



Committee on Ecology and Transportation Newsletter

Transportation Research Board Committee ADC30

Winter 2008

Notes from the Chair

Tom Linkous, Chair

Another year slipped away and we are about to head for Washington for the Annual Meeting again. We will be meeting just a few days before the historic inauguration of our first African American president. We are also facing serious economic turmoil as a nation and world. Currently it looks likely that the new administration will enact legislation to pump federal dollars into the nation's infrastructure to help get the economy moving in a positive direction. As pointed out by Hans Becker recently, this is an opportunity to improve connectivity for wildlife and address other ecological issues related to our transportation system. With the increased awareness of major problems caused by the road network in the west and animal vehicle accidents throughout the United States there is an opportunity to use reconstruction of bridges and culverts and other road reconstruction projects to improve the ecological permeability

of highways nationwide. An article in the October/November National Wildlife Magazine points the way and is indicative of the public's increased awareness of this problem. I hope we, as a part of the Transportation Research Board, can make use of the past and current work of our members and colleagues to point the way to more ecologically sensitive design and implementation of the coming infrastructure revitalization.

I would be remiss if I didn't point out that we have a great program at the 2009 Annual Meeting and are an integral part of planning for the 2009 ICOET in Duluth, Minnesota. Our midyear meeting will be at ICOET and we will have a business meeting there as usual. I hope all of our members and friends are aware that the deadline for submitting abstracts for ICOET has been extended to January 31, 2009. This gives you another month and a half to get an abstract submitted. You will find additional information on both our Annual Meeting activities and ICOET in this newsletter. See you next month and hopefully in Duluth in September.

2008 Northeastern Transportation and Wildlife Conference

By Sarah Barnum, Normandeau Associates

The 2008 NETWC was held in Meredith NH on September 21-24. The conference was hosted by NH DOT, NH Fish and Game, FHWA, The Nature Conservancy, and McFarland Johnson. NH DOT was the primary organizer of the event, and kudos go to Cathy Goodman and Christine Perron of NHDOT, who did a superb job of bringing together participants from across the Northeast to exchange ideas and innovations in the growing field of "Road Ecology". Papers and posters were presented by transportation and ecology specialists from New Hampshire, Maine, Vermont, Massachusetts, Maryland, New York, New Brunswick, and Ontario. Topics included planning at the project as well as the landscape level, impact assessment, connectivity assessment, road and crossing structure design, and identifying crossing hot spots. Species studied or used as models in the research presented included turtles, snakes, birds, butterflies, moose, meso-carnivores, and aquatic species dependent on culverts for habitat connectivity throughout a watershed. The conference was an excellent opportunity for all participants to connect with their counterparts across agencies and States. The information presented will be useful for both transportation planning and project design, to reduce the impacts of roadways on wildlife. Everyone who attended looks forward to the next edition of NETWC, to be held in 2010 (location TBD), and encourage you to attend as well.

The Paper Chase

By Alex Levy, Senior Ecologist, ARCADIS U.S., Inc.

TRB's call for papers serves a valuable two-fold purpose: the publicity of important research at the TRB annual meeting and publication in the Transportation Research Record of 25% of submitted papers reviewed by each Committee.

For the 88th Annual TRB meeting, the Committee on Ecology and Transportation received five submitted papers for our review that spanned themes from aquatic habitat and terrestrial landscape connectivity to strategic conservation planning for transportation.

A total of 18 voluntary reviewers, including one invited technical expert who is NOT a member of our committee, enthusiastically heeded the call-to-service in poring over these papers and providing valuable feedback to their authors. We're proud to announce that three papers were recommended for presentation at the 2009 Annual Meeting and will be included for distribution on the annual meeting's CD ROM. Because of limited space for publication, only one of the papers will receive a final publication recommendation pending a final review by our intrepid volunteers. However, authors still needing to publish in a

■ See **THE PAPER CHASE**, Page 4

Wildlife Monitoring of the U.S. Highway 17 Underpass in Chesapeake, Virginia

By Bridget Donaldson, *Research Scientist*
Virginia Transportation Research Council

In November 2005, the Virginia Department of Transportation (VDOT) realigned and widened more than 10 miles of U.S. Highway 17 in Chesapeake, Virginia in order to accommodate growing traffic volume and to increase safety. Through extensive coordination with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and technical experts in the region, measures were designed to minimize impacts to the area's natural resources and the neighboring Great Dismal Swamp National Wildlife Refuge (GDSNWR). This 111,000 acre refuge is home to a variety of wildlife, including one of the largest black bear populations on the east coast. A previous study of genetic statistics of bears at GDSNWR compared to bear populations further south suggested that the bear population at the refuge is isolated to some degree, potentially due to geography and encroaching urban development. Highway 17 crosses an important riparian corridor, which is one of the last remaining corridors connecting the refuge to other patches of black bear habitat along the eastern coast of the U.S. Animal-vehicle collisions were frequent along the original U.S. Highway 17, including multiple bear deaths in the last several years before its closing.

The primary mitigation for this project included the construction of two parallel bridges, 984 ft long (or wide, from the animal's perspective) and approximately 8 ft high that span a wetland within the riparian corridor. Two dry berms (each 25 ft wide) were constructed on the wetland beneath both ends of the bridges to serve as wildlife crossings, and nearly 2 miles of 10 ft high fencing extends from the underpass to help guide wildlife toward the underpass and prevent them from entering the roadway. This \$4.2 million project was designated as a 2004 Exemplary Ecosystem Initiative by the Federal Highway Administration (FHWA) for protecting wildlife and preserving the ecosystem along the GDSNWR.

Virginia Transportation Research Council conducted a 29-month monitoring effort (November 2005 – April 2008), with the help of students from Virginia Wesleyan College, designed to determine (1) whether the underpass is successful at facilitating wildlife passage, and (2) whether wildlife crossing frequency increases over successive years. The monitoring study documented 550 crossings by at least 12 species. Cameras documented 13 bear crossings during the second year following underpass construction. If a similar bear crossing frequency continues in subsequent years, it is expected to be more than sufficient to satisfy the dispersal and reproductive needs that will help prevent isolation from bear populations further south. Deer

crossings peaked in the fall and spring, corresponding with periods of increased movement associated with feeding and mating activities, but there were no significant seasonal or monthly differences in any species' crossings throughout the monitoring period. This may be attributed to the fact that the monitoring period included only two to three seasons. Additional years of monitoring may be required to determine whether species' use increases over time and whether seasonal or monthly patterns exist in crossing frequencies.



Photographs (black bear, bobcat, and white-tailed deer) captured by remote cameras in the U.S. Highway 17 underpass

Results suggest that the underpass is not only successful at connecting important wildlife habitat, but, as deer represented 30 percent of the crossings, the underpass also reduces the risk of large animal collisions. Given the significant effort and cost put forth for this mitigation, the information gained from this project can assist with decisions regarding future investments in underpass mitigation projects. The value of successful wildlife underpasses increases over time in terms of its ecological significance (i.e. facilitating wildlife movement and conserving important habitat); benefits to drivers from a reduction in animal-vehicle collisions; and cost savings to VDOT in carcass removal and disposal expenses.

For further information or for a copy of the full report, contact Bridget Donaldson: Bridget.Donaldson@VDOT.Virginia.gov, Phone: 434-293-1922, Fax: 434-293-1990

SUMMARY OF CLIMATE CHANGE WORKSHOP

By Marcia Bowen, Normandeau Associates

The Center for Transportation and the Environment at North Carolina State held a webinar entitled “Transportation and Climate Change: Time to Think, Plan, Mitigate, and Adapt. The four-person panel included Harrison Rue, ICF International; Robert Ritter, FHWA; John Zamurs, NY State DOT; and Kelly McGourty, Puget Sound Regional Council; and was moderated by Jenny Noonan, USEPA.

First, Harrison Rue confirmed that scientists now have very high confidence that the Earth’s climate is changing, and that greenhouse gases (GHGs) from human activities are the major influence. According to leading scientists, a 50 to 85% reduction in GHGs by 2050 is necessary to avoid the worst impacts. Transportation is the largest single, and fastest growing, source of CO₂ in the United States.

There are currently two approaches to climate change. The first is mitigation, trying to minimize impacts or slow down the rate of change. The second is adaptation, or accepting that climate change is inevitable and developing strategies to accommodate the changes.

Climate impacts vary by region, and could include:

- Higher sea levels due to sea level rise and upland subsistence;
- Increased hurricane storm surge as hurricanes become more intense;
- Changes in temperature, including increases in average and maximum temperatures as well as the number of hot days
- Changes in precipitation, including more intense precipitation events.

These impacts have implications for all types of transportation including highways and transit, rail, ports and waterways, and airports, as well as emergency management systems. Four basic approaches are currently being employed: raising vehicle energy efficiency, reducing carbon content of fuels, reducing vehicle miles travelled (VMT), and changes in land use. Of these, environmental professionals can have the most input into the latter.

Climate change is often not considered in today’s transportation 20-year planning time frame. However, our infrastructure’s lifespan would dictate that it should be considered. There are huge barriers to including climate change considerations, the most significant of which are resources and leadership. In addition, there are critical informational needs such as how to quantify climate change, and what are effective mitigation and adaptation processes. Several states that have established climate change or GHG goals, including Washington, California, Oregon and New York.

In addition, State DOTs are beginning to develop adaptation strategies. These include: maintain and manage existing systems by absorbing increased maintenance/repair costs; improve real-time response to severe events; strengthen structures and protect facilities by incorporating design changes when rebuilding; promote buffers; enhance redundancy; moving or abandon existing facilities and re-site new facilities in less vulnerable locations.

New York is one state that is leading by example. The NYSDOT philosophy is that the greatest opportunities to affect climate change are at the state level (“Think globally, act locally”), especially VMT and travel demand. DOTs can further change by supporting vehicle technology and fuel improvements. While individual actions may be small, cumulatively they may begin to make a difference.

To that end, New York State developed an Energy Plan in 2002, which is a blueprint to establish state-wide energy policy and guide energy decision making. Recommendations include statewide GHG reduction goals. NYSDOT has taken that plan and enacted a number of policies to further integrate consideration of climate change in its actions. First transportation plans need to consider GHG production, energy use, and air emissions. This includes the State’s Environmental Quality Review Act (SEQRA) process, which now must consider CO₂ production and mitigation strategies. This ensures that transportation actions consider energy use and GHG impacts in their planning process, using the no-build alternative as a baseline for comparison. NYSDOT is also considering many direct “actions” to reduce GHG emissions, such as expansion of mass transit, smart traffic signals, managed land, smart growth, idle reduction, etc. NYSDOT’s Climate Change/Energy Efficiency team was created to “institutionalize climate change and energy efficiency in everything we do”. With representation from all program areas, the Team’s actions encompass everything from major policy to individual actions.

At the MPO level, the Puget Sound Regional Planning Commission (PSRC) has developed its own approach to climate change. Washington State’s Executive Order 07-02 mandates aggressive goals for reduced GHG emissions. Of particular interest to environmental professionals is the Growth Management Act, which encourages land use planning processes to mitigate GHG emissions. There are many local task forces and action plans that address climate change. The Puget Sound Regional Planning Commission, a planning organization for the Central Puget Sound Region, encompasses 90 member agencies and organizations that are involved in transportation. Its planning document *VISION 2040* is a regional growth, transportation and economic strategy that incorporates climate change goals and mandates

specific and wide ranging actions. For example, environmental impact statements must analyze CO₂ emissions and VMTs in its alternatives analysis. A key conclusion of the group was that improved fuel and vehicle technology will not be sufficient to meet GHG goals; travel reduction, at least in the short term, will also be needed. This can be accomplished through a variety of strategies including land use changes, efficiency improvements, and the highly-unpopular actions that increase the cost of driving. The PSRC is partnering the Washington's Climate Change Technical Working group, comprised of federal, state and local agencies and stakeholder groups, to help coordinate its activities and message with those of the region and state.

FHWA's role in this is in the dual role of outreach/education and research. In addition, FHWA plays a key role in integrating climate change into the reauthorization.

The overarching theme is that there are a myriad of federal state and local groups with similar goals to address climate adaptation and mitigation. Many are achieving early success. As climate change considerations become integrated into early planning and NEPA evaluations, so will the impacts of climate change on species distributions, habitats, migratory movements, and other ecological considerations.

The webinar can be viewed at the Center for Transportation and the Environment's website <http://itre.ncsu.edu/CTE/TechTransfer/Teleconferences/archive.asp>

■ THE PAPER CHASE from page 1

recognized journal their will benefit from the thoughtful feedback by our reviewers and are encouraged to seek alternate venues for publications of record.

Thanks go to the authors who took time to craft and submit papers, as well as who endure and respond to the constructive feedback of our reviewers. Special thanks to those 18 anonymous women and men who've dedicated considerable time and attention to their charge, and especially to those of you participating in additional reviews to make a final publication recommendation.

(Remember, as a friend or member of the Committee on Ecology and Transportation, you can always log-in to the TRB website and edit your contact information, including indicating your interest in serving the important role as a reviewer for papers submitted to TRB.)

Personally, I'd like to "shout-out" to those who contributed their assistance and perspective on coordinating meaningful reviews. Finally, I want to give special thanks to our Committee Chair, Tom Linkous, and our TRB Liaison, Christine Gerencher, who patiently guided my-own performance as paper review chair for this year's slate of submissions.



Duluth Entertainment Convention Center, Duluth, Minnesota, www.icoet.net

CALL FOR ABSTRACTS **EXTENDED** – NEW SUBMISSION DEADLINE **JANUARY 31, 2009**

In view of the December holiday season and upcoming TRB Annual Meeting in January, ICOET is pleased to extend its invitation to receive abstracts for technical papers and poster presentations for the 2009 conference program. Abstract submissions will continue to be accepted electronically via the conference website until January 31, 2009.

The ICOET 2009 theme is *'Adapting to Change.'* The conference will focus on the challenges ahead as we adapt for future global climate changes, shifts in transportation demand and patterns, and evolving environmental and transportation policy. Abstracts submitted for consideration should address current planning and project activities, research applications, and best practices in one or more topic areas selected for the conference.

Visit www.icoet.net, for a complete listing of ICOET 2009 program topic areas and additional conference info.

FOR MORE INFORMATION ABOUT ICOET, CONTACT: Center for Transportation and the Environment (CTE); James Martin, jbm@ncsu.edu, 919-515-8620 or Eugene Murray, eugene_murray@ncsu.edu, 919-515-8037

We look forward to your participation at ICOET 2009!

**2009 TRB Annual Meeting
Environment & Energy Section Workshops, Sessions and Meetings of Interest
(At Hilton Hotel, unless otherwise indicated)**

	Monday, January 12, 2009	Tuesday, January 13, 2009
8:00-9:45	233 U.S. Environmental Protection Agency Motor Vehicle Emission Simulator (MOVES) Model Update [ADC20] 215 The Cost of Aesthetics in Workhorse Bridge Design [AFF10/ADC50/AFB50T] (<i>SHOREHAM</i>) ADC10 Cmte. Mtg. ADC40(2) Guided Rail & Transit Noise Subcmte. Mtg ADD40 Transportation and Sustainability Cmte. Mtg.	447 Research Papers in Transportation Environmental Analysis [ADC10] 469 Environment & Energy Poster Session - 9:30-Noon ADC20 Cmte Mtg. ANB20(2) Animal-Vehicle Collisions Subcmte Mtg. (<i>MARRIOTT</i>) AV030 Environmental Impacts of Aviation Cmte. Mtg. (<i>SHOREHAM</i>)
10:15-Noon	282 Reducing Noise and Vibration with Low-Impact Special Track Work [ADC40/AR055] 280 Petroleum Supply, Demand and Prices: What is in Store for the Future? [A0020T/A0000/AR000/AV000/ADC70] ADC10 Cmte. Mtg. <i>Continued</i> ADC20(1) Project Level Air Quality Analysis Subcmte Mtg. ABE80/ADC50 Tribal Historical and Archeological Preservation Subcmte Mtg ADD40 Transportation and Sustainability Cmte. Mtg. <i>Continued</i>	496 On-Board Sound Intensity (OBSI) Method for Measuring Tire/Pavement Noise [ADC40] 478 Greening Asset Management in Transportation Maintenance and Operations [AHD10, ADC30, ABC40, AHD50] (<i>MARRIOTT</i>) 469 Environment & Energy Poster Session <i>continued</i> - 9:30-Noon ADC60 Cmte. Mtg ANB20(2) Animal-Vehicle Collisions Subcmte Mtg. <i>Continued</i> (<i>MARRIOTT</i>)
Noon-1:30	ADC70(1) International Aspects of Transportation Energy Subcmte. Mtg.	ADC60 Cmte. Mtg <i>Continued</i> AV030(2) Aviation Climate Change Subcmte. Mtg (<i>SHOREHAM</i>)
1:30-3:15 Wed: 2:30-4:00	315 Tracking and Managing Cultural Resources in the Transportation Right of Way: GIS and Other Database Solutions [ADC50] 306 The U.S. Energy Crisis - Solutions to Meeting the Nation's Energy Needs [ABE40/A0020T/ADC00/ADC70] (<i>SHOREHAM</i>) ADC30 Cmte. Mtg. ADC20(2) Regional Air Quality Analysis Subcmte. Mtg. ADC40(3) Highway Noise & Vibration Subcmte Mtg.	530 Incorporating Greenhouse Gas Considerations into Transportation Project and Metropolitan Planning Requirements [ADC20/ADC10] ADC70 Cmte. Mtg. ADC50(3) Programs Subcmte. Mtg. AV030(1) Aviation Sustainability Subcmte. Mtg (<i>SHOREHAM</i>) AR020(1) Rail Environmental Subcmte. Mtg (<i>SHOREHAM</i>)
3:45-5:30 Wed: 4:30-6:00	364 Integration and Co-Benefits of Climate Change Mitigation Policies [ADC20/ADD40/ABE50/ABE20/ADC70] 365 Linking Transportation and Climate Legislation [ADC70/ADC80/ADD40] 355 Designing Beyond Context Sensitive [AFF10/ADC50/AFB50T] (<i>SHOREHAM</i>) ADC30 Cmte. Mtg. <i>Continued</i> ADC40(1)/AV030 Aircraft Noise Subcmte Mtg.	587 Partnerships Toward Ecological and Cultural Sustainability: Application of Peer-to-Peer Information-Sharing Technology to Enhance the Development and Delivery of Transportation Projects in a World of Changing Climates and Declining Budgets [ADC30/AB]60/ADD50/ADC50/ADC10] ADC80 Cmte. Mtg.
5:45-7:15		ADC40 Cmte. Mtg.

	Monday, January 12, 2009	Tuesday, January 13, 2009
7:30-9:30	414 New Developments in Transportation Agency Resource Efficiency and Sustainability [ADC60] 410 Consumers Count Too: Impacts of Vehicle & Fuel Technology Adoption [ADC70/ADC80] 400 Case Studies of Successful Steel Bridge Projects [AFF20/ADC50] (<i>SHOREHAM</i>)	ADC40 Cmte. Mtg <i>Continued</i> ADC10(1) Strategic Issues Subcmte Mtg. ADC70/80(2) Climate Change Subcmte. Mtg. AW030 Marine Environmental Cmte. Mtg (<i>SHOREHAM</i>)
	Wednesday, January 14, 2009	Thursday, January 15, 2009
8:00-9:45	660 Considering Indirect and Cumulative Effects to Historic Properties: Challenges and Opportunities in Environmental Analysis [ADC50/ADC10] 661 Extending Travel Survey Data Utility with Novel Vehicle Fuel Use and Climate Change Research [ABJ40/ABJ10/ADC70/ADC80]	795 <i>Thurs, 10:15-Noon</i> : Behavioral Considerations in Response to Energy Prices and Global Climate Change [ADB10/ADC70]
10:15-Noon	717 Transportation-Related Noise [ADC40] 715 Transportation Demand Management and the NEPA Process - a Fresh Look at Incorporating TDM Strategies as Creative Transportation Alternatives [ADC10/ADC30/ADA20]	Sunday, January 11, 2009 <i>WORKSHOPS</i> <u>9:00am-Noon</u> 100 Climate 101: The Basics of Climate Change [A0020T/ADC20/ADC70] (<i>MARRIOTT</i>) 120 Measuring Ecosystem Effects in the Emerging World of Ecosystem Markets [ADC30] 129 Vibration Effects of Transportation Projects on Historic Properties [ADC50/ADC40]
Noon-1:30	ADC00 Environment & Energy Section Chairs Lunch <i>-MEMBERS ONLY-</i>	<u>1:30pm-4:30pm</u> 142 Climate Change and Transportation 101 [A0020T/E000/ADC20/ADC70] (<i>MARRIOTT</i>) 171 Wayside Transit Noise & Vibration Methodologies and Criteria [ADC40]
1:30-3:15 Wed: 2:30-4:00	744 Managing Environmental Activities in Public-Private Partnerships [ADC60] 740 Bio-fuels (Part 1) - The Good, the Bad and the Ugly [ADC70/ADC80/ADC20] ADC50 Cmte. Mtg. ADC10(2) Research Topics Subcmte Mtg.	<u>1:30pm-5:00pm</u> 174 The Conduct of Transportation Environmental Research: What You Should Know About Getting It Done - Will Detailing the Process Yield Future Progress? [ADC10/30/40/50/60/AW030/AL050/ABG10] <i>MEETINGS/ORIENTATIONS</i> <u>2:30p-4:00p</u>
3:45-5:30 Wed: 4:30-6:00	767 Incorporating Ecology in Transportation Planning and Design [ADC30] 765 Bio-fuels (Part 2): Global Programs, Global Impacts [ADC70/ADC80] ADC50 Cmte. Mtg.	New & Young Attendees Welcome Session (<i>MARRIOTT</i>) <u>4:00p-6:30p</u> Policy & Multimodal Groups New Chairs Orientation – COMMITTEE CHAIRS ONLY (<i>SHOREHAM</i>) <u>4:00p-7:00p</u> Exhibit Hall Opening Reception (<i>MARRIOTT</i>) <u>6:30p-8:30p</u>
5:45-7:15		Policy & Multimodal Group Chairs Dinner – COMMITTEE CHAIRS ONLY (<i>SHOREHAM</i>) <u>7:00p-8:30p</u> International Participants Reception (<i>HILTON</i>)
7:30-9:30	<i>NOTE: To find the names of the committees listed by their codes in this matrix, visit:</i> http://www.trb.org/directory/diva.asp	