# Evaluating bee response to habitat provisioning within agricultural landscapes

## Data and Materials Produced

**What data will be generated in the research?**

The data that will be generated is count data. Counts will be taken of bee specimens collected within each trap type allowing abundance to be determined. Following collection, each specimen will be identified, which will reveal species richness. Percent coverage of blooming forb species within a one by one square meter quadrat will be noted as well as number of blooming forb species in the surrounding area.

**What data types will you be creating or capturing?**

The data collected is raw data. Any processing or manipulation will take place later.

**How will you capture or create the data?**

The bee data will be captured by use of various traps and sweeping techniques. Within each strip, a sixty meter long transect will be measured and two blue vane traps filled with approximately an inch of soap and water solution will be placed at either end.  Twelve pan traps, which are 96 mL plastic Solo® bowls, four of each white, fluorescent blue, and fluorescent yellow color, will be placed in random color order every five meters along the transect and then partially filled with a weak soap and water solution.  Bamboo stakes of varying height will be used to adjust the height of the pans to that of the vegetation as the growing season progresses.  Both the blue vane traps and the pan traps will remain deployed for six hours.  Two emergence traps will be placed within the target transect in early May and remain in place throughout the duration of the growing season. Contents will be collected once per month. Targeted and nontargeted sweep netting will be employed along the transect.  Targeted sweeping is conducted to capture individual bees visiting flowers, whereas nontargeted sweeping through vegetation for a uniform amount of time and distance provides a consistent survey tool from site to site.  Both sweeping methods will be conducted by two individuals along half of the transect (30m) for six minutes each for a total of 48 minutes of sweeping.

Floral resources will be assessed by placing a 1m x 1m quadrat randomly to either side of the transect every six meters for a total of ten quadrats.  Percent cover of each blooming forb species within the quadrat will be estimated.  Additional species in bloom found near, but not within, the strip will be recorded.

## Standards, Formats and Metadata

**Which file formats will you use for your data and why?**

Excel files for storing raw data. CSV files for importing into R for subsequent analysis.

**What form will the metadata describing/documenting your data take?**

I intend to use Ecological Metadata Language as soon as I figure out how to do so.

**What contextual details (metadata) are needed to make the data you capture or collect meaningful?**

Site location details.

## Roles and Responsibilities

**Outline the staff/organizational roles and responsibilities for implementing this data management plan.**

Morgan Mackert will be responsible or organizing and directing the team as far as collection dates/times, appropriate methods/techniques, and processing protocols. The technicians are responsible for using approprite collection methods, processing samples, and data entry.

**Who will be responsible for data management and for monitoring the data management plan?**

Morgan Mackert will monitor all data entry and data management activities.

**What process is in place for transferring responsibility for the data?**

Data is uploaded to CyBox, where Dr. Mary Harris has access to all raw files.

**Who will have responsibility over time for decisions about the data once the original personnel are no longer available?**

Dr. Mary Harris

## Dissemination Methods

**What data will be made available from the study and preserved for the long-term?**

All raw data files and R analysis scripts will be made available to the public. Raw data files will be preserved for long-term use.

**How and when will you make the data available?**

The data will be made available for public use via email request upon completion of my Master's thesis.

**What metadata/documentation will be submitted alongside the data or created on deposit/transformation in order to make the data reuseable?**

The data dictionary as well as site location information.

**What is the process for gaining access to the data?**

Email request.

**How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?**

The data will become available for public use upon the completion of my Master's thesis.

## Policies for Data Sharing and Public Access

**Will any permission restrictions need to be placed on the data?**

No.

**Are there ethical and privacy issues?**

No.

**Who will hold the intellectual property rights to the data and how might this affect data access?**

Dr. Mary Harris and Iowa State Univeristy.

**What and who are the intended or foreseeable uses/users of the data?**

Researchers interested in native bee conservation.

**Do you plan on publishing findings which rely on the data? If so, do your prospective publishers place any restrictions on other avenues of publication?**

My Master's thesis and various journal articles will be published based on the collected data.

## Archiving, Storage and Preservation

**What is the long-term strategy for maintaining, curating, and archiving the data?**

All bee specimens will be donated to the Iowa State University Insect Museum. Data files will be given to Iowa State University and stored as CSV files to mitigate any version control issues.

**Which archive/repository/database have you identified as a place to deposit data?**

The repository belonging to Iowa State University.

**How long will/should data be kept beyond the life of the project?**

Forever.

**What data will be preserved for the long-term?**

All bee specimens and count data as well as floral resource data.