

Atlantic Regional Environmental Emergencies Team Meeting

Coastal Response Research Center

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Coastal Response Research Center

Thank You

- For inviting me to the Atlantic REET meeting
- Logistics: Steve Lehmann and Annie MacNeil



Today's Talk

- Coastal Response Research Center history
- Center mission
- Center administration
- Center external grants program
- Center outreach
- Issues Center is monitoring
- Feedback/Input/Discussion



Packet Contents

- Today's slides
- One page description of Center
- Current requests for proposals
- Current project descriptions
- Contact information



Coastal Response Research Center History, Mission and Administration



Coastal Response Research Center

Center Creation

- Funding for oil spill research decreasing
 - Government
 - Private sector
- Many research needs exist regarding spill response, recovery and restoration



Center Creation

- NOAA's Office of Response and Restoration wanted to partner with research-oriented university to create center to address research needs
- NOAA and University of NH (UNH) have a history of research partnerships
 - Ocean/coastal mapping
 - Atmospheric science
 - Ocean monitoring
 - Coastal and estuarine environmental technologies



Center Creation

- UNH has strong marine environmental research interest
- UNH has experience with running competitive research grant programs



Center Creation

- ORR/UNH oil spill partnership started in 2002
 - Competitive grants program with CICEET
 - 2002 Congressional appropriation = \$0.5M
 - 2003 Congressional appropriation = \$0.75M
 - NOAA provided RFP topics and peer review
- Coastal Response Research Center formed in 2004
 - Memorandum of Agreement between UNH/NOAA dictates Co-Directors, Advisory Board, Science Advisory Panel
- Co-Directors:
 - UNH - Nancy Kinner
 - NOAA - Carol-Ann Manen



Overall Center Mission

- Develop new approaches to spill response and restoration through research/synthesis of information
- Serve as a resource for ORR and NOAA
- Serve as a hub for spill research, development, and technical transfer
 - Oil spill community (e.g., RRTs)



Specific Center Mission

- Conduct and oversee basic and applied research and outreach on spill response and restoration
- Transform research results into standards of practice
- Encourage strategic partnerships to achieve mission
- Conduct outreach to improve preparedness and response
- Create a learning center to promote awareness of capabilities and realistic expectations about risks and benefits



Center Oversight

- Advisory Board
- Science Advisory Panel



Mission: Advisory Board

- Review and evaluate Center's general policies, research themes, and priorities
- Evaluate Center's programs, activities and budget
- Help establish partnerships with public and private sectors
- Conduct long-term planning to coordinate Center activities



Advisory Board Membership

- NOAA: David Kennedy, Jim Murray (Sea Grant)
- USCG: Capt. Steve Hanewich
- USEPA: Reg. 1 Administrator Robert Varney
- API: Robin Rorick
- State Agencies: Robin Jamail (Tx GLO)
- UNH: John Aber (VP Research), Jon Pennock (Marine Prog. Director)



Science Advisory Panel

- Advice/recommendations on quality and usefulness of the funded projects
- Representatives from research community and users groups:
 - Academia
 - Governmental agencies (state/federal)
 - Private sector

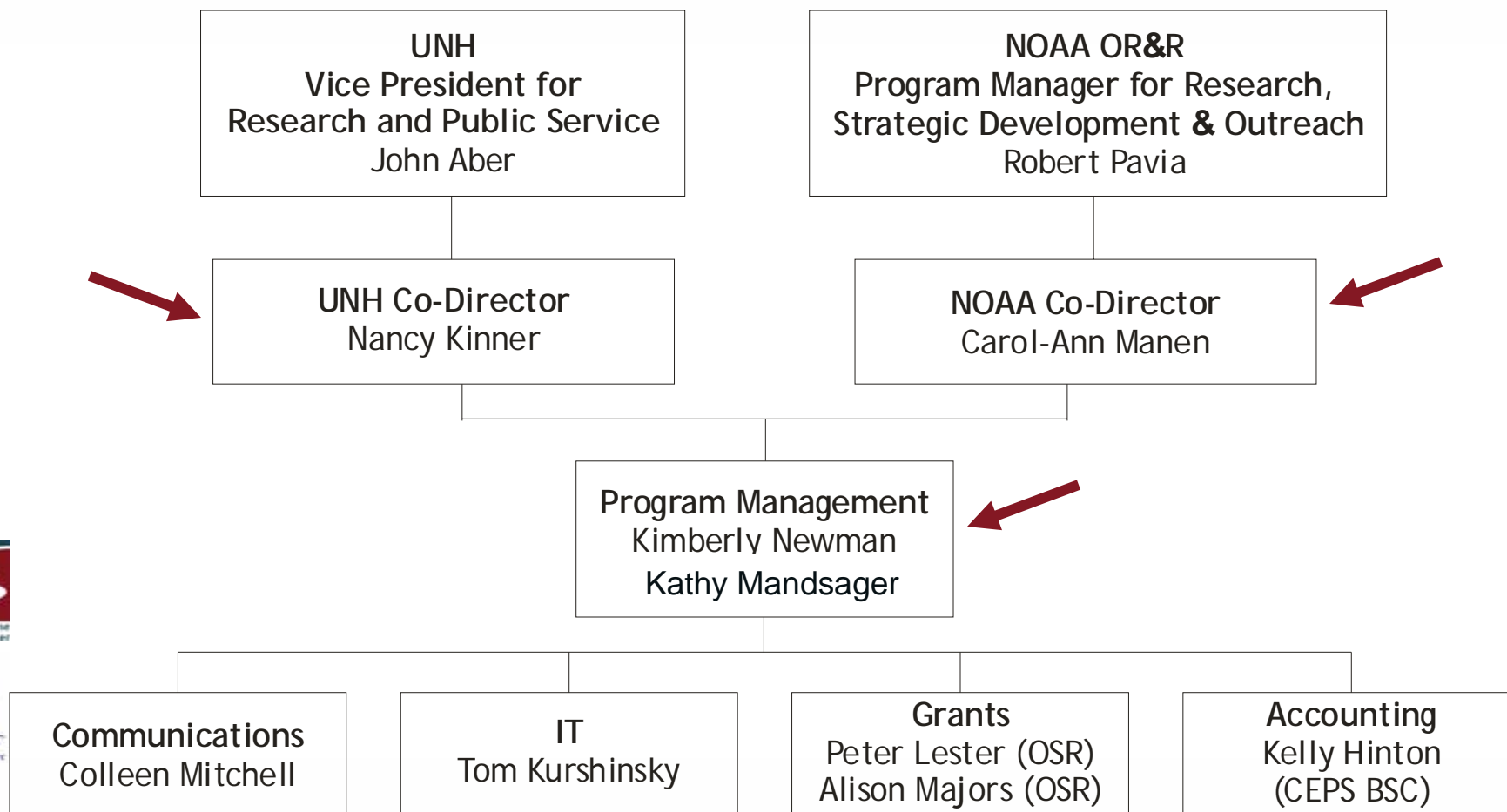


Science Advisory Panel Membership

- NOAA: Mark Fonseca
- Other Federal Agencies: Roger Helm (FWS), Ken Hinga (USDA)
- State Agencies: Yvonne Addassi (CA OSPR)
- Academia: Tom Leschine (UWA)
- Industry: Jim Clark (ExxonMobil)



Center Staffing



Program Management

- Management of:
 - Request for Proposals (RFPs)
 - Research grant programs
 - Workshops
 - Funded research projects
 - Communications/outreach
 - Conference participation
 - Project subaward finances



Center Budget

- Function of annual Congressional appropriation
- 5 year NOAA/UNH contract
 - October '04 to September '09
- October '04 - September '05
- Categories:
 - External grants ~ **\$1.2 M**
 - CRRC research ~ **\$0.2M**
 - Outreach ~ **\$0.1M**
 - Administration ~ **\$0.5M**



External Grants Program



1. Annual Request for Proposals



Annual Request For Proposals

- Identification of priority research needs
 - November 2003 Workshop
 - Spill response community including industry and academia
 - Report on Center website
 - May 2004 NOAA Practitioners' Meeting
 - e.g., HAZMAT, DAC, Sea Grant, NCCOS
- RFP topics = Workshop/Meeting outcomes



Workshop-Identified Research Needs

- Physical transport forecasting
- Oil weathering: data development and modeling
- Ecosystem services: identification and valuation
- Communication: stakeholder participation
- Restoration methods
- Chronic effects of oil
- Methods and techniques
- New tools for restoration and recovery



Practitioners' Meeting

- Environmentally realistic exposure regimes
- Communication with stakeholders must be improved
- Field data for verification of fate and transport models



Annual RFP Mechanics

- Internet distribution, preproposal and proposal submittal, and reviews
- Issue RFP in May
- Projects funded start following January
- \$1.0 to 1.2M funding available annually



Peer Review

- Several peer reviews per proposal
 - 4 experts do individual reviews
 - 2 panel reviews
- Reviewed for:
 - Technical approach and innovativeness 30%
 - Scientific and management relevance 30%
 - Transferability 15%
 - Budget appropriateness 10%
 - Qualifications of project investigators (PI) 10%
 - Support and capabilities 5%



2. Current Grants



Currently Funded Projects

- 2002 = 3 projects
- 2003 = 5 projects
- 2004 = 5 projects



2002 Projects: Response

- A Module for NOAA's GNOME Model To Provide Capability To Simulate Deepwater Oil and Gas Spills
 - P. Yapa, Clarkson University, \$40,000, **COMPLETE**
 - CDOG (Clarkson University Deepwater Oil and Gas) model
 - Jet/plume and rise
 - Linked to NOAA GNOME surface trajectory model



2002 Projects: Response

- Use of Natural Seeps for Evaluation of NEAT SWEEP Dispersant Application Technology and Intercalibration of NOAA SMART Protocols
 - J. Payne, Payne Environmental Consultants, \$60,000, **COMPLETE**
 - Evaluating oil boom/dispersant NEAT SWEEP and intercalibrate NOAA SMART protocols using natural seep (Santa Barbara, CA)
 - Oil not amenable to dispersants
 - Report on “lessons learned” in permitting field experiments



2002 Projects: Injury and Recovery

- Fate and Effects of Emulsions Produced After Oil Spills in Estuaries
 - R. Lee, Skidaway Institute of Oceanography, 2 years, \$169,000
 - Examining how emulsions of crude oil in estuarine sediments degrade with/out sunlight
 - Determining biological effects of emulsions



2003 Projects: Response

- Improvements to Integration of NOAA's GNOME Model and Clarkson Oil and Gas Blowout Model
 - P. Yapa, Clarkson Univ., 1 year, \$66,000 **COMPLETE**
 - Continuing interpretation of CDOG (new version) and GNOME
 - Modifying CDOG so updates will be compatible with GNOME
 - Sensitivity testing with respect to plume height and drop size



2003 Projects: Injury and Recovery

- Acute and Chronic Effects of Crude and Dispersed Oil on Chinook Salmon Smolts
 - R. Tjeerdema, UC Davis, 2 years, \$150,000
 - Assessing acute and long-term impacts of water accommodated fraction (WAF) and chemically-enhanced (dispersant) WAF (CEWAF) of Prudhoe Bay crude on salmon smolts
 - Jointly funded with CA OSPR



2003 Projects: Injury and Recovery

- Use of Meiobenthos for Risk Assessment of Low Level Crude Oil WSFs: Rapid Copepod-Based Approaches for Evaluating Long Term Endocrine and Reproductive Toxicity
 - G.T. Chandler, Univ. South Carolina, 1 year, \$120,000 **COMPLETE**
 - Using novel assay that determines threshold toxicity of water soluble fraction (WSF) of crude for meiobenthic copepods
 - Culturing copepods through two generations (full life cycle) with range of possible WSF post-remediation concentrations



2003 Projects: Injury and Recovery

- Dispersants as Oil Spill Countermeasure for Remediation & Restoration in Sensitive Coastal Habitats
 - Q. Lin, Louisiana State, 2 years, \$188,000
 - Determining effect/fate of oil and dispersed oil in different marsh sediments as function of season
 - Determining effect of dispersants on oil sorption/fate in marsh sediments



2003 Projects: Injury and Recovery

- Impacts of Low Level Residual Oil on Toxicity Assessment and Improving the Predictive Modeling of Environmental Fate of Oil Spills
 - D. Di Toro/ J. McGrath, HydroQual, 2 years, \$97,000
 - Exploring role(s) of narcotic and non-narcotic hydrocarbons in long and short term petroleum toxicity
 - Using existing data in Target Lipid Model to predict concentrations where toxicity will occur



2004 Projects: Injury and Recovery

- Effects of oil exposure on terns breeding in Buzzards Bay
 - F. Tseng, Tufts Univ., 1.5 years, \$96,000
 - Using 35 year demographic and physiological dataset, compares suite of blood-based parameters with reproductive success
- Effects of oil and dispersed oil on symbiotic Cnidarians (Soft corals and anemones)
 - C. Mitchelmore, Univ. of MD, 2 years, \$199,000
 - Coupling suite of biological stress endpoints to behavioral changes, with quantified, controlled, environmentally realistic exposures



2004 Projects: Injury and Recovery

- Long-term effects of oiling of diamondback terrapin and snapping turtle nests
 - C. Rowe, Univ. of MD, 2 years, \$205,000
 - Eggs, hatchlings and juvenile turtles exposed to oil in artificial nests monitored for viability, metabolic and growth rates and developmental and behavior abnormalities
- Quantitative prediction of lethal effects of oil from environmentally realistic exposure regimes using grass shrimp as model
 - M. Newman, Coll. Wm. and Mary, 2 years, \$220,000



2004 Projects: Communication

- Establishing performance metrics for oil spill response, recovery and restoration
 - S. Tuler, SERI, 2 years, \$230,000
 - Including public in review and examination of metrics used in describing progress of spill response and restoration
 - e.g., Using actual spills as case studies



2005 Annual RFP Topics

- Data sets to verify fate and transport models
- Integrating regional observing systems with circulation and transport forecasts
- Recovery of natural resources
- Injury to natural resources
- Valuing restoration
- Effects and efficacy of dispersants



3. Cold Climate RFP



Cold Climate RFP

- Partnership between:
 - Oil Spill Recovery Institute (Cordova, AK)
 - Cooperative Institute for Coastal and Estuarine Environmental Technology
 - Coastal Response Research Center
 - Mineral Management Service



Cold Climate RFP Process

- Cold Climate RFP released in June 2005
- \$1M available
- Funding for Summer 2006 field season
- International projects allowed
 - e.g., Norway, Canada, Russia, Japan
- Funding announced in February 2006



2006 Cold Climate RFP Topics

- Detection, containment and clean-up of oil spills
- Exposure and injury assessment tools
- Data development: Processes and rates affecting oil
- Human use valuation of ecosystems
- Habitat recovery and restoration technologies



4. Future RFPs



Possible Future RFPs

- Dispersants focus
 - Follow-up to NRC Dispersants Report and Center's Dispersants Workshop
- Submerged oil focus
 - Coordinate with NOAA/UNH Joint Hydrographic Center and Center for Coastal and Ocean Mapping



D. Information Transfer and Outreach



Outreach

- Center Website
- www.crrc.unh.edu
- RFP process run online
- Information on research projects
 - Proposals
 - Progress reports
 - Final reports
 - Presentations
 - Articles



Outreach

- Data Mining
 - Search multiple websites simultaneously for information/reports
- Upcoming events/workshops/meetings of interest on spill response, recovery and restoration and related topics
- Center contact information



Outreach

- Presentations/Participation at meetings
 - Clean Gulf 2004 (booth)
 - RRT meetings
 - Input on Center RFP topics
 - Update on research findings/applications to spill response
 - Cold Regions Research Engineering Laboratory
 - Oil in ice detection
 - OHMSETT dispersants testing
 - IOSC booth and paper



Outreach

- March 2005- Emerging Research Workshop
 - Center PIs presented results
 - Free and open to all
 - Attendees: NOAA, USCG, MMS, EPA, API, State, Industry (~60 total attendees)
- Upcoming Workshops
 - Socioeconomic aspects of dispersant use research needs
 - March 2006 Emerging Research Workshop



Dispersants Initiative

- NRC report on dispersants efficacy and effects discussed need for integrated research plan
 - Need for collection and dissemination of peer-reviewed information
 - Scientifically-robust and environmentally-meaningful context
 - Center's mandate from NOAA to address national issues related to spills
 - Act as a hub for oil spill research



Dispersants Initiative

- Center and NOAA convened meeting of NRC, USEPA, MMS, USCG, TXGLO, OSRI, LA OSRD, CA OSPR, API and Industry reps
 - July 2005
- General willingness by all parties to participate in formulation of integrated research plan (Dispersants Working Group)
- Workshop on R&D needs for making decisions regarding dispersing oil



Dispersants Workshop

- UNH on Sept 20-21, 2005 followed by Working Group planning meeting on Sept 22
- ~35 invitees from regulatory agencies, academia, private sector
- Jacqui Michel = facilitator
- Outcome of workshop = list of RFP topics and brief descriptions
- Working Group will use these as basis for their upcoming RFPs



Dispersants Workshop

- Discussion topics:
 - Dispersants effectiveness: Parameters that affect overall effectiveness
 - Chemical
 - Operational and hydrodynamic
 - Modeling integration
 - Effects of dispersants
 - Fate of oil and dispersed oil in the water column and other habitats
 - Realistic exposure regimes
 - Toxicity testing



Dispersants Website

- Workshop summary report available on Center's website in early 2006
- Dispersants link on Center's website
 - Description of Dispersants Working Group (DWG)
 - One pagers on each DWG member including research of research, funding opportunities
 - Links to on-going RFPs of members



Coastal Response Research Center

www.crrc.unh.edu

