

Meeting Minutes
CHNEP Working Group to Review
Climate Change Indicators Tele-Conference
Friday January 8, 2010

Attendees

Lisa Beever	Charlotte Harbor National Estuary Program
Maran Hilgendorf	Charlotte Harbor National Estuary Program
Judy Ott	Charlotte Harbor National Estuary Program
John Wilson	U.S. Environmental Protection Agency
Tristan Peter-Contesse	U.S. Environmental Protection Agency
Keith Laakkonen	Town of Fort Myers Beach
Jon Iglehart	Florida Department of Environmental Protection
Jennifer Nelson	Florida Department of Environmental Protection
Miki Renner	Southwest Florida Water Management District
Wayne Daltry	Lee County
Mark Sramek	National Oceanic and Atmospheric Administration – National Marine Fisheries Service
Lindsey Cross	Tampa Bay Estuary Program
Ed Sherwood	Tampa Bay Estuary Program
Stan Frank	City of North Port
Joe Herr	ICF International
Liz Strange	ICF International
Susan Asam	ICF International
Katy Maher	ICF International

1. Call to Order and Introductions

Lisa Beever called the meeting to order at 1:30 pm. The minutes for this meeting will be provided by email to those in attendance and will also be available on CHNEP's website at <http://www.chnep.org>.

2. Purpose of the CHNEP Climate Change Indicators Working Group

Lisa Beever discussed the purpose of the EPA/CHNEP Climate Change Indicators Study and CHNEP Climate Change Indicators Working Group. CHNEP and EPA are working together to identify 3-5 climate change indicators and corresponding monitoring plan alternatives for the CHNEP. The purpose of the Climate Change Indicators Working Group is to review the results of the previous CHNEP Climate Change Indicators Survey, agree on the short list of indicators and develop monitoring plan alternatives for each indicator.

3. Review and Discuss Results of CHNEP Climate Change Indicators Survey

Lisa Beever described the process for developing the climate change indicators survey to date. CHNEP worked with EPA and ICF International to develop a list of 172 potential indicators using a variety of sources (e.g., CHNEP vulnerability assessment, Water Quality Status and Trends, CHNEP environmental indicators). The survey was then developed to get feedback on the full list of indicators. Survey respondents ranked the indicators in terms of relevance and added any indicators that were considered important but not covered by the list. The only

indicator that was added by a survey respondent was the volume and location of oligohaline-freshwater transition habitat, which was rated as relevant and then removed from the list after further discussion.

The survey results were compiled and median values were generated for each indicator (ranged from 2-4). A list of 20 different indicators with median values of 3.5 or higher resulted from the survey. These results of the CHNEP Climate Change Indicators Survey are summarized in Table 1 below.

Table 1. CHNEP Climate Change Indicators Survey Results that Received Median Values of 3.5 or Higher

Climate Change Indicator	Priority Action
Loss of wetlands attributed to retreating shorelines	FW
Changes to precipitation trend/patterns	HA
Loss of Conservation Acreage due to sea level rise	FW
Water temperature	WQ
Habitat loss/degradation - salt marshes	FW
Migration/depletion of seagrass beds	FW
Habitat loss/degradation - seagrasses	FW
Saltwater Marsh Acreage and Location	FW
Mangrove Acreage and Location	FW
Conversion of wetlands to open water	FW
Drought caused by increased atmospheric temperatures	HA
Habitat loss/degradation - coastal strand	FW
Habitat loss/degradation - mud flats and sandbars	FW
Coastal erosion rates	HA
Relative sea-level rise	SG
Drought intensity	HA
Timing of seasonal activities (migration, hatching, production)	FW
Extreme precipitation	HA
Ecologic changes at the coastline	FW
Flooding at coastlines	HA

There was some replication among these 20 indicators, so similar indicators were combined and condensed into a list of 15 indicators:

- Timing of seasonal activities (migration, hatching, production)
- Loss of Conservation Acreage due to sea level rise
- Ecologic changes at the coastline
- Habitat loss/degradation/migration (changes) of coastal strand
- Habitat loss/degradation/migration (changes) of mangroves
- Habitat loss/degradation/migration (changes) of mud flats/sand bars
- Habitat loss/degradation/migration (changes) of salt marshes
- Habitat loss/degradation/migration (changes) of seagrass

Habitat loss/degradation/migration (changes) of wetlands from retreating shorelines/conversion to open water
Coastal erosion rates
Drought intensity
Flooding at coastlines
Changes to precipitation trend/patterns, including extreme precipitation
Relative sea-level rise
Water temperature

Lisa Beever explained that some of these indicators could be further collapsed or broken out, but asked for feedback on the list of top indicators that came out of the survey results. Discussion ensued on the top indicators list. Keith Laakkonen agreed with the list and thought the additional indicator was interesting but not more important than any other indicator on the list.

In a point of clarification, Lisa Beever explained that conservation lands refer to those lands that are under public management. Jon Iglehart suggested that an indicator be added that addresses portions of the shoreline that are armored but not currently at the water line (shoreline loss will stop at the armoring). For example, in the Isle of Capri, the bay was experiencing erosion, so retention walls were built, and the shoreline eroded back to retention structures. In the future, there may be a lot of wall building behind the mean high water line. While this might not be a specific indicator of climate change, it would impact a lot of the current indicators on the list. Lisa Beever suggested a potential indicator to address this issue – “armored shorelines disallowing retreat” (which would be a stewardship gap indicator). Keith Laakkonen agreed and noted that the Town of Fort Myers will be potentially looking at that issue in the future, and will be interested to see how well the indicator would fit within the priority action groups.

Stan Frank brought up the issue of changing floodplain extent and noting changes due to development pressure versus the climate regime. New floodplain maps are showing floodplain extent as much larger than it was in the past. It was agreed that other indicators probably cover this issue, and that floodplain maps could be used as monitoring tools for those indicators.

Keith Laakkonen noted that several indicators capture other indicators on the list; for example, relative sea level rise will capture ecological changes, retreating shorelines, etc. Miki Renner agreed with this point; for example, ecological changes will cover habitat loss, etc. Lisa Beever suggested dropping the following indicators that are duplicative of other indicators: loss of conservation acreage and ecological changes. There were no objections to this.

Keith Laakkonen noted that the indicators of changes to precipitation patterns and drought intensity are somewhat duplicative, and that drought intensity should be dropped. There were no objections to this.

Lisa Beever explained that further cutting of the indicator list (down to 3-5 indicators) will involve looking at other considerations, such as: new monitoring, availability of data, etc. This meeting has cut the list of indicators down to 12 now – this revised list will be sent out for further consideration. Looking at these indicators in context with each other will be important. While it may be beneficial to have existing data on individual indicators, there may be some

indicators that do not have existing data and it will be important to begin developing monitoring for those.

Lisa Beever outlined the updated list of 12 indicators:

- Timing of seasonal activities (migration, hatching, production)
- Habitat loss/degradation/migration (changes) of coastal strand
- Habitat loss/degradation/migration (changes) of mangroves
- Habitat loss/degradation/migration (changes) of mud flats/sand bars
- Habitat loss/degradation/migration (changes) of salt marshes
- Habitat loss/degradation/migration (changes) of seagrass
- Coastal erosion rates
- Flooding at coastlines
- Changes to precipitation trend/patterns, including extreme precipitation
- Relative sea-level rise
- Water temperature
- Armored shorelines disallowing retreat

Keith Laakkonen, Mark Sramek, and Jon Iglehart agreed with this list and the plan for further narrowing of the list of indicators.

Stan Frank asked if anyone had thought of monitoring trends in wildfire. Lisa Beever noted that this was included as an indicator in the survey but it did not rank well – possibly because there are other non-climate aspects that override the climate aspects of the issue. Wayne Daltry noted that this is an important inland issue, and suggested that the indicator “days of critical designation of drought index” (which is measured by the Division of Forestry and the National Weather Service) be added to the list. Miki Renner, Ed Sherwood, Mark Sramek, and Jon Iglehart agreed with adding this indicator to the list.

Lisa Beever noted the addition of this indicator to the list and reviewed the final list of 13 indicators.

4. Discuss Data Sources, Quality, Analysis Mechanisms, Gaps and Targets

Lisa Beever initiated a discussion about data sources, quality, analysis mechanisms, gaps and targets for the identified list of indicators. The “timing of seasonal activities” indicator needs to be given an operational definition before data sources can be explored in more detail. Data are already available on a variety of habitat types: seagrasses have been historically monitored; salt marshes have been monitored through Land Use/Land Cover mapping; mudflats/sandbars have similar data availability as seagrasses; mangroves data are dependent on Land/Use Land Cover mapping; coastal strand data are available through the Land Use/Land Cover mapping of water management districts. Data on coastal erosion rates may be available through critical shoreline designation by the Department of Environmental Protection, and possibly other sources. Miki Renner noted that the annual aerial/LiDAR mapping overlay could be useful for measuring coastal erosion over different years.

Lisa Beever noted that data for “flooding at coastlines” was less certain, though flooding events can be tracked. Data on “changes to precipitation trends” are available in the Water Quality

Status and Trends assessment. Bartow, Arcadia, and Fort Myers have data for daily rainfall and temperature. For sea level rise, the gauge at Fort Meyers could be compared to levels measured in Key West and St. Petersburg. Water temperature is a tricky indicator as data are not taken at same time. CHNEP's Volunteer Water Quality Monitoring Network has some better monitoring data, but it only goes back to the 1990s. Aerials from 2006 could provide base data for shorelines that have been armored. Judy Ott will be replicating this information next spring. Data on "days of critical designation of drought index" would be available through the Division of Forestry and the National Weather Service. Wayne Daltry noted that the Division of Forestry produces maps on these data that may be available online.

Stan Frank noted that satellite monitoring/NOAA might have data on temperature. Lisa Beever will look into availability of this type of data. Mark Sramek noted that there is coastal monitoring taking place at the Space Center – he will look into what is available there for these indicators.

Judy Ott asked if anyone had thought of particular species that might be good climate change indicators. Mark Sramek listed the presence of tropical fish species and red mangroves as potential indicators. Lisa Beever noted that red mangroves are very common in southwest Florida, and that temperature is not a limiting factor for the species. The northern extent of crocodile, however, could be a good example of species presence. Judy Ott suggested the nesting patterns of osprey as a potential species indicator. Lisa Beever will speak with Jim Beever about the timing of seasonal biological activities, and will look into whether there is an independent species monitoring network.

5. Summarize Consensus of Climate Change Indicators and Next Steps

Lisa Beever outlined the updated list of 13 indicators:

- Timing of seasonal activities (migration, hatching, production)
- Habitat loss/degradation/migration (changes) of coastal strand
- Habitat loss/degradation/migration (changes) of mangroves
- Habitat loss/degradation/migration (changes) of mud flats/sand bars
- Habitat loss/degradation/migration (changes) of salt marshes
- Habitat loss/degradation/migration (changes) of seagrass
- Coastal erosion rates
- Flooding at coastlines
- Changes to precipitation trend/patterns, including extreme precipitation
- Relative sea-level rise
- Water temperature
- Armored shorelines disallowing retreat
- Days of critical designation of drought index

Lisa Beever described the next steps of narrowing the climate change indicators. CHNEP will set up another spreadsheet survey to get feedback about potential available monitoring sets and the survey will be reissued to the management conference. The aim will be to have the survey distributed next week. The next meeting of the Climate Change Indicators Working Group will be in about 5 weeks.

Wayne Daltry noted that February 4 is his last day working for Lee County.

6. Adjourn

Lisa Beever adjourned the meeting at 2:30 pm.