Other Bees and Wasps presentation notes

* Slide 1: Hi and welcome to the Texas Master Beekeeper Advanced level training. Today we are going to cover other bees and wasps you may find in Texas. We will go over some general differences between bees and wasps before diving into specific types of wasps and bees you could encounter while out and about in Texas. Let’s begin!
* Slide 2: As a beekeeper you are often treated as the expert on all things that fly and can sting you. The knowledge shared in this presentation should help you answer any questions you may receive from the general public, identify a few of the common bees and wasps found in Texas, as well as discuss their biology and importance as beneficial insects or as pests.
* Slide 3: There are a few general differences between bees and wasps that can help you distinguish between the two. In general, bees have more body hair, whereas wasps tend to have very little hair. Bees have flattened hindlegs, usually containing a pollen basket. On the other hand, wasps tend to have more rounded legs. Bees will feed primarily on pollen and nectar. Wasps will feed on plant nectar, however they also prey on other insects and will also scavenge for food scraps or carrion. Bees in general can only sting once, whereas wasps can and will sting repeatedly. Keep in mind, the general umbrella of wasps also includes hornets and yellowjackets.
* Slide 4: Let’s start off by covering some yellowjackets and hornets you may find in Texas. In general, these insects’ colonies are founded in the spring by a single-mated, overwintered queen. The queen will construct papery brood cells first and then go out and forage for food. She will then start laying eggs and feeding her progeny. She is also responsible for defending the nest at this time.
* Slide 5: When the first offspring emerge they will take on every task except for the egg-laying. That is left to the foundress queen. The workers will feed the larvae various resources such as masticated adult and immature insects, other arthropods, and fresh carrion. The tasks involved in managing a hornet or yellowjacket hive are not determined by the age of the workers, as they are with honey bees.
* Slide 6: Some examples of yellowjackets and hornets you may find in Texas are the:
	+ Eastern yellowjacket as seen in the top image.
	+ The southern yellowjacket, depicted in the bottom right image
	+ And the baldfaced hornet, shown in the bottom left corner
* Slide 7: The eastern yellowjacket, species name Vespula maculifrons, is classified within the family Vespidae. Their bodies are primarily black with yellow markings. One identifying characteristic is that the first abdominal segment will have a wide, anchor-shaped black marking on the dorsal side. It creates mostly subterranean nests, but aerial nests do occur. The largest recorded nest found for this species had 8 layers of comb and contained over 2800 wasps. These are considered beneficial insects because they help manage populations of other unwanted insects.
* Slide 8: the southern yellowjacket, species name Vespula squamosa, is also classified within the family Vespidae. The workers are typically about ½ inch long and will have yellow and black markings on their head, thorax, and abdomen. They forage for protein sources such as other insects and animal carcasses. This species constructs both terrestrial and aerial nests. One of the larger nests found was about 2.5 meters in height and had a total of 74 layers of comb. This insect is considered a pest since workers will emerge from the nest for defense if their hive is disturbed.
* Slide 9: The bald-faced hornet, species name Dolichovespula maculata, is classified under the family Vespidae. It is not a true hornet, rather it is considered a yellowjacket. It will construct aerial nests that are often a foot or more in diameter. A distinguishing characteristic of this wasp is the white markings on its face. The thorax and abdomen also have distinct white markings that are also a good indicator. They are considered beneficial insects since they have the potential to reduce the presence of other unwanted insects, such as other yellowjackets. They are also great pollinators while they are out foraging for nectar.
* Slide 10: As stated before these wasps do perform beneficial tasks by destroying many different insects, such as those that attack cultivated and ornamental plants. However, they are very adept at stinging and will do so repeatedly. They can be aroused to defend their nest if they feel it is danger of a threat. They also will release an alarm pheromone recruiting other workers of the nest to defend their home.
* Slide 11: Other wasps you may find in Texas are the Red Wasp, the Paper Wasp, the Potter Wasp, and Mud Daubers.
* Slide 12: Now we are going to move into other bee species you could come across in Texas. These bee species cover a wide range of classification, so in order to appreciate their diversity it is important to have a general idea of how organisms are organized based on their relation to other organisms. Phylogenesis is the classification system used to categorize closely related organisms. Its exact definition is that it is the evolutionary development and diversification of a species or group of organisms, or of a particular feature of an organism. Phylogeny is always organized in the order below. Kingdom is the overarching classification for organisms. For Eukaryotic organisms, such as ourselves and insects, an example of a kingdom is Animalia. Continuing on down the sequence, using bees as an example, the next classification is the phylum, which is Arthropoda. The class is Insecta, and the order is Hymenoptera. Under Hymenoptera there are several families classifying more specifically types of bees and wasps. Genus and species are classifications under a family that are increasingly more specific for a certain insect. From this point we will refer to the bees discussed using their family name. Species names will also be used and are important to know for certain families covered in this presentation.
* Slide 13: We will cover only a handful of the families of bees found in Texas, but keep in mind there is a wide-array of other bees found not only in Texas, but across the United States. Here is a list of families of bees we will cover in this presentation: ……..
* Slide 14: Let’s start with the family Andrenidae. This is the “mining bees” family. They are the largest bee family under the order Hymenoptera. They are diverse in their body size and color. Their primary food source is pollen and nectar. They are ground nesters, hence “mining”. The nest depth can range from 1 inch to greater than 1 foot below ground. They also line their nests with a waterproofing substance to protect it from moisture and from mold growing.
* Slide 15: Some examples with this family are Andrena clarkella and Andrena barbilabis. They range from ¼ inch to ½ inch in body size. Their colors also can range from a grayish-brown to red. They are ground nesters and feed on pollen and nectar. They are also influential pollinators of commercial crops such as blueberries, cranberries, and apples.
* Slide 16: Moving on to the family Colletidae. The name of this family stems from the latin word “Colletes” which means “one who glues”. These are solitary bees and show no evidence of sociality. Some species do nest in aggregations, meaning there can be many nests in one area and some may even share a nest entrance, but they do not share nest cavities or hive tasks. Some species within this family are ground-nesters and will secrete a waterproof substance, which looks like cellophane, to line the nest cells. This lining acts as a line of resistance to mold and water.
* Slide 17: Some examples of bees within the Colletidae family are cellophane bees, polyester bees, and plasterer bees. Their body size can range from ¼” to ¾” in length. Some species can be very hairy, whereas other species have very little body hair and may look similar to wasps. Their diet consists of pollen and nectar. Some species even feed specifically from one group of plants, but can also be important pollinators of wildflowers.
* Slide 18: in the family Halictidae there is a wide-array of sociality among the species. They can range from being solitary and having not level of sociality to being primitively eusocial. Many species within this family have a queen and workers. Their diet consists of pollen and nectar, however some species are specialists for certain crops, whereas other species may not be as resource specific and therefore are considered to be generalists. Many of the species are ground-nesters which consist of many interconnected tunnels.
* Slide 19: One example of a bee from the family Halictidae are sweat bees. They range from 1/8” to ½” in body length, with a body color range of black to metallic blue. They are called sweat bees because they will actually lick sweat from the surface of your skin. They are ground-nesters and will feed on pollen and nectar. They are especially abundant during the flowering season and are considered to be important pollinators of sunflowers and other wildflowers.
* Slide 20: moving on to the family Megachilidae. This family is considered the “big-lipped family” due to the large mouthparts the bees have. They use their mouthparts to cut pieces of leaves or petals from plants that they then use to line their nest cavity. Their diet consists of pollen and nectar. One major defining characteristic of megachilids