Mercury TMDL Stakeholders Meeting

October 15, 20007

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FDEP

Division of Environmental Assessment and Restoration

Today's Agenda

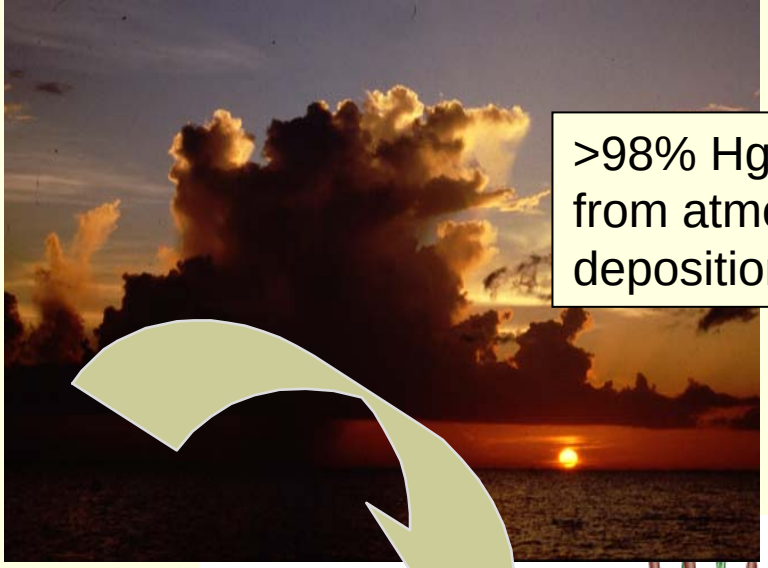
- Introduction and Background for the Mercury TMDL
  - Russ Frydenborg
- Project Overview
  - Curt Pollman, Ph.D.
- Analyze/account for All Sources of Pollutants
  - Jerry Keeler, Ph.D.
- Statewide Mercury TMDL Development
  - Curt Pollman, Ph.D.
- Potential Collaborations and Partnerships. Discussion/feedback from Stakeholders.

Introduction

- Background on mercury in the environment.
- Extent of the mercury problem in Florida fish.
- Human health endpoint.
- Mandate for a Mercury TMDL.
- Timeframe for completion.
- Introduction of Project Team.

Mercury Background

- When consumed in sufficient quantities, mercury has adverse neurological effects in humans and wildlife.
- The most sensitive human population includes women of childbearing age and young children.
- Mercury is a “multi-media pollutant”.
- Major Florida sources include combustion of fossil fuels, waste incineration, and cement kilns.



>98% Hg derived from atmospheric deposition

Consumption of contaminated fish can affect humans and wildlife

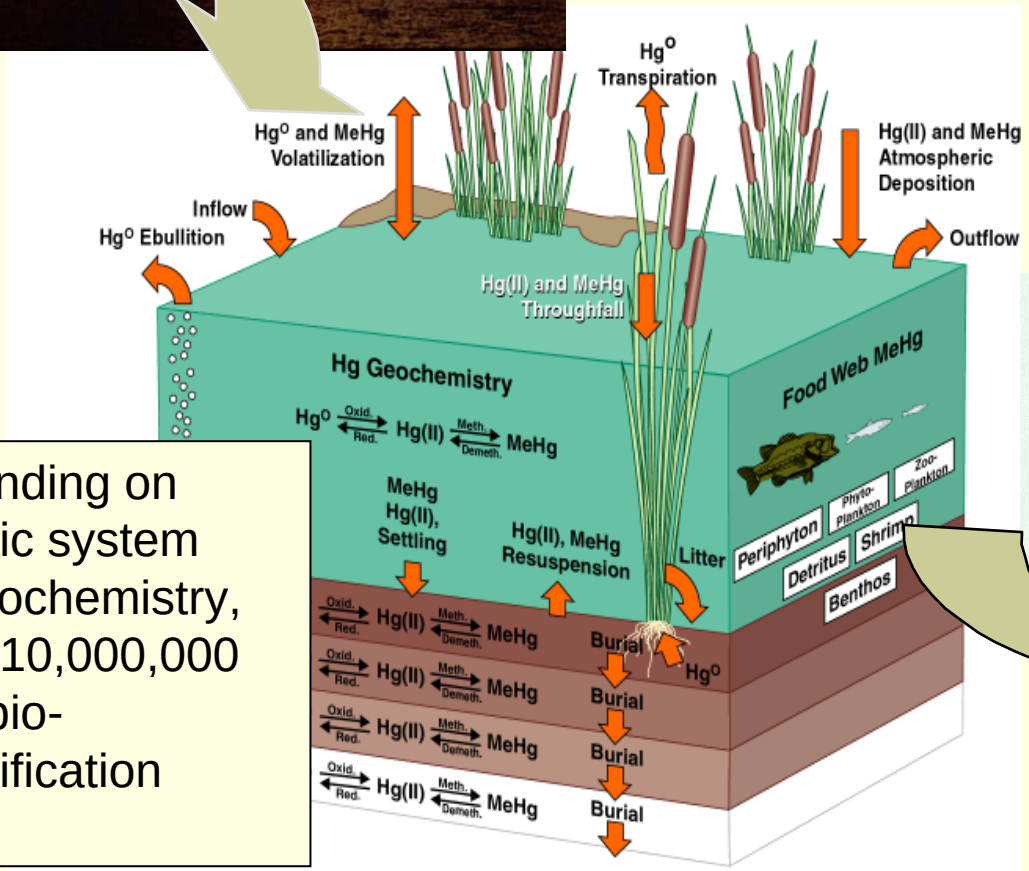
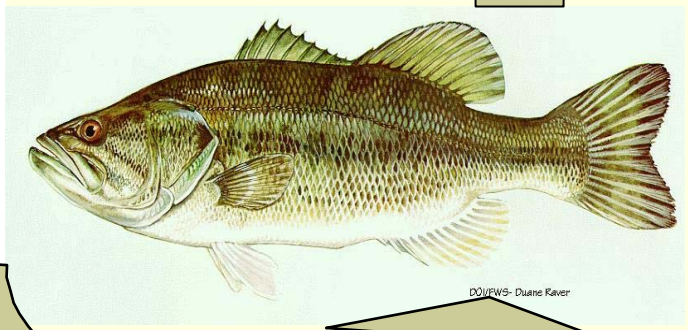


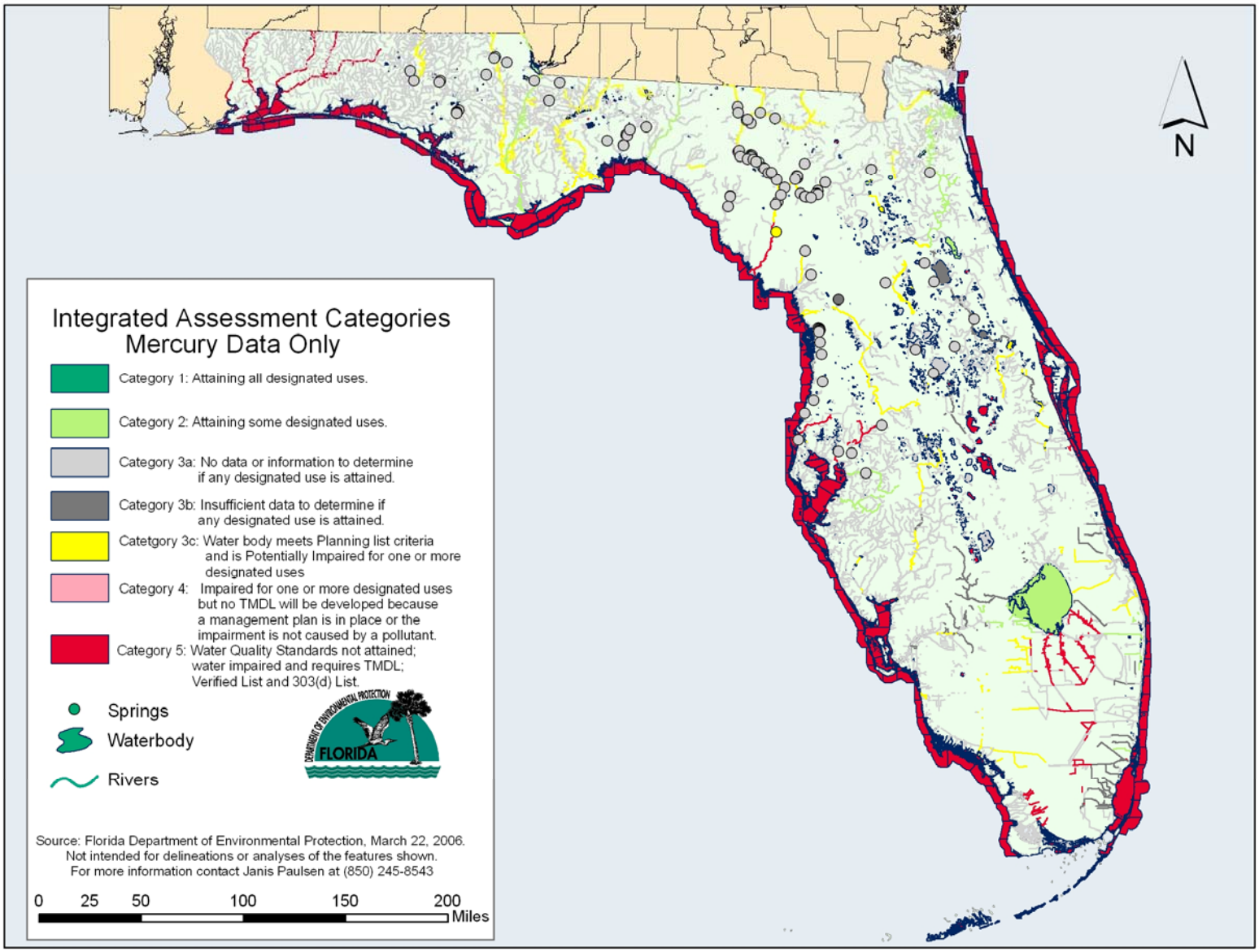
Figure 1. Conceptual model of Hg cycle in Everglades Hg Model



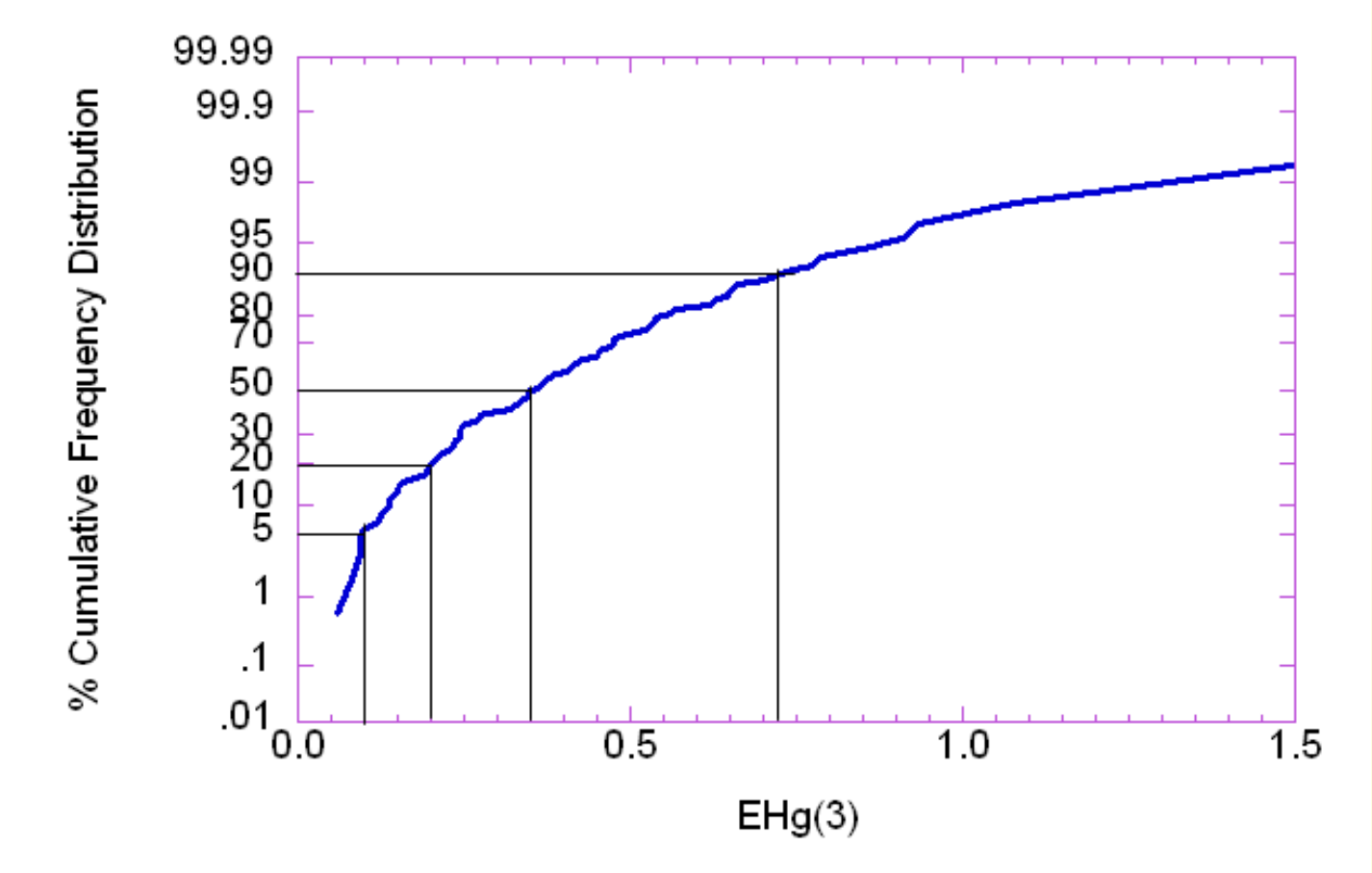
Depending on aquatic system biogeochemistry, up to 10,000,000 time bio-magnification factor

Top predators have highest Hg tissue burdens

Map of Hg Impaired Waterbodies



Cumulative Distribution of Average Mercury Concentration (mg/kg) in Florida Largemouth Bass



Based on 3 Year old fish. From the Lange, Pollman and Axelrad, 80 lakes study of representative Florida lakes.

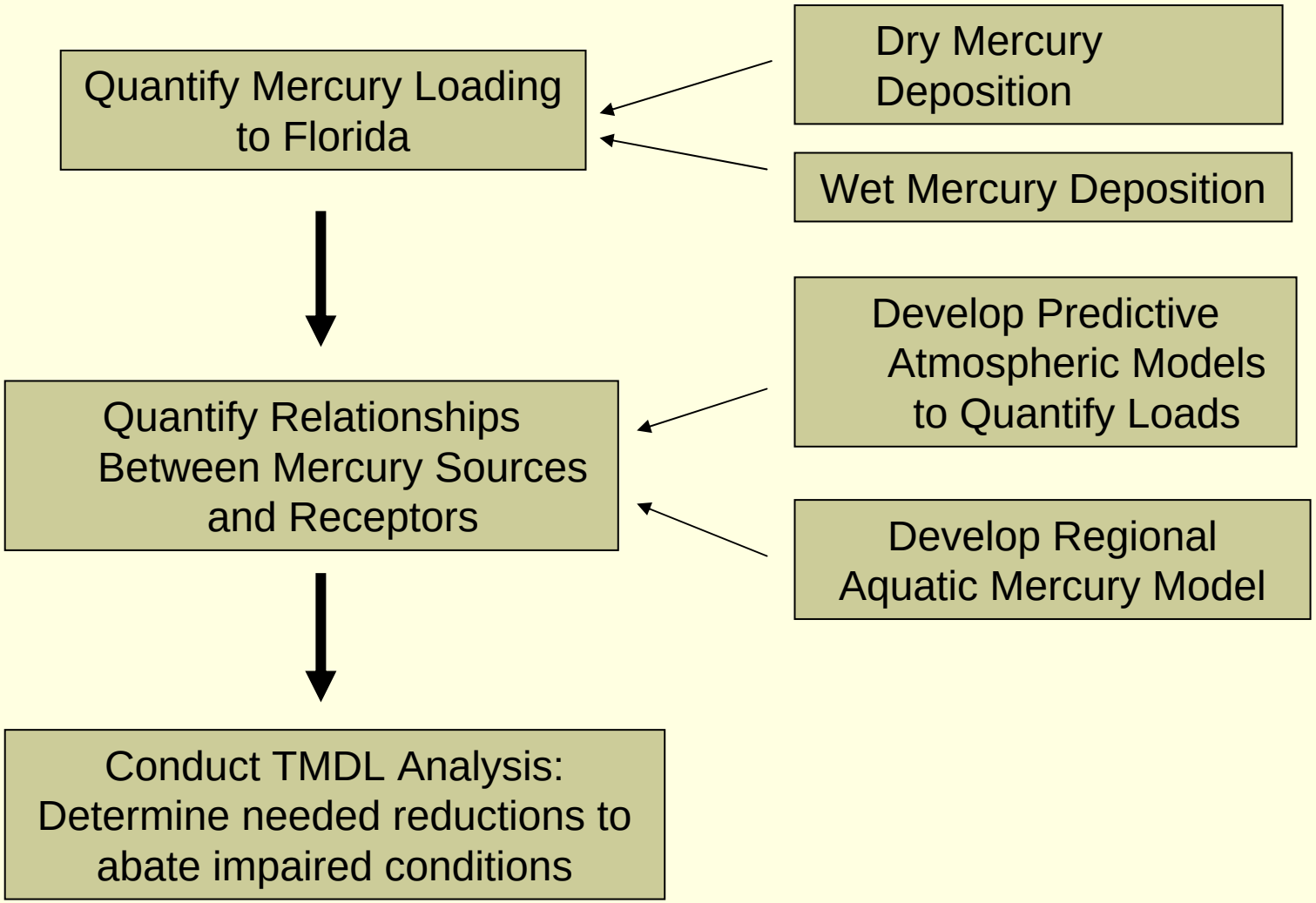
Mandate for Mercury TMDL

- Impaired Waters Rule (62-303 FAC) places a waterbody on the “verified list” if DoH issues a fish consumption advisory for it.
- USEPA’s 1999 Consent Decree listed 102 Florida waterbodies as requiring mercury TMDLs by 2012.
- Statewide approach is most practical and cost effective method.
- Due to the technical complexity, work must begin in early 2008.

TMDL Listing Process for Mercury

- Based on previous DoH input, waterbodies are placed on the verified list if mercury in the tissue of standard size largemouth bass (3 years old, minimum of 12 fish) exceeds 0.43 mg/Kg.
  - Group 4 List adopted in May, 2006.
- EPA general recommendation is 0.3 mg/Kg.
- FDEP and FDoH will continue to examine most appropriate fish tissue end-point as part of the TMDL process.

Statewide Mercury TMDL Strategy



Projected Timelines

- Wet and dry mercury deposition measurements, including Supersites and intensive studies: Early 2008- 2010
- Statewide mercury inventory: 2009
- Atmospheric modeling, including receptor and dispersion models: 2008-2011
- Aquatic cycling model: 2009-2010
- Conduct TMDL analyses and produce final report: 2011-2012

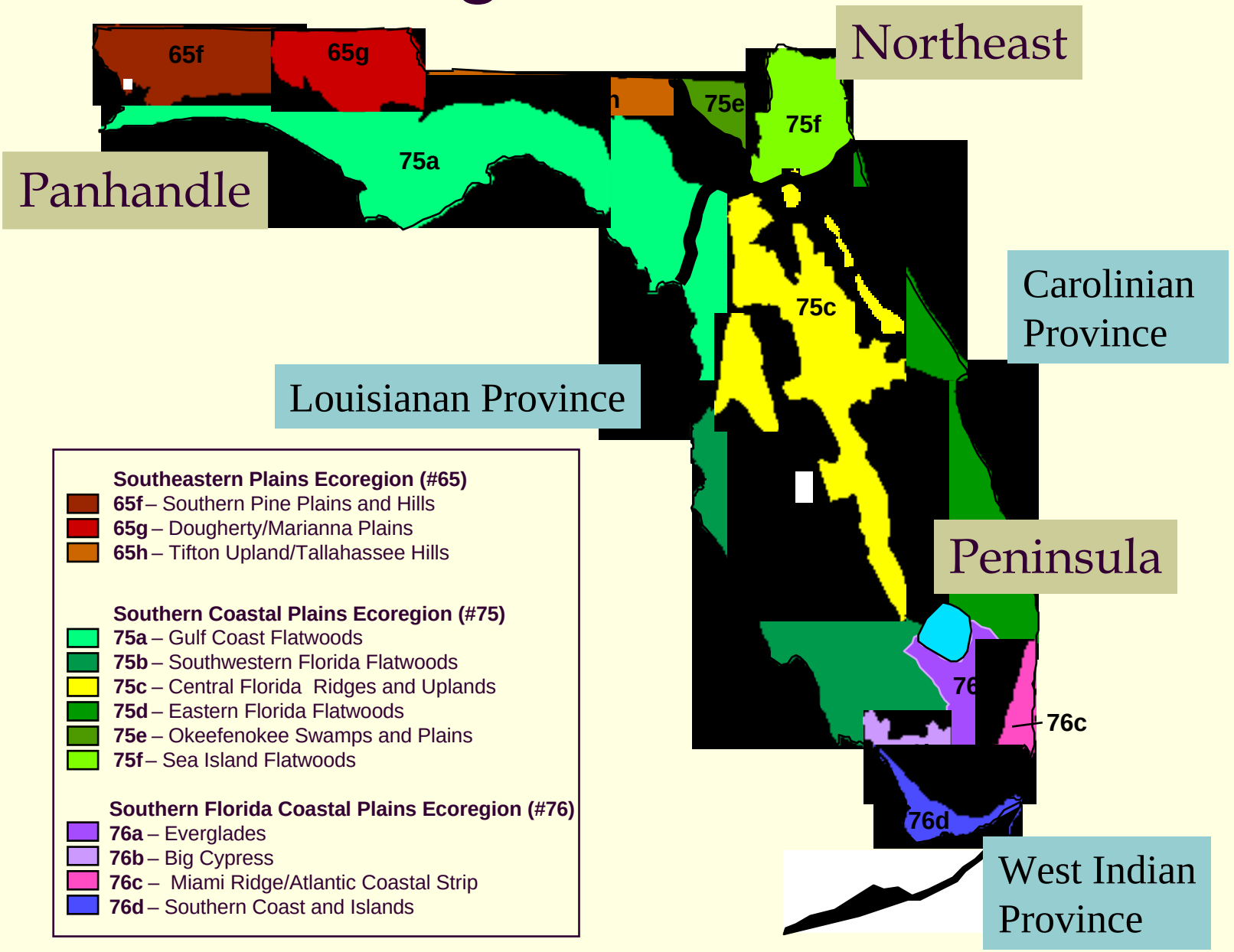
Introduction of Project Team

- University of Michigan
  - Jerry Keeler, Ph.D., Tim Dvonch, Ph.D.
- Contractors
  - Curt Pollman, Ph.D., Eric Edgerton, Ph.D.
- FDEP
  - Tom Atkeson, Don Axelrad, Denise Miller, Tom Frick, Bob Stevens, Russ Frydenborg, Wayne Magley, Daryll Joyner, Jan Mandrup-Poulsen, Drew Bartlett, John Glunn, Tom Rodgers, Al Linero, Trina Vielhauer, Bill Coppenger, Dave Whiting, Tim Fitzpatrick
- USEPA
  - Matt Landis, Ph.D., Katherine Coutros, P.E.
- FDoH
  - Brian Hughes, Joe Sekerke, Ph.D.

Questions?

- Next up, Dr. Curt Pollman

Eco-regions of Florida



FDoH Recommended Fish Consumption Rate vs. Mercury Concentration in Fish

Meal Frequency[1]	Sensitive Population[2]	General Population[3]
2 meals per week	< 0.1 mg/kg methylmercury[4]	< 0.3 mg/kg methylmercury
1 meal per week	< 0.2	< 0.6
1 meal per month	< 0.85	< 1.5
None	≥ 0.85	≥ 1.5

1. A meal is defined as 6 oz. of cooked fish which is equivalent to 8 oz. of uncooked fish
2. Women of childbearing age and young children
3. All other individuals
4. Methylmercury in fish measured in fresh (uncooked) fish, mg/kg = ppm (Essentially all of the mercury in predator fish is methylmercury)