp and Darcee A. Guttilla. 572

Summer diets of feral hogs in the Davis Mountains, Texas. Roger N. Adkins and Louis A. Harveson. 578

Texas tortoise (*Gopherus berlandieri*) consumed by a mountain lion (*Puma concolor*) in southern Texas. R. Bill Adams, James C. Pitman, and Louis A. Harveson. 581

Richard Kirk Spears, Jr., 1920–2004. 583

Announcements. 585

Index for Volume 51. 591

The online article is the official version and may contain additional content not available in this print issue. To access the full article, including multimedia, enhanced figures, auxiliary materials, and other nonprinted content, go to <http://www.wagu.org/journals/wr>.

Opinions

p. 1 of 2

W11301 *Faisal Hossain and Dennis P. Lettenmaier*

Flood prediction in the future: Recognizing hydrologic issues in anticipation of the Global Precipitation Measurement mission (DOI 10.1029/2006WR005202)

Regular Articles

W11401 *A. Peters and W. Durner*

Improved estimation of soil water retention characteristics from hydrostatic column experiments (DOI 10.1029/2006WR004952)

W11402 *Amy L. Rhodes, Andrew J. Guswa, and Silvia E. Newell*

Seasonal variation in the stable isotopic composition of precipitation in the tropical montane forests of Monteverde, Costa Rica (DOI 10.1029/2005WR004535)

W11403 *Sébastien Lambot, Lutz Weihermüller, Johan A. Huisman, Harry Vereecken, Marnik Vanclooster, and Evert C. Slob*

Analysis of air-launched ground-penetrating radar techniques to measure the soil surface water content (DOI 10.1029/2006WR005097)

W11404 *Hyun-Han Kwon, Upmanu Lal, Young-Il Moon, Abedalrazq F. Khalil, and Hosung Ahn*

Episodic interannual climate oscillations and their influence on seasonal rainfall in the Everglades National Park (DOI 10.1029/2006WR005017)

W11405 *J. Scibek and D. M. Allen*

Modeled impacts of predicted climate change on recharge and groundwater levels (DOI 10.1029/2005WR004742)

W11406 *Andy Hodson*

Biogeochemistry of snowmelt in an Antarctic glacial ecosystem (DOI 10.1029/2005WR004311)

W11407 *O. Seidou, T. B. M. J. Ouarda, L. Bilodeau, M. Hessami, A. St-Hilaire, and P. Bruneau*

Modeling ice growth on Canadian lakes using artificial neural networks (DOI 10.1029/2005WR004622)

W11408 *O. Seidou, T. B. M. J. Ouarda, M. Barbet, P. Bruneau, and B. Bobée*

A parametric Bayesian combination of local and regional information in flood frequency analysis (DOI 10.1029/2005WR004397)

W11409 *Lucy Marshall, Ashish Sharma, and David Nott*

Modeling the catchment via mixtures: Issues of model specification and validation (DOI 10.1029/2005WR004613)

W11410 *Yoshihiro Shibuo, Jerker Jarsjö, and Georgia Destouni*

Bathymetry-topography effects on saltwater–fresh groundwater interactions around the shrinking Aral Sea (DOI 10.1029/2005WR004207)

W11411 *Brian J. Yanites, Robert H. Webb, Peter G. Griffiths, and Christopher S. Magirl*

Debris flow deposition and reworking by the Colorado River in Grand Canyon, Arizona (DOI 10.1029/2005WR004847)

W11412 *Judith K. Haschenburger*

Observations of event-based streambed deformation in a gravel bed channel (DOI 10.1029/2006WR004985)

(continued on inside back cover)

Water Resources Research

Vol. 42, no. 11 (Nov. '06)

(continued from outside back cover)

p. 2 of 2

- W11413** *S. Miori, R. Repetto, and M. Tubino*
A one-dimensional model of bifurcations in gravel bed channels with erodible banks (DOI 10.1029/2006WR004863)
- W11414** *J. Aberle and V. Nikora*
Statistical properties of armored gravel bed surfaces (DOI 10.1029/2005WR004674)
- W11415** *B. Panteleit, W. Kessels, and F. Binot*
Mud tracer test during soft rock drilling (DOI 10.1029/2005WR004487)
- W11416** *András Bárdossy*
Copula-based geostatistical models for groundwater quality parameters (DOI 10.1029/2005WR004754)
- W11417** *P. Salamon, D. Fernández-García, and J. J. Gómez-Hernández*
Modeling mass transfer processes using random walk particle tracking (DOI 10.1029/2006WR004927)
- W11418** *Ivars Neretnieks*
Channeling with diffusion into stagnant water and into a matrix in series (DOI 10.1029/2005WR004448)
- W11419** *Giuseppe Mendicino, Alfonso Senatore, Giandomenico Spezzano, and Salvatore Straface*
Three-dimensional unsaturated flow modeling using cellular automata (DOI 10.1029/2005WR004472)
- W11420** *John A. Christ, C. Andrew Ramsburg, Kurt D. Pennell, and Linda M. Abriola*
Estimating mass discharge from dense nonaqueous phase liquid source zones using upscaled mass transfer coefficients: An evaluation using multiphase numerical simulations (DOI 10.1029/2006WR004886)
- W11421** *Javier González and Juan B. Valdés*
New drought frequency index: Definition and comparative performance analysis (DOI 10.1029/2005WR004308)
- W11422** *Sujith Ravi, Paolo D'Odorico, Bruce Herbert, Ted Zobeck, and Thomas M. Over*
Enhancement of wind erosion by fire-induced water repellency (DOI 10.1029/2006WR004895)
- W11423** *Fredrik Wetterhall, András Bárdossy, Deliang Chen, Sven Halldin, and Chong-Yu Xu*
Daily precipitation-downscaling techniques in three Chinese regions (DOI 10.1029/2005WR004573)

Technical Notes

- W11501** *Muhammed Khlosi, Wim M. Cornelis, Donald Gabriels, and Gürkan Sin*
Simple modification to describe the soil water retention curve between saturation and oven dryness (DOI 10.1029/2005WR004699)
- W11502** *D. Han and M. Bray*
Automated Thiessen polygon generation (DOI 10.1029/2005WR004365)
- W11503** *M. Leonard, A. V. Metcalfe, and M. F. Lambert*
Efficient simulation of a space-time Neyman-Scott rainfall model (DOI 10.1029/2006WR004986)
- W11504** *N. Suciú, C. Vamoş, and J. Eberhard*
Evaluation of the first-order approximations for transport in heterogeneous media (DOI 10.1029/2005WR004714)

Commentaries

- W11601** *A. G. J. Hilberts and P. A. Troch*
Comment on "Influence of capillarity on a simple harmonic oscillating water table: Sand column experiments and modeling" by Nick Cartwright et al. (DOI 10.1029/2006WR005042)
- W11602** *Nick Cartwright, Peter Nielsen, and Pierre Perrochet*
Reply to comment by A. G. J. Hilberts and P. A. Troch on "Influence of capillarity on a simple harmonic oscillating water table: Sand column experiments and modeling" (DOI 10.1029/2006WR005188)

The Author Index appears at the end of the issue.

Volume 42 Number 12 December 2006
WRERAQ (12) W12201-W12501; W12701; W12S01-12S16 (2006)
ISSN 0043-1397

The online article is the official version and may contain additional content not available in this print issue. To access the full article, including multimedia, enhanced figures, auxiliary materials, and other nonprinted content, go to <http://www.wagur.org/journals/wrr>.

Rapid Communications

p. 1 of 3

- W12201** *H. C. Winsemius, H. H. G. Savenije, N. C. van de Giesen, B. J. J. M. van den Hurk, E. A. Zapreeva, and R. Klees*
Assessment of Gravity Recovery and Climate Experiment (GRACE) temporal signature over the upper Zambezi
(DOI 10.1029/2006WR005192)
- W12202** *John S. Selker, Luc Thévenaz, Hendrik Huwald, Alfred Mallet, Wim Luxemburg, Nick van de Giesen, Martin Stejskal, Josef Zeman, Martijn Westhoff, and Marc B. Parlange*
Distributed fiber-optic temperature sensing for hydrologic systems (DOI 10.1029/2006WR005326)
- W12203** *Pat J.-F. Yeh, S. C. Swenson, J. S. Famiglietti, and M. Rodell*
Remote sensing of groundwater storage changes in Illinois using the Gravity Recovery and Climate Experiment (GRACE) (DOI 10.1029/2006WR005374)

Regular Articles

- W12401** *Reza Kerachian and Mohammad Karamouz*
Optimal reservoir operation considering the water quality issues: A stochastic conflict resolution approach
(DOI 10.1029/2005WR004575)
- W12402** *G. Sinai and C. Dirksen*
Experimental evidence of lateral flow in unsaturated homogeneous isotropic sloping soil due to rainfall
(DOI 10.1029/2005WR004617)
- W12403** *S. Assouline and D. Or*
Anisotropy factor of saturated and unsaturated soils (DOI 10.1029/2006WR005001)
- W12404** *Niklas Linde, Andrew Binley, Ari Tryggvason, Laust B. Pedersen, and André Revil*
Improved hydrogeophysical characterization using joint inversion of cross-hole electrical resistance and ground-penetrating radar traveltime data (DOI 10.1029/2006WR005131)
- W12405** *S. Assouline and Y. Mualem*
Runoff from heterogeneous small bare catchments during soil surface sealing (DOI 10.1029/2005WR004592)
- W12406** *Gerrit Schoups, C. Lee Addams, Jose Luis Minjares, and Steven M. Gorelick*
Reliable conjunctive use rules for sustainable irrigated agriculture and reservoir spill control
(DOI 10.1029/2006WR005007)
- W12407** *Margarita Genius and Konstantinos P. Tsagarakis*
Water shortages and implied water quality: A contingent valuation study (DOI 10.1029/2005WR004833)
- W12408** *F. J. Leij, A. Sciortino, and A. W. Warrick*
Infiltration in two parallel soil columns (DOI 10.1029/2006WR005009)
- W12409** *G. Darvini and P. Salandin*
Nonstationary flow and nonergodic transport in random porous media (DOI 10.1029/2005WR004846)

(continued on inside back cover)

Water Resources Research

Vol. 42, no. 12 (Dec. '06)

(continued from outside back cover)

p. 2 of 3

- W12410** *Masahide Ishizuka, Yumi Sone, Hiroyuki Ii, and Tatemasa Hirata*
Effect of enriched early dropped rainwater on mesoscale isotopic distribution in surface water on the Kii Peninsula, Japan (DOI 10.1029/2004WR003810)
- W12411** *Anne Jefferson, Gordon Grant, and Tim Rose*
Influence of volcanic history on groundwater patterns on the west slope of the Oregon High Cascades (DOI 10.1029/2005WR004812)
- W12412** *Felix Schlöpfer and Pieter-Jan Witzig*
Public support for river restoration funding in relation to local river ecomorphology, population density, and mean income (DOI 10.1029/2006WR004940)
- W12413** *Wiebe Borren and Wladimir Bleuten*
Simulating Holocene carbon accumulation in a western Siberian watershed mire using a three-dimensional dynamic modeling approach (DOI 10.1029/2006WR004885)
- W12414** *Charles J. Werth, Olaf A. Cirpka, and Peter Grathwohl*
Enhanced mixing and reaction through flow focusing in heterogeneous porous media (DOI 10.1029/2005WR004511)
- W12415** *Michael Bliss Singer and Thomas Dunne*
Modeling the influence of river rehabilitation scenarios on bed material sediment flux in a large river over decadal timescales (DOI 10.1029/2006WR004894)
- W12416** *Karsten Osenbrück, Stefan Fiedler, Kay Knöller, Stephan M. Weise, Jürgen Sültenfuß, Harald Oster, and Gerhard Strauch*
Timescales and development of groundwater pollution by nitrate in drinking water wells of the Jahna-Aue, Saxonia, Germany (DOI 10.1029/2006WR004977)
- W12417** *Marieke M. de Groen and Hubert H. G. Savenije*
A monthly interception equation based on the statistical characteristics of daily rainfall (DOI 10.1029/2006WR005013)
- W12418** *R. Juanes, E. J. Spiteri, F. M. Orr Jr., and M. J. Blunt*
Impact of relative permeability hysteresis on geological CO₂ storage (DOI 10.1029/2005WR004806)
- W12419** *Kick Hemker and Mark Bakker*
Analytical solutions for whirling groundwater flow in two-dimensional heterogeneous anisotropic aquifers (DOI 10.1029/2006WR004901)
- W12420** *Chongxuan Liu, John M. Zachara, Wassana Yantasee, Paul D. Majors, and James P. McKinley*
Microscopic reactive diffusion of uranium in the contaminated sediments at Hanford, United States (DOI 10.1029/2006WR005031)
- W12421** *David E. Rupp and John S. Selker*
On the use of the Boussinesq equation for interpreting recession hydrographs from sloping aquifers (DOI 10.1029/2006WR005080)
- W12422** *B. Renard, V. Garreta, and M. Lang*
An application of Bayesian analysis and Markov chain Monte Carlo methods to the estimation of a regional trend in annual maxima (DOI 10.1029/2005WR004591)

Technical Notes

- W12501** *G. Di Baldassarre, A. Brath, and A. Montanari*
Reliability of different depth-duration-frequency equations for estimating short-duration design storms (DOI 10.1029/2006WR004911)

(continued on facing page)

Water Resources Research

Vol. 42, no. 12 (Dec. '06)

(continued from inside back cover)

p. 3 of 3

Corrections

- W12701** *B. A. Mamedov and A. S. Ekenoğlu*
Correction to "Evaluation of the Hantush's $M(\alpha, \beta)$ function using binomial coefficients"
(DOI 10.1029/2006WR005618)

Special Section: Colloid Transport in Subsurface Environments

- W12S01** *James E. Saiers and Joseph N. Ryan*
Introduction to special section on Colloid Transport in Subsurface Environments (DOI 10.1029/2006WR005620)
- W12S02** *Maria Auset and Arturo A. Keller*
Pore-scale visualization of colloid straining and filtration in saturated porous media using micromodels
(DOI 10.1029/2005WR004639)
- W12S03** *Yuniati Zevi, Annette Dathe, Bin Gao, Brian K. Richards, and Tammo S. Steenhuis*
Quantifying colloid retention in partially saturated porous media (DOI 10.1029/2006WR004929)
- W12S04** *Thomas Baumann and Reinhard Niessner*
Micromodel study on repartitioning phenomena of a strongly hydrophobic fluorophore at a colloid/1-octanol interface
(DOI 10.1029/2006WR004893)
- W12S05** *David A. DiCarlo, Yuniati Zevi, Annette Dathe, Shree Giri, Bin Gao, and Tammo S. Steenhuis*
In situ measurements of colloid transport and retention using synchrotron X-ray fluorescence
(DOI 10.1029/2005WR004850)
- W12S06** *Naoyuki Ochiai, Erika L. Kraft, and John S. Selker*
Methods for colloid transport visualization in pore networks (DOI 10.1029/2006WR004961)
- W12S08** *Ori Zvikelsky and Noam Weisbrod*
Impact of particle size on colloid transport in discrete fractures (DOI 10.1029/2006WR004873)
- W12S09** *Ned B. Turner, Joseph N. Ryan, and James E. Saiers*
Effect of desorption kinetics on colloid-facilitated transport of contaminants: Cesium, strontium, and illite colloids
(DOI 10.1029/2006WR004972)
- W12S10** *Liping Pang and Jirka Šimunek*
Evaluation of bacteria-facilitated cadmium transport in gravel columns using the HYDRUS colloid-facilitated solute transport model (DOI 10.1029/2006WR004896)
- W12S11** *Nathalie Tufenkji*
Application of a dual deposition mode model to evaluate transport of *Escherichia coli* D21 in porous media
(DOI 10.1029/2005WR004851)
- W12S12** *Scott A. Bradford, Jirka Šimunek, and Sharon L. Walker*
Transport and straining of *E. coli* O157:H7 in saturated porous media (DOI 10.1029/2005WR004805)
- W12S13** *Andrea Cortis, Thomas Harter, Lingling Hou, E. Robert Atwill, Aaron I. Packman, and Peter G. Green*
Transport of *Cryptosporidium parvum* in porous media: Long-term elution experiments and continuous time random walk filtration modeling (DOI 10.1029/2006WR004897)
- W12S14** *S. Torkzaban, S. M. Hassanizadeh, J. F. Schijven, and H. H. J. L. van den Berg*
Role of air-water interfaces on retention of viruses under unsaturated conditions (DOI 10.1029/2006WR004904)
- W12S15** *S. A. Bradford, J. Šimunek, M. Bettahar, M. T. van Genuchten, and S. R. Yates*
Significance of straining in colloid deposition: Evidence and implications (DOI 10.1029/2005WR004791)
- W12S16** *Shangping Xu, Bin Gao, and James E. Saiers*
Straining of colloidal particles in saturated porous media (DOI 10.1029/2006WR004948)

There is no W12S07 in this issue.

Author and Subject Indexes appear at the end of the issue.

Western North American Naturalist

Volume 66 No. 4

October 2006

ISSN 1527-0904

CONTENTS

p. 1 of 2

Articles

- Testing hypothesized evolutionary shifts toward stress tolerance in hybrid *Helianthus* species
..... Larry C. Brouillette, Maheteme Gebremedhin, David M. Rosenthal,
and Lisa A. Donovan 409
- Long-term effects of tebuthiuron on *Bromus tectorum* Dana M. Blumenthal,
Urszula Norton, Justin D. Derner, and Jean D. Reeder 420
- Microhabitat-specific controls on soil respiration and denitrification in the Mojave Desert:
the role of harvester ant nests and vegetation Jeremy B. Jones and Diane Wagner 426
- Effects of temperature on the survival and growth of age-0 least chub (*Lotichthys phlegethon-*
tis) Eric J. Billman, Eric J. Wagner, and Ronney E. Arndt 434
- Correlation of neighborhood relationships, carbon assimilation, and water status of sage-
brush seedlings establishing after fire Katherine DiCristina and Matthew Germino 441
- Wildlife use of Douglas-fir dwarf mistletoe witches' brooms in the Southwest
..... Shaula J. Hedwall and Robert L. Mathiasen 450
- Serologic survey of the island spotted skunk on Santa Cruz Island Victoria J. Bakker,
Dirk H. Van Vuren, Kevin R. Crooks, Cheryl A. Scott,
Jeffery T. Wilcox, and David K. Garcelon 456
- Characterization of the dorsal skin gland of the Texas kangaroo rat, *Dipodomys elator*
(Rodentia: Heteromyidae) Frederick B. Stangl, Jr., Jim R. Goetze,
Michael M. Shipley, and Desiree A. Early 462
- Stand-level herbivory in an old-growth conifer forest canopy ... David C. Shaw, Kristina A.
Ernest, H. Bruce Rinker, and Margaret D. Lowman 473
- Populations and habitat relationships of Piute ground squirrels in southwestern Idaho
..... Karen Steenhof, Eric Yensen, Michael N. Köchert, and Kenneth L. Gage 482
- Ontogenetic and habitat-related changes in diet of late larval and juvenile suckers (*Catosto-*
midae) in Upper Klamath Lake, Oregon Douglas F. Markle and Kale Clauson 492
- Long-term interactions of climate, productivity, species richness, and growth form in relictual
sagebrush steppe plant communities Neil E. West and Terence P. Yorks 502

Notes

- The female of *Cnodocentron* (*Caenocentron*) *yavapai* Moulton and Stewart (Trichoptera:
Xiphocentronidae) David E. Ruitter 527
- Ecology of Owens valley vole (*Microtus californicus vallicola*) Fletcher C. Nelson,
Michael L. Morrison, Roel R. Lopez, Fred E. 'Smeins, and Nova J. Silvy 529
- A longevity record for Canada lynx, *Lynx canadensis*, in western Montana ... Jay A. Kolbe
and John R. Squires 535

(continued on page 552)

Raptors of California	<i>by Hans Peeters and Pam Peeters</i>	Clayton M. White	541
Reviewers for 2006			542
Index to Volume 66			543

Western North American Naturalist
Vol. 66, no. 4 (October 2006)

CONTENTS

P. 2 of 2

(Continued from back cover)

Book Reviews

Invasion Biology: Critique of a Pseudoscience	<i>by David Theodoropoulos</i>	Howard Clark	537
Birds of Washington: Status and Distribution	<i>edited by Terence R. Wahl, Bill Tweit, and Steven G. Mlodinow</i>	Clayton M. White	540
Raptors of California	<i>by Hans Peeters and Pam Peeters</i>	Clayton M. White	541
Reviewers for 2006			542
Index to Volume 66			543



Wildlife Society Bulletin

An Official Publication of
The Wildlife Society

Volume 34, Number 5
December 2006

Editorial Staff

Terry A. Messmer

Editor-in-Chief

Janet Wallace

Editorial Assistant

Rebecca Britton

Technical Assistant

Tracy Estabrook

Scientific Assistant

Erica Goodoff

Managing Editor, Alliance Communications Group

Karen Ridgway

Publishing Manager, Alliance Communications Group

Associate Editors

Roger Applegate

Tennessee Wildlife Resources Agency

Robert I. Baker

Texas Tech University

Jake Bownan

University of Delaware

Jeff Bownan

Ontario Ministry of Natural Resources

Michael Chamberlain

Louisiana State University

Michel Crête

*Min. des Ressources naturelles,
de la Faune et des Parcs du Québec*

Phil Doerr

North Carolina State University

John M. Eadie

University of California, Davis

David Euler

Birch Point Enterprises

Robert A. Garrott

Montana State University

William M. Giuliano

University of Florida

Meredith L. Gore

Cornell University

Steve Grado

Mississippi State University

Dave Haikos

U.S. Fish and Wildlife Service

Cynthia A. Jacobson

Alaska Department of Fish and Game

Pat Kehoe

Ducks Unlimited, Canada

Winifred Kessler

U.S. Forest Service

Paul Krausman

University of Arizona

Roel Lopez

Texas A&M University

Russ Mason

Nevada Department of Wildlife

Robert A. McCleery

Texas A&M University

Joshua J. Millsap

University of Missouri

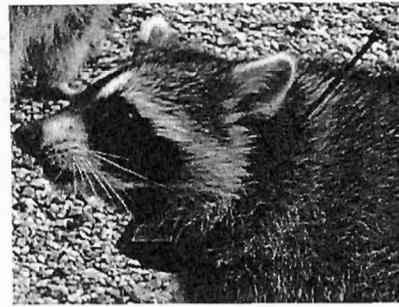
Karen E. Mock

Utah State University

Dennis Murray

Trent University

RECEIVED
2007 JAN 24 AM 11:49
CENTRAL COLORADO



p. 1 of 3

Raccoon (*Procyon lotor*) wearing a radiocollar. See "New Radiocollars for the Detection of Proximity Among Individuals" on page 1333. Photo by Suzanne Prange.

TABLE OF CONTENTS

Ungulate Management and Research

Mountain Lion Predation of Translocated Desert Bighorn Sheep in Arizona
Ted McKinney, James C. deVos Jr., Warren B. Ballard, and Sue R. Boe.....1255

Effectiveness of the State Soil Geographic Database (STATSGO) to Predict White-Tailed Deer Morphometrics in Mississippi
Bronson K. Strickland and Stephen Demarais.....1264

Response of Adult Sex Ratios to Simulated Harvest Strategies in White-Tailed Deer
Patrick D. Keyser, David C. Guynn Jr., W. Matt Knox, Kent E. Kammermeyer, and James M. Crum.....1273

Is the Migratory Behavior of Montane Elk Herds in Peril? The Case of Alberta's Ya Ha Tinda Elk Herd
Mark Hebblewhite, Evelyn H. Merrill, Luigi E. Morgantini, Clifford A. White, James R. Allen, Eldon Bruns, Linda Thurston, and Tomas E. Hurd.....1280

Characteristics of Ungulate Behavior and Mortality Associated with Wire Fences
Justin L. Harrington and Michael R. Conover.....1295

Human Dimensions

Using Role Analysis to Plan for Stakeholder Involvement: A Wyoming Case Study
Nina Burkardt and Phadrea D. Ponds.....1306

Carnivore Research

An Individual-Based Method to Measure Animal Activity Levels: A Test on Brown Bears
Vincenzo Gervasi, Sven Brunberg, and Jon E. Swenson.....1314

Temporal Variation in Stable Carbon and Nitrogen Isotopes of Grizzly Bear Guardhair and Underfur
Elena S. Jones, Douglas C. Heard, and Michael P. Gillingham.....1320

The Efficacy of Obtaining Genetic-Based Identifications from Putative Wolverine Snow Tracks
Todd J. Ulizio, John R. Squires, Daniel H. Pletscher, Michael K. Schwartz, James J. Claar, and Leonard F. Ruggiero.....1326

Wildlife Management Techniques

New Radiocollars for the Detection of Proximity among Individuals
Suzanne Prange, Trevor Jordan, Colin Hunter, and Stanley D. Gehrt.....1333

A Cost-Effective System for Measuring Microscale Habitat Use of Small Mammals with High Precision
Gregory W. McDaniel and Kevin S. McKelvey.....1345

Evaluation of Paintball, Mark-Resight Surveys for Estimating Mountain Goat Abundance
George R. Pauley and John G. Crenshaw.....1350

A Comparison of Deer and Turkey Harvest Data Collection Methods in Missouri
Lonnie P. Hansen, Michael Wallendorf, and Jeff Beringer.....1356

Video-Scale: A Novel Device to Measure Supplemental Feed Consumption by Wildlife
Susan M. Cooper, James C. Cathey, and Shane S. Sieckenius.....1362



A wolverine (*Gulo gulo*) is seen at Glacier National Park. See "The Efficacy of Obtaining Genetic-Based Identifications from Putative Wolverine Snow Tracks" on page 1326. Photo by Ken Curtis.

p. 2 of 3

Bat Conservation

Are External Mine Entrance Characteristics Related to Bat Use?

Joshua B. Johnson, Petra Boball Wood, and John W. Edwards..... 1368

Avian Conservation and Management

Using Sharp-tailed Grouse Movement Patterns to Guide Release-Site Selection

Peter S. Coates, San J. Stiver, and David J. Delehanty..... 1376

Wading Bird Response to Recreational Boat Traffic: Does Flushing Translate into Avoidance?

Kimberly A. Peters and David L. Otis..... 1383

Effects of Falconry Harvest on Wild Raptor Populations in the United States: Theoretical Considerations and Management Recommendations

Brian A. Millsap and George T. Allen..... 1392

Age Determination of American Black Ducks in Winter and Spring

E. Paul Ashley, Norman R. North, Scott A. Petrie, and Robert C. Bailey..... 1401

Retrospective

The Landscape of Paul Errington's Work

James A. Pritchard, Diane M. Debinski, Brian Olechnowski, and Ron VanNimwegen..... 1411

Departments

Editorial, by Terry A. Messmer..... 1253

Policy News, by Laura Bies..... 1417

From the Field:

A New BEAST: Bayesian Software Tools for Ecological Trend Analysis

Eric J. Ward..... 1420

The Reliability of Citizen Science: A Case Study of Oregon White Oak Stand Surveys

Aaron W. E. Galloway, Margaret T. Tudor, and W. Matthew Vander Haegen..... 1425

Effects of SpayVac® on Urban Female White-Tailed Deer Movements

Saul Hernandez, Shawn L. Locke, Matthew W. Cook, Louis A. Harveson, Donald S. Davis, Roel R. Lopez, Nova J. Silvy, and Mark A. Fraker..... 1430

Efficacy of Scent Dogs in Detecting Black-Footed Ferrets at a Reintroduction Site in South Dakota

Sara A. Reindl-Thompson, John A. Shivik, Alice Whitelaw, Aimee Hurt, and Kenneth F. Higgins..... 1435

A Preliminary Evaluation on the Use of Dogs to Recover Bat Fatalities at Wind Energy Facilities

Edward B. Arnett..... 1440

Tracking the Rapid Pace of GIS-Related Capabilities and Their Accessibility

Barry A. Sampson and Glenn D. DelGiudice..... 1446

An Affordable Computerized Camera Technique for Monitoring Bird Nests

Marie-Anne R. Hudson and David M. Bird..... 1455

Limitations of Thermal Infrared Imaging for Locating Neonatal Deer in Semiarid Shrub Communities

David A. Butler, Warren B. Ballard, Shawn P. Haskell, and Mark C. Wallace..... 1458

Effects of Variable Sampling Frequencies on GPS Transmitter Efficiency and Estimated Wolf Home Range Size and Movement Distance

Kenneth J. Mills, Brent R. Patterson, and Dennis L. Murray..... 1463

Commentary:

Clinical Practice versus Field Surgery: A Discussion of the Regulations and Logistics of Implanting Radiotransmitters in Snakes

Corey Devin Anderson and Michael Talcott..... 1470

- Charles Nilon
University of Missouri-Columbia
Gad Pe...
Texas Tech University
William C. Pitt
National Wildlife Research Center
R. Douglas Ramsey
Utah State University
Steven S. Rosenstock
Arizona Game and Fish Department
Sara Schweitzer
University of Georgia
Alberto Lafor Terrazas
Universidad Autonoma de Chihuahua
Ben C. West
Mississippi State University
Gary White
Colorado State University
Heather A. Whitlaw
Texas Parks and Wildlife
Don Whittaker
Oregon Department of Fish and Wildlife

Book Review Editor

- Gary W. Witmer
National Wildlife Research Center

Front Cover

Mule deer (Odocoileus hemionus) doe and fawns interact with a fence consisting of woven wire topped by one strand of barbed wire. Photo by Emily Harrington. This type of fence allows passage of the doe but not the fawns. See "Characteristics of Ungulate Behavior and Mortality Associated with Wire Fences" on page 1295.

Editorial Panel

- Vince Crechton
Manitoba Conservation
Matthew Cronin
University of Alaska
Glenn D. DelGiudice
Minnesota Department of Natural Resources
James de Vos, Jr.
Arizona Department of Fish and Game
Daniel Edge
Oregon State University
Brian T. Gray
Ducks Unlimited, Canada
John P. Hayes
Oregon State University
Jonathan A. Jenks
South Dakota State University
Julio A. Carrera López
Comisión Nacional de Áreas Naturales
James E. Miller
Mississippi State University
James M. Peek
University of Idaho
John Rappoie
National Zoological Park
Gary San Julien
Penn State University
Nova J. Silvy
Texas A&M University
Winston F. Smith
USDA Forest Service
Mark Wallace
Texas Tech University

Editor Contact: Terry A. Messmer, Editor, Wildlife Society Bulletin, UMC 5230, Jack H. Bertymann Institute, Department of Wildland Resources, Utah State University Logan, UT 84322-5230. E-mail: terrym@ext.usu.edu

Editorial Office Contact: RWFM Mail Stop 42125, Texas Tech University, Lubbock, TX 79409-2125. Phone: (806) 742-4885, Fax: (806) 742-2280. E-mail: Editor-WSB@ttu.edu.

Subscriptions: In 2007, the Wildlife Society Bulletin (WSB) will become part of the Journal of Wildlife Management, which will be published eight times per year by The Wildlife Society, 5410 Grosvenor Lane, Suite 200, Bethesda, MD 20814-2144, at an annual nonmember subscription rate for 2007 of \$595 for online only, \$719 for U.S. print and online, and \$765 for international print and online. Alliance Communications Group, The Publishing Division of Allen Press, Inc., 810 East 10th Street, Lawrence, KS 66044. Phone: (800) 627-0932. Back issues of WSB are available from Alliance Communications Group.

Address all membership and business correspondence to the Executive Director, The Wildlife Society, 5410 Grosvenor Lane, Suite 200, Bethesda, MD 20814-2144.

Advertising: Please contact Rhett Dubiel, Alliance Communications Group, (800) 6527-0932 ext. 212.

Periodicals postage paid at Bethesda, Maryland, and additional mailing office.

Contacts for The Wildlife Society

Michael Hutchins Executive Director

Laura Bies

Associate Director—Government Affairs 5410 Grosvenor Lane, Suite 200 Bethesda, MD 20814-2144 (301) 897-9770, Fax: (301) 560-2471 E-mail: tws@wildlife.org Website: http://www.wildlife.org

Sandra Staples-Bortner

Director Conference and Membership 18214 NE 125th Way Brush Prairie, WA 98606 (360) 253-4611

John F. Organ, President

USFWS, 300 Westgate Center Drive Hadley, MA 01035

W. Daniel Svedarsky, President-Elect

Natural Resources Department University of Minnesota Crookston, MN 56716

Thomas M. Franklin, Vice President

The Izaak Walton League of America 707 Conservation Lane Gaithersburg, MD 20878

The Journal of Wildlife Management

Michael L. Morrison, Editor

210 Nagle Hall, Texas A&M University College Station, TX 77843-2258 (979) 862-7667

E-mail: mlmorrison@ag.tamu.edu

Wildlife Society Bulletin

Terry A. Messmer, Editor

UMC 5230

Jack H. Berryman Institute Department of Wildland Resources Utah State University Logan, UT 84322-5230

(435) 797-3975, Fax: (435) 797-1871

E-mail: terrym@ext.usu.edu

Wildlife Monographs

Paul R. Krausman, Editor

School of Natural Resources The University of Arizona Tucson, AZ 85721

(202) 621-3845, Fax: (520) 621-8801

E-mail: Krausman@ag.arizona.edu

Herbicides and Forest Biodiversity: An Alternative Perspective

Werner T. Flueck and Jo Anne M. Smith-Flueck1472

In My Opinion:

Western Association of Fish and Wildlife Agencies Comment on the Cougar Management Guidelines—

First Edition

Duane Shroufe1479

The Tragedy of the Commons: Wildlife Management Units in Southeastern Mexico

Manuel Weber, Gabriela Garcia-Marmolejo, and Rafael Reyna-Hurtado1480

Book Review:

The Mammals of Texas Review by Mark C. Wallace1489

Information Access, by Carla G. Heister1490

Officers, Editors, and Representatives to Council1493

Reviewers1495

Index to Volume 341498

Table of Contents for Volume 341519

Postmaster: send address changes to Wildlife Society Bulletin, Allen Press, Inc., 810 East 10th Street, Lawrence, KS 66044.