

NEWS in Science and Technology



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The following is an Executive Summary of the Academy's quarterly Bulletin (Vol. 20,4) that includes topics and issues in science and technology deemed by the Academy to be both timely and relevant to Connecticut's interests. Each item is briefly summarized from press releases and reports of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. Hyperlinks are included to the original online source, where more detailed information is available.

NOTE: Online versions of this newsletter and the Bulletin are available on the Academy website at www.ctcase.org.

FEATURE: Protecting CT's Diverse Habitats

➤ Connecticut's Challenge: Protecting the State's Diverse Habitats for Future Generations

Facilities such as the new Biological Research Collection at the University of Connecticut (UConn) and programs such as BioBlitz in the state's schools are helping the state's scientific community highlight the critical need to better understand and protect the state's notably diverse variety of habitats.

- UConn's Biological Research Collection houses more than 750,000 specimens, many are species that are either extinct or threatened with extinction.
- Annual BioBlitz program is part festival, part competition, part serious science research — goal is to see how many species can be identified in 24-hour period within 2.5 miles radius of host location:
 - BioBlitz 2005 held at Two Rivers Magnet School in East Hartford
 - 170 scientists and 30 students participated and identified 1,800 species
 - Students worked alongside scientists in the field
 - Critical to foster student appreciation of nature, teach adventure of scientific inquiry; BioBlitz exposes students to real scientists in action
- Urban sprawl and how to limit it subject of debate in state
 - Defined by Hartford Courant as "relentless, helter-skelter development that chews up the landscape at an appalling rate and diminishes our quality of life"
 - In last 30 years, state's population has grown 30%, land in residential use grown 102%, meaning loss of habitat
 - Twenty other states have found ways of "fostering high-quality development without destroying character of region"

[See http://www.ctcase.org/bulletin/20_4.pdf]

EDUCATION/BUSINESS & INDUSTRY

➤ Broad Federal Effort Needed to Create New, High-Quality Jobs for Americans in 21st Century

A new report from the National Academies, requested by Congress, concludes that a comprehensive and coordinated federal effort is urgently needed to bolster US competitiveness and pre-eminence in science and technology fields. The report:

- Was produced by a 20-member committee comprised of university presidents, including Yale University president Richard Levin, CEOs, Nobel Prize winners and past presidential appointees

- Makes four recommendations along with 20 implementation actions that federal policy-makers should take to create high-quality jobs and focus new science and technology efforts on meeting the nation's needs, especially in the area of clean, affordable energy:

- 1) Increase America's talent pool by vastly improving K-12 mathematics and science education
- 2) Sustain and strengthen the nation's commitment to long-term basic research
- 3) Develop, recruit, and retain top students, scientists, and engineers from both the U.S. and abroad
- 4) Ensure that the United States is the premier place in the world for innovation

[<http://www.nap.edu/books/0309100399/html>]

Update: The Connecticut Center for Science and Exploration

The Connecticut Center for Science & Exploration has made tremendous progress, including breaking ground on October 21, 2005, unveiling exhibit plans, launching a new website, and adding four prominent leaders to its Board of Trustees. In addition, the Center is now 87% of the way to its goal of raising \$149.5 million. An Exhibit Concept Plan was adopted by the Center's Board of Trustees, organizing and describing exhibit topics throughout the Center's six major exhibit areas and four floors.

The Center also has launched the new Future Capsule, an interactive electronic repository of ideas. Predictions are being collected from all over the world and may be deposited into the capsule via the Center's website (www.ctcse.org). In addition to the online Future Capsule, the Center's new website offers details and renderings of the facility and exhibits, and educational resources for teachers.

Four prominent leaders joined the Center's Board of Trustees this fall. They include Dean Kamen, inventor of the Segway and founder of the FIRST Robotics competition; Joseph Lacher, Executive Vice President and CEO of Personal Lines for St. Paul Travelers; Anthony March, President of Tony March Automotive and sponsor of learning incentive programs, and Walter Wick, world renowned photographer and co-author of the educational I-Spy book series.

[See http://www.ctcase.org/bulletin/20_4.pdf]

➤ Educating America's Engineers: The Vital Role of the Nation's Community Colleges

America's community colleges are essential to the schooling of many of the nation's engineers, according to a new report from the National Academy of Engineering and the National Research Council, but this

educational pipeline is operating beneath its capacity. The report, which includes descriptions of stellar programs and practices, says:

- Four-year institutions should work more closely with community colleges to recruit, retain, and train students seeking bachelor's or advanced degrees in engineering.
- Two- and four-year schools that team up for this purpose also should have clear, effective "articulation agreements" — programs and policies to foster seamless transfers of community college students to four-year colleges or universities.

[<http://www.nap.edu/books/0309095344/html/>]

ENERGY

➤ 'Clean Vehicle' Research Initiative on Track, But Faces Many Challenges Ahead

A public-private effort to develop more fuel-efficient automobiles and eventually introduce hydrogen as a transportation fuel is well planned and identifies all major hurdles the program will face, according to a report from the National Research Council. The FreedomCAR (Cooperative Automotive Research) and Fuel Partnership, a research collaboration between the US Department of Energy, the Big Three automakers, and five major energy companies, seeks to develop emissions-free and petroleum-free vehicles. The report finds:

- That while many technical barriers must be overcome and new inventions will be needed, the program, which was launched three years ago, has already made an excellent start.
- That the current funding split (30% for short-term activities such as research on advanced combustion engines and electric batteries and 70% for long-term research on hydrogen energy technologies) is suitable, but if Congress continues to appropriate significant portions of the overall funding for specific recipients and activities not focused on program goals without increasing overall funding, timing milestones for the program will certainly slip.

[<http://www.nap.edu/books/0309097304/html/>]

HEALTH

➤ Childhood Obesity: Focus on Schools

The Institute of Medicine (IOM), through its Food and Nutrition Board and with support from The Robert Wood Johnson Foundation, is undertaking a study to design a dissemination effort that will assess progress in obesity prevention actions and promote the implementation of the findings and recommendations for the IOM report, Preventing Childhood Obesity: Health in the Balance. The IOM com-

mittee is organizing three regional meetings during 2005 to galvanize obesity prevention efforts of local, state, and national decision-makers, community and school leaders, grassroots organizations, and industry including the food, beverage, restaurant, leisure, and entertainment industries. At the first symposium, held in Wichita, KS, in June:

- Organizers focused on the IOM report recommendations for schools and stakeholders in the school setting to explore how to create a healthy school environment
- Recurring themes that emerged included:
 - Forging strategic partnerships
 - Empowering local schools and communities
 - Educating stakeholders
 - Evaluating obesity prevention efforts
 - Documenting the benefits of obesity prevention
 - Innovating to address barriers
 - using a systems approach
 - developing a long-term strategic plan

[<http://www.nap.edu/books/0309100402/html/>]

➤ Safe Medical Devices for Children

To ensure the safety of medical devices such as pacemakers, wheel-chairs, stents, and other medical technologies after they are put on the market — especially ones used with children — Congress should require the US Food and Drug Administration (FDA) to establish a better system for post-market monitoring, says a new report from the Institute of Medicine. The report recommends that:

- Congress bolster FDA's authority to require manufacturers to conduct post-market safety studies for certain categories of devices.
- Studies of devices used with children not be limited to the typical three years, because children's growth spurts and developmental changes can occur over many years.
- The FDA share publicly the data collected and encourage health care providers and patients and their families to report problems associated with devices.

[<http://www.nap.edu/books/0309096316/html/>]

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