Biscayne Bay Regional Restoration Coordination Team

NOAA SE Fisheries Science Center (SEFSC)
Statistics Building Conference Room
75 Virginia Beach Drive, Miami, FL 33149

January 14, 2015

Attendees
Pamela Sweeney
Phil Everingham
Sarah Bellmund
Joan Browder
Caroline McLaughlin
Jeffrey Mullins
Dan Kipnis
Nancy Diersing
Sheryl Gold
Tiffany Troxler
Harold Wanless
Roberto Torres
Mary Weber
Josh Mahoney
Diane Goldin
Joe Serafy
LT COL Tom Greco
Karen Bolter
John Englander
Tom Jamir
Jack Meeder
Ann Wachnicka
Tom Gustafson
S. Jamir
Joan Lawrence

1. **Welcome and Introductions**
   Phil Everingham, Chairman of the BBRRCT, called the meeting to order and asked everyone to introduce themselves.

2. **Sea Level Rise: Understanding the Gravity**

John Englander gave a presentation entitled "Unstoppable Sea Level Rise – Prospective for Biscayne Bay". Mr. Englander is an oceanographer and sea level rise expert. He has a broad background in marine science as well as degrees in geology and economics. Mr. Englander stated that the problem is real and will not be stopped by "greenhouse gas" (GHG) reduction. Coastal South Florida is unique due to the porous limestone and low elevation, but others around the world have flooding risk with sea level rise. Actual Sea Level Rise (SLR) is exceeding projections. By 2100 the new IPCCC projections show 10 to 32 feet of sea level rise, but these projections do not take into account the "wild card" amplifiers: methane and the collapse of the West Antarctica Ice Sheet. The West Antarctica glaciers are the "elephant in the room". Humans need to have an awareness of what's happening. They have decades to prepare. Everglades Restoration may buy us 3, 4, or 5 decades of water supply. Takeaways:

- Storms + tides + SLR = vulnerability now
- After years of stability, SL is rising and will continue for centuries
- We can slow SLR, but not stop it
- The trend can be your friend
- Know your risk, plan, and adapt

RECAP:

- Storms, Extreme Tides and SLR are different
- SLR will have different effects in different places
- Projections differ and change. Plan for first 3 feet of SLR, asap…more to come
- Don't confuse planning for SLR with reducing GHG and other efforts at being "sustainable" and green.

Mr. Englander is the author of the book "High Tide on Main Street – Rising Sea Level and the Coming Coastal Crisis".

(Note: The above presentation, along with a fact sheet entitled *10 surprising Facts About Sea Level Rise is* posted on the Task Force website at http://www.evergladesrestoration.gov/content/bbrrct_handouts.html)

3. <u>Effects of Sea Level rise on the Water Table in South Florida</u>

Dr. Karen Bolter's presentation focused on *Misconceptions on Sea Level Rise in South Florida*. Dr. Bolter is a hydrologist and a research assistant at the FAU Center for Environmental Studies. The USA is within the top 10 in nuisance flooding; our level of sea level rise matches the global level. Dr. Bolter conducted an online survey of Broward County residents as to perceived risk vs. actual risk. Her research focus is to increase the awareness of the need for adaption to sea level rise in South Florida.

(Note: The above presentation is posted on the Task Force website at http://www.evergladesrestoration.gov/content/bbrrct_handouts.html)

4. **<u>Updating the Science on Sea Level Rise</u>**

Dr. Harold Wanless, a professor and Chair of the Department of Geological sciences at the University of Miami, has been at the forefront of broadening awareness of climate change in south Florida and is considered an expert on the sea level effects we can expect from climate change. Dr. Wanless gave a presentation entitled *COMES THE SEA – ACCELERATING SEA LEVEL RISE WILL DRAMATICALLY CHANGE LIFE ON EARTH AS THE CENTURY PROGRESSES*. He stated that a SLR OF 1-2 FEET VERSUS 3-5' MAKES A DRAMATIC DIFFERENCE.

- A 1-2 FOOT RISE THIS CENTURY
    - Miami, barrier islands and upper Keys are still sort of inhabitable;
    - Probably worth throwing up extensive defenses;
    - And just maybe all will get hold of global warming problem before all is lost.

Every county and city urgently needs accurate and detailed elevation maps from which to assess future drainage and infrastructure risk. In SE Florida, a 50cm (20 inch) SLR will make 80% of our coastal water control structures useless.

- 3-5 FOOT RISE THIS CENTURY
    - All barrier islands abandoned;
    - Miami-Dade & Broward diminished and risky place to live – including all of the Florida Keys;
    - Increased pollution risk from eroding dumps;
    - Sea level rising at 0.6 to 1 foot per decade.

Dr. Wanless presented inundation projection maps showing how much land would remain at different inundation levels. On top of these projections are higher seasonal tides. Storm surges, acting at higher sea levels, will cause more frequent and exponentially more severe and expensive damage. Importantly, Florida is underlain by very porous limestone and sand – we cannot build dikes to keep out rising water. Quotes from Dr. Mann, Director of the Earth System Science Center at Penn State University:

- *Sea ice decline is decades ahead of when models predicted*
- *Melting of the polar ice sheets may occur more rapidly than previously predicted*
- *We could see disastrous consequences of climate change far sooner than expected.*

Recent research shows that relative sea level rise is not a simple curve, but one with significant stalls and rapid rises. Several slides show the relative sea level rise for south Florida. We are now seeing:

- Continued warming of the world's oceans;
- Accelerating ice melt of alpine glaciers;
- Rapidly accelerating ice melt of Greenland Ice Sheet and West Antarctic Ice Sheet;
- Rapidly diminishing Artic Pack Ice cover in summer.

A warmed atmosphere is rapidly accelerating the ice melt of the Greenland Ice Sheet – there is enough ice to raise sea level by up to 23 feet. There is a rapid acceleration of the ice melt of the Greenland Ice Sheet by warmed sea water equaling 1.5 foot or much greater per century rise. Atmospheric warming is dramatically increasing the extent of the summer melt, but the biggest concern is the warming ocean water. Scientists are just now recognizing that Antarctica is also

rapidly melting, and has been for some time. This is because of increased wind shear, which has increased upwelling and melting under the ice shelves. The rate of mass loss has more than doubled over the past 7 years on both Greenland and Antarctica. We are already at the anticipated 2050 loss of Arctic Ocean Ice.

James Hansen, a leading climatologist has suggested a sea level rise of 5 meters (16 feet) by 2100. We are running well ahead of Hansen's prediction looking just at Greenland. In 2013 and 2012, a glaciologist and a paleo climatologist supported 20 meters (69 feet) of SLR. Dr. Wanless states that it is time to begin the consideration that [pulses of rapid SLR in the 1-10 meter range are a real possibility during this century and recommends quick planning and implementation for putting things too important to lose and too valuable to be disrupted at greater than 165 feet elevation and in areas that will not be in the chaos of rapid relocation. Southeast Florida is vulnerable to rising sea level – barrier islands and the mainland. Rapid loss of saline and freshwater wetlands is occurring throughout South Florida's coastal complex in response to seal level rise and saline intrusion.

(Note: The above presentation is posted on the Task Force website at http://www.evergladesrestoration.gov/content/bbrrct_handouts.html)

5. **Biscayne Bay, selected as one of the next three new Habitat Blueprint Focus Areas for NOAA: What This Means for the Bay and What this Process Will Likely Be**

Dr. Joan Browder told the Team that Biscayne Bay has been selected as one of NOAA's New Habitat focus Areas. Dr. Browder had given a prior presentation to the Team before the selection. The Habitat Focus Area includes all of Biscayne Bay and its adjacent connected reef tracts. The next step is a posting announcing the competitive opportunity for funding to partners to address water quality issues through a cooperative agreement. An implementation plan will then be developed and implemented.

Objectives are to build upon the multi-agency management framework and use of sound science to…

- Conserve and restore marine habitat structure and function,
- Ensure the stability of fishery stocks,
- Protect and recover marine protected species, and
- Restore marine biological diversity, and protect and improve the support value of Biscayne Bay for the local community and economy.

The Implementation Plan will

- Address water quality issues with partners and through other opportunities,
- Continue monitoring, assessment, and adaptive management to protect and restore Biscayne Bay in the comprehensive Everglades restoration Program,
- Address water quality and other issues with partners, and
- Review and scope alternative activities to pursue relative to objectives, and apply for other NOAA and non-NOAA funding opportunities.

The Threats are:

- Degradation of Biscayne Bay water quality,
- Alteration of freshwater inflow to the Bay, and
- Vulnerability of imperiled species and habitat.

NOAA activities already underway:

- Engage in freshwater management and science planning affecting Biscayne Bay,
- Investigating algal blooms in Biscayne Bay,
- Monitoring nursery habitat along the Biscayne Bay shoreline and assessing effects of freshwater inflow changes in CERP, and
- Investigating connections of fishery species to Biscayne Bay nursery and feeding habitat.

This Habitat focus Area will enhance collaborative opportunities within NOAA and with partners to repair Biscayne Bay.

(Note: The above presentation is posted on the Task Force website at http://www.evergladesrestoration.gov/content/bbrrct_handouts.html)

6. Wrap-up

The Chair adjourned the meeting at 3:30pm.