

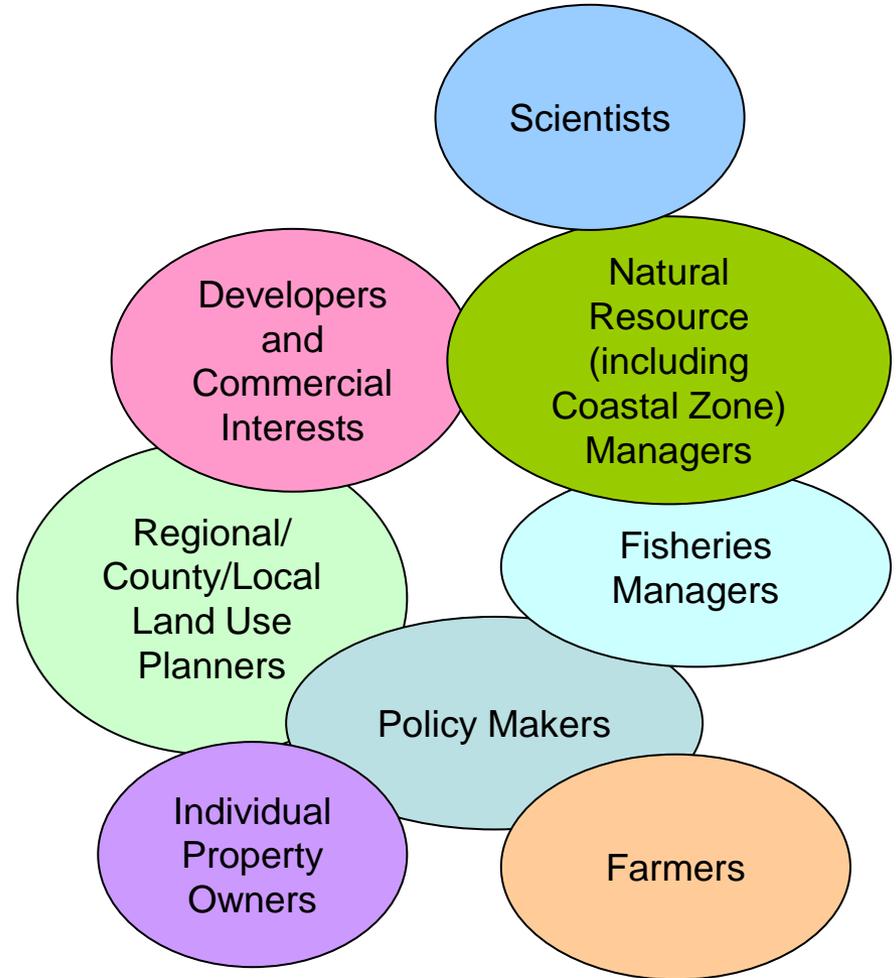
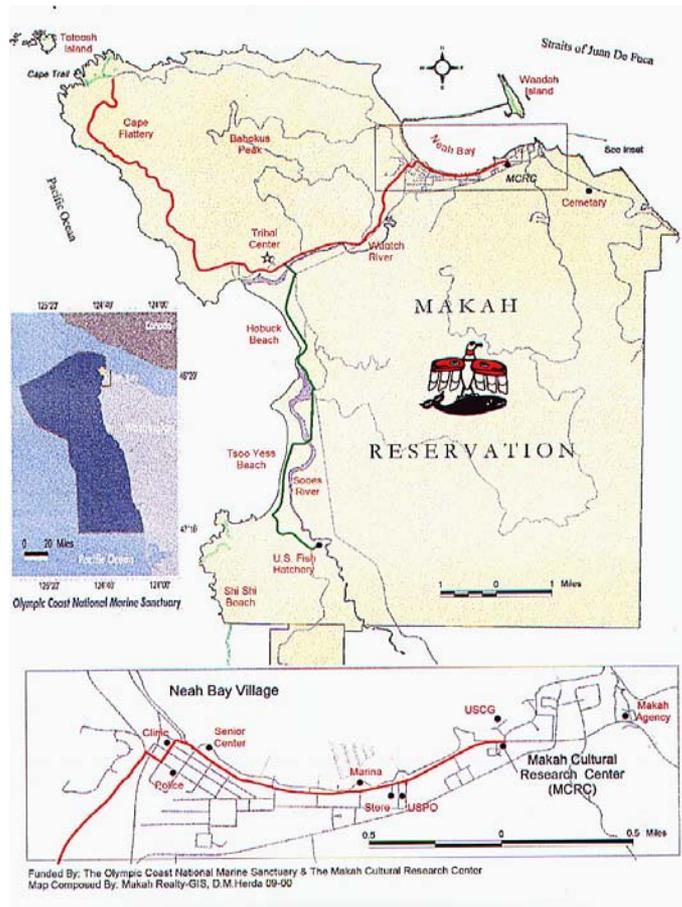
Sustainable and Healthy Communities

Rick Linthurst, Interim NPD

SAB Presentation, 3 March 2011



Communities face a fragmented decision process with conflicting stakeholder interests.



Sustainable and Healthy Communities Research

- **Problem**

- Communities face social, economic, and environmental trade-offs in a resource-constrained world. These trade-offs are often not well characterized in terms of the implications and interactions between human health, ecosystem services, economic vitality, and social equity. Conventional decision-making often does not adequately characterize these complex interactions. Communities therefore need holistic, integrated, and functional science and practical technical tools and support to find solutions that are sustainable: that is, they are equitable, efficient, and effective.

- **Expected broad outcomes**

- Local, regional and national decision-makers will have tools to more equitably weigh and integrate social (including human health), economic, and environmental factors in order to promote human health and welfare and to ensure that nature's benefits are available to generations to come.

Recent Research Accomplishment from STAR/SHCRP

Research conducted by STAR grantees revealed that:

- 16% of Hispanic women in Durham, NC had blood lead levels above 2 $\mu\text{g}/\text{dL}$ compared to 11% among non-Hispanic Black women and 6% among non-Hispanic white women.
- In Black and Dominican mothers and newborns in New York City, prenatal exposure to a pyrethroid pesticide synergist was associated with average scores 3.9 points lower on a test of mental development at age 3 than those with lower exposures
- In California's South Coast Air Basin, median values for exposure to primary pollutants are 16–40% higher in non-Whites.

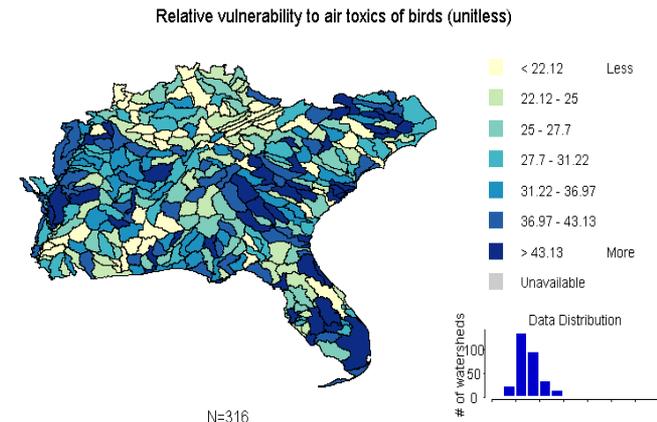
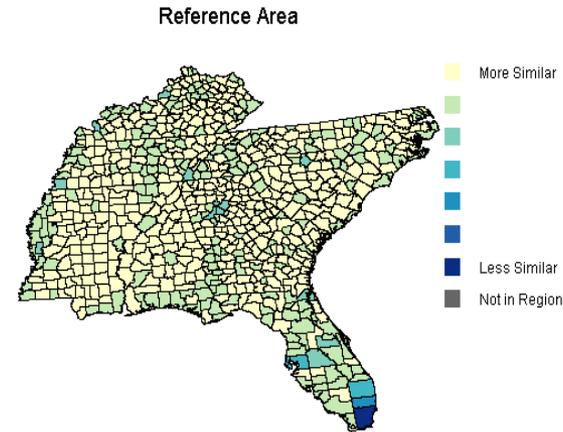


Children's Environmental
Health Research Centers

Recent Research Accomplishment from ESRP/SHCRP

ORD, in partnership with EPA Region 4 and OAQPS, conducted the first ever regional-scale assessment of vulnerability to air toxics for both human and ecological populations. The results are part of a web-based Environmental Decision Toolkit to identify where future point sources might impact human well-being and vulnerable species.

- Twenty-four bioaccumulative toxics and acid gases were assessed by point source and in aggregate.
- Seventy-two human health metrics were used to evaluate human health vulnerabilities
- Innovative integration methods were applied for sensitive wildlife species, incorporating species sensitivities to different toxics, locations of sensitive species, and known emission sources



Recent Research Accomplishment from ESRP/SHCRP

ORD developed a model that finds the lowest cost mix of green and gray infrastructure projects needed to achieve the nutrient and sediment loading targets established under the recent Executive Order to restore the Chesapeake Bay and calculates the corresponding delivery of ecosystem service co-benefits

- Least cost solutions consist of 1/3 gray infrastructure and 2/3 green infrastructure (e.g., agricultural and stormwater BMPs , restoration of historical wetlands, etc.)
- The social value of the ecosystem service co-benefits from the green infrastructure substantially reduce the net costs of the projects.
- OW and OPEE plan to use the model to explore options for water quality trading and other policies and their impacts on cost-effectiveness and ecosystem service co-benefits.



Ecosystem service co-benefits
in the Chesapeake Bay
Watershed

Basic Principles:

- All projects begin with extensive discussions with community decision-makers and stakeholders to identify concerns and establish priorities
- Projects will develop decision analysis frameworks to identify outcomes desired by community officials and stakeholders and to prioritize their interests.
- Decision frameworks will be linked to models and data that quantify the linkages among alternative decisions and intended and unintended outcomes
- Projects will consider the interactions among human health, landscapes, and ecosystems, as well as economic and sociological impacts associated with solutions to environmental problems, but will not focus on sustainability issues that are primarily economic or sociological in nature (e.g., low-income housing).
- Projects will develop sustainability indicators that can be used to assess current conditions and to track progress of programs, once implemented.
- Projects will consider not just solving current problems, but will consider how sustainability might be affected by foreseeable future developments.

Research Theme 2: Solving Nationally Important Problems in a Sustainable Manner

- This theme research to address particular community problems that are common across many communities, using a systems approach better integrate the interacting aspects of human health, landscapes and ecosystems to solve them.
 - Beginning in March, SHC in partnership with the EPA Regions, will conduct listening sessions with community leaders across the US.
 - In April, SHC will hold a large workshop with NGOs concerned with community sustainability and
 - In April, an EPA-wide working meeting to support development of the SHC Science Action Plan based on the input from these meetings.

Sustainable and Healthy Communities Research 2012 Illustrative Accomplishments

- **Valuation** of the ecosystem services of the Tampa Bay ecosystem
- Supply and demand for selected **ecosystem services in 50 urban areas** of the U.S. along gradients of size and condition measures
- Report identifying U.S. **ecosystems sensitive to increased nitrogen deposition** based on regional and national critical loads and other work
- Reports on **the ecosystem service of (surface water) N removal** by different classes of wetlands in multiple landscape settings and ecoregions of the U.S.
- **Non-invasive method** developed to determine whether and which **molds** trigger or exacerbate **asthma**
- Development of first ever draft of Agency Technical Guidance for **incorporating EJ** into regulatory development
- C-FERST (**Community-Focused** Exposure and Risk Screening Tool) adapted for use by Tribal communities
- EJ Wizard tool being developed by EPA’s Risk Assessment Forum will be made web-accessible by incorporation into **C-FERST**
- Report on the results and application of laboratory studies and dosimetry modeling of asbestos and determine the relative potency of Libby Amphibole to **reduce uncertainties in the risk assessment**

Sustainable and Healthy Communities Research – Expected Outcomes

- Sustainability indicators suitable for establishing baselines and tracking progress toward community sustainability goals.
- Increased recognition and importance of the linkages between ecosystem services and human health and welfare.
- Solutions to waste disposal, site clean-up, development, and redevelopment that are economically efficient and socially just, and that result in a net increase in human health and ecosystem services.
- Centers of Excellence on Environment and Health Disparities will provide alternative strategies to the joint impacts of social and physical environmental conditions/processes/systems on health in collaboration with NIH's National Center on Minority Health and Health Disparities
- Decision framework and supporting database used by multiple communities to analyze alternative strategies to become more sustainable.



Sustainable and Healthy Communities (SHC)

(FY 2010 Enacted \$210.3M, FY 2012 PB \$189.3M, Change -\$21.0M)

- EPA will continue to support the President's STEM initiative to train the next generation of environmental scientists and engineers under the STAR Fellowship program (\$6.3M)
- Reductions reflecting difficult choices include:
 - Ecosystems research for mapping and modeling current and future ecosystem services, such as site-specific demonstration projects and the expansion of the Regional Vulnerability Assessment toolkit (\$1.7M)
 - Decrease in scope for planned Superfund research in groundwater remediation and contaminated sediments (\$3.6M)
 - Scaling back the Advanced Monitoring Initiative and integrating the remaining collaborative research with NASA into the research program (\$3.5M)
- The FY 2012 budget does not include \$3.0M added by Congress in 2010 for children's environmental health research or the \$2.0M supplemental for spills research.

SUSTAINABLE & HEALTHY COMMUNITIES

