Narrative: *(1197 words)*

Pollinators play a crucial role for most fruit and vegetable production, as well as many nut and seed formation. They also support healthy ecosystems that clean the air, stabilize soils and support wildlife. Studies indicate pollinator populations are declining from loss of feeding and nesting habitats, pollution and pesticide misuse. This program trains how to protect our agricultural economy and food supply with six classes of three hours.

The Master Pollinator Steward Program began as a partnership opportunity with Missouri State Beekeepers Association (MSBA) in late 2014. While their member affiliates taught many 'beginning beekeeping classes', concerns developed that many individuals were attending out of concerns for honeybees or pollinators, and not to 'keep bees', a mismatch of purpose and expectation. Interest by the public was surging, led by concerns for honeybee hive survival rates and monarch butterfly population declines. MU Specialists and stakeholders developed this program over three years, with financial assistance from NRCS.

Specific learning objectives were identified as the following:
1. Properly describe an insect, how it functions, and why they are important in the ecology.
2. Describe the basic anatomy of a flower, the seasonality of blooming, the methods of pollination and types of pollinators.
3. Explain the different pollinators societies, from simple to complex, and their respective life cycles.
4. Define natural versus managed habitats and how the latter is manipulated for complex societies such as honeybees.
5.List the major diseases/parasites of honeybees and bumblebees. Identify the treatments commonly used, in a safe manner.
6. Describe some principal ways to manage a habitat to attract and keep pollinators; tell why this is important.

Program Activities. There are pollinator programs in extension around the country. Many operate through a well-known program, such as Master Gardeners. Recognizing beekeepers proposed this program, we sought their partnership, acknowledging they could promote and assist with teaching. Missouri has 30+ beekeeping groups and many offer 'beginning beekeeping classes', yet few engaged with extension. We knew conservation minded groups would show interest, so desired a structure that would include them and have some self-direction. An informal steering committee resulted, formed by Extension specialists, beekeepers, Master Gardeners, and Master Naturalists. The following continued laying the foundation to develop the program.

- March of 2016, received extension's administrative approval.

- Summer 2016, steering committee structure was formally recognized.
- September 2016, received NRCS grant to support curriculum development.
- October of 2016, operational guidelines approved.
- Spring 2017- Extension webpage(s) developed.
- Winter 2018- Missourians for Monarchs joins steering committee.

Significant outreach, promotional or educational activities have included:

- Poster presentations at national pollinator conferences- 2015 and 2017.
- Presentations made at MSBA's annual conference- 2015, 2016 and 2018.
- Articles in American Bee Journal and Bee Culture Journal- winter 2019.

The educational basis for the program was also under work. It was modeled after the Master Gardener program in delivery, using publications on a topic, with a matching presentation, in a classroom. Two distinctions were sought:

- Hands on activities incorporated into each class;
- Volunteerism would be encouraged, but not managed or monitored by Extension.

Key to the educational quality are the publications. Four are completely new and one a major revision to a Master Gardener publication (Insects). Over 10 professors, specialists, graduate students and volunteers are authors.

The teaching method is classroom format, augmented by hands on activities, take home assignments or experientially influenced discussions (e.g. outside show & tell). While each publication can 'stand alone', teaching them all is preferred for a greater level of understanding. The first educates about insects (M401); the second the plant and pollinator relationship (M402). The third addresses the most significant pollinator specie, honeybees (M403) and the fourth covers common native insect pollinators (M404). The culmination is the final publication, which delves into conservation and habitat issues. Because this is the most relevant to this program area, it (M405) is a supporting document.

Each publication corresponds to a class, except for honeybees, taught as two. A PowerPoint presentation was developed for each class (PPT for M405 provided as supporting document). Over 10 hands-on activities were developed and structured as 'Instructor Program Plans'. One for M405 is a supporting document.

This program is adaptable for local needs or circumstances. A presenter is welcome to refine a given PowerPoint presentation. Extension specialists are encouraged to partner with a beekeeping group (stakeholder) and have them

assist in recruitment and teaching. A unique feature of this program is the option to share the state fee, which was set at $50. The local county extension center, which officially offers the program, has the option to provide up to half to the stakeholder group.

Results. Over 80 individuals were trained in 2018 and 60+ are already taking it or registered in 2019. It is hoped that about 200 will take it annually. The Master Gardener program is one of the most successful for Extension. In Missouri, about 400 are trained annually and about a quarter do so online. Training half of what the Master Gardener program does would be a notable accomplishment, and adapting this program to an online capacity could extend its reception.

Impact statement. This program teaches Missourians on a hot topic in agriculture and conservation. Nationally the plight of the honeybee has grabbed headlines and statewide, a coalition united out of concern for monarchs. Those involved will demonstrate enthusiasm in volunteering or getting involved in conservation efforts. Many will increase pollinator habitat at their gardens or farms. Involvement by individuals and/or local extension personnel with area beekeeping organizations should rise. Its development and launching, as an independent extension pollinator program, demonstrates national leadership by University of Missouri Extension and other states may benefit by adapting some of the materials and methods.

An evaluation summary from classes during latter part of 2018 is below.
Over 90% found it was very worthwhile attending.

- Participant suggestion- suitable for older 4-H kids or scouts as a nature project; high school ag or science teachers, as continuing education credits.

100% found the publications of good value.

- Noted as being very comprehensive.

Over 90% found the PowerPoints well done and the presenters shared their knowledge well.

- High quality and professional.
- Good mix of personalities and styles.

100% felt the hands on activities added value; over 70% rated great value.

- Cited ‘the show & tell on planting prep’ and ‘reading the pesticide labels’.

When asked “Are you likely 'to do' anything with what you've learned?”, over 80% said very likely or absolutely. The examples of how, demonstrate the potential of this program.

- My wife is working on making our yard, about 3 acres, pollinator friendly. My eyes were opened on several issues that will help me in helping her.
- I intend to improve the habitat for pollinators in my own landscape and encourage others.
- Continue sharing knowledge and using the resources in the chapters to share facts.
- As a Master Naturalist I will advocate there and I own a 210ac farm that I'm doing a complete habit reconstruction; most interested in native bees and their habitat.
- Read labels and avoid killing bees.
- I’m going to rehab property I recently inherited and needed a plan. I want to be a better land steward and now know how to protect pollinator habitat.