

# 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

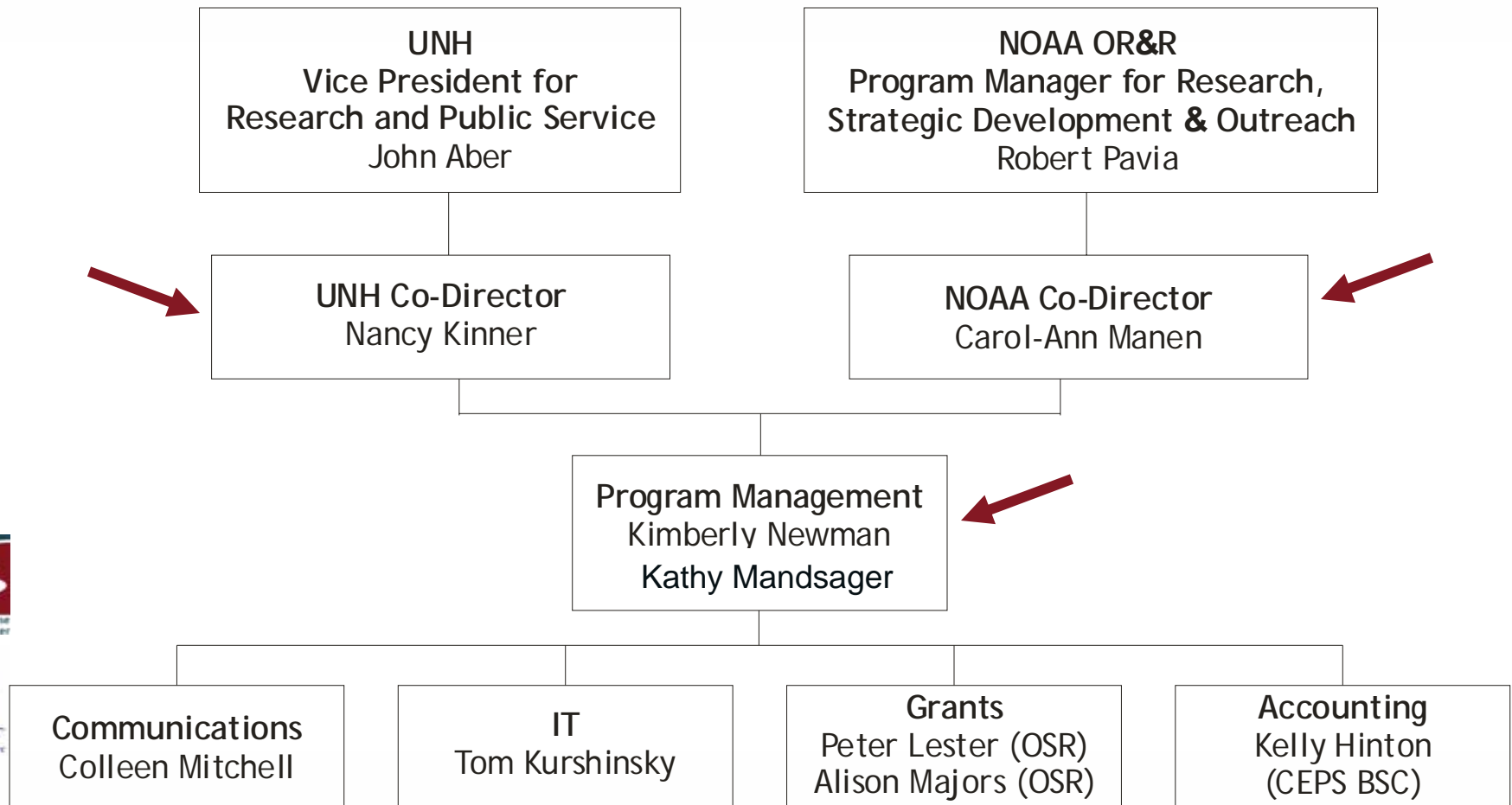


# Science Advisory Panel Membership

- 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](http://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](http://www.crrc.unh.edu)

