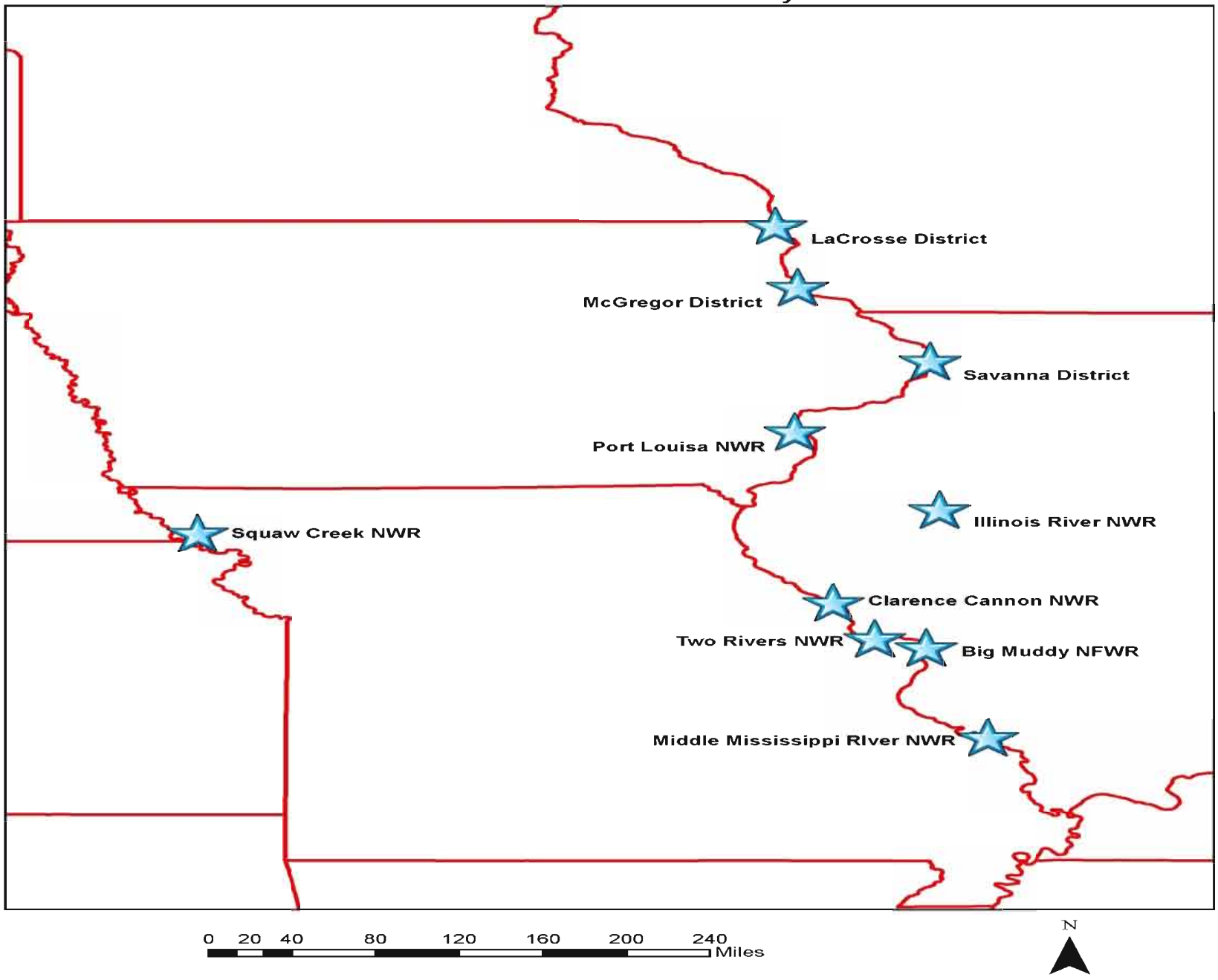
Bottomland Bees

- Monitoring Native Bees on 10 stations within the Big Rivers Network of the Midwest Region of the U.S. Fish and Wildlife Service in 2012

What are we doing?

- **Conducting a survey for native bees,.**
- **Sampling habitats on 10 stations located near large rivers of the Midwest region of the U.S. F.W.S. National Wildlife Refuge System.**
- **Establishing a baseline (species list) that may be useful in monitoring environmental changes over time.**

Big Rivers Network
2012 Native Bee Survey



Why are pollinators important??

- Provide essential ecological services
- Crop pollination
- Flower and tree pollination
- Important component of the biodiversity in many areas
- Some research shows declines in native bee populations (Forgotten Pollinators)

Why Monitor Pollinators

- **Pollinators have high site fidelity**
- **Pollinators have annual life cycles**

- **Maintaining a diverse assemblage of pollinators, is one of the best ways of minimizing risks due to climate change.**

- **Pollinator diversity provides “insurance“ not just for current conditions, but for future conditions as well.**

Bee Bowl Trapping

- Solo bowls painted flourescent colors
- Filled with detergent water
- Passive sampling
- USGS sample design
  - 3 transects with 15 bowl traps separated by 5m for each habitat. Bowls deployed for 24 hours/ every 2 weeks/April-October

Bee bowl trapping

Pros

- Easy to learn and deploy
- Collects lots of individuals
- Can sample several sites simultaneously
- Methods easily standardized

Cons

- Specimens may require storage in alcohol
- Processing bees requires time
- No ecological data
- Must carry water
- Difficult in tall grass and steep terrain

Netting at Flowers

Pros

- Detailed ecological information can be collected
- Flower records/Time of day
- Can process bees immediately
- Can observe bee habits
- Can examine pollen loads
- Its fun!!!!

Cons

- Requires netting skill
- Hard to standardize among different collectors
- Time consuming
- Can only sample a couple sites a day at different times
- Must carry poisons

Why Monitor Bees

- **Mostly non-migratory (more easily tied to a particular site)**
- **Annual life cycle (more immediate detection of change)**
- **Pollinator data can be correlated to other data (plants, weather, hydrology, birds)**

Species Found Only In Upland (Pasture/Old Field)

- Agapostemon texanus
- *Andrena imatatrix*
- Andrena nuda
- Andrena perplexa
- Andrena personata
- Andrena rudbeckiae
- Augochloropsis metallica
- Ashmeadiella buccomis
- Ceratina calcarata
- Colletes latitarsus
- Florilegus condignus
- Halictus parallelus
- Heriodes carinatus
- Lasioglossum bruneri
- Lasioglossum forbesii
- Lasioglossum fuscipenne
- Lasioglossum lustrans
- Lasioglossum nymphaearum
- Lasioglossum rohweri
- Lasioglossum truncatum
- Lasioglossum zephyrum

Megachile exilis
Megachile texana
Osmia lignaria
Sphecodes dichrous

Species Found Only in Wet Prairie

- Melissodes communis
- Svastra atripes
- Perdita halictoides
- Augochlora pura
- Lasioglossum coreopsis
- Lasioglossum disparila
- Lasioglossum hartii

Species Found Only In Bottomland Forest

- **Andrena andrenoides**
- **Andrena carlini**
- **Andrena commoda**
- **Andrena erythrogaster**
- **Andrena hippotes**
- **Anthophora abrupta**
- **Halictus tripartitns**
- **Hylaeus mesillae**
- **Lasioglossum coriaceum**
- **Lasioglossum cressonii**
- **Lasioglossum oceanicum**
- **Lasioglossum testaceum**
- **Megachile xylocopoides**
- **Melissodes denticulata**
- ***Mellisodes subillata***
- ***Osmia atriventris***
- ***Osmia conjuncta***
- ***Osmia georgica***
- ***Pseudopanurgus albitarsis***
- ***Specodes Atlantis***
- ***Specodes heraclei***
- ***Svastra obliqua***
- ***Xeromelecta california***


Taylor
Cole-Parmer

What Have We Learned?

- **We have documented over 150 species of native bees.**
- **We are gaining an understanding of the relationship between pollinators and plant phenology and hydrology.**
- **We have added three new state records and several county records for bee species.**

What We Don’t Know

- **Every bee species present ,or if a given species is really absent.**
- **Relative abundance, population trends of bees at these sites.**
- **What is normal/average for these sites**
- **If this information can be extrapolated to other areas (refuge units, MDC, private lands).**
- **The correlation between this data and other data (birds, vegetation, hydrology, climate)**

Questions ?

- Based on what you know now, what do you want to know next?
- What are the potential relationships of bees to the overall health of other wildlife, ecosystems, and people?
- How might these relationships effect land management?

A Partnership for Conservation
Thanks To:

- **Region 3 U.S. Fish & Wildlife Service- Big Rivers Network**
- **Missouri Department of Conservation**
- **Boone's Lick Chapter MMN**
- **USGS – Wildlife Research Center Patuxent, MD**


Don’t Worry – Bee Happy