

Dear Master Level Candidates:

This information is provided to help you concentrate your study efforts on items you will likely be tested on. The test will consist of 181 questions, multiple choice, true and false, matching, anatomy identification, and 2 short essay. Half of the questions will be taken from general beekeeping information provided in the general reading list. The other half will be taken from videos listed in the “review sessions” on the TMBP website in both the “Apprentice” and “Advanced” sections **AND** from the 5 supplemental videos provided below. It is important that you study both sets of videos carefully since many of the questions will be specific to the presenter’s lecture.

Please see a list of study objectives below:

- I. Recognize scientific and common names of:
 - a. Pests, pathogens, parasites of brood and adult bee diseases, *A. mellifera* subspecies, major *Apis* species, families of non-*Apis* bee species.
 - b. The proper use and active ingredients of products used in the hive i.e. Apistan, Mite Away Quick Strips, etc. A good reference for this is www.honeybeehealthcoalition.org/Varroa
 - c. Know causative agents of diseases, life cycles, treatments.

- II. There will be questions on AHBs, general beekeeping management, Varroa, reproductive biology, swarming, age polyethism, polyandry, thelytoky, demaree method, Vitellogenin, homozygosity, heterozygosity, haploidy and diploidy, eusociality drivers, breeding designs, etc. Most of these items will be covered in the 5 supplemental videos below:

Honey Bee Breeding Fact or Fiction?

By Dr. Delaplane-2/9/2013

<https://www.youtube.com/watch?v=txZtQrMTeag>

Honey Bee Democracy

By Tom Seeley-2/15/2012

<https://www.youtube.com/watch?v=JnnjY823e-w>

The Biology of Honey Bee Nutrition

By Dr. Tarpy-1/17/2017

<https://www.youtube.com/watch?v=DqOqd6gFY8w>

Biology of Mating

By Dr. Rangel -Nov. 21, 2015

<https://www.youtube.com/watch?v=tLHcle6CKcg>

The Superorganism

By Dr. Delaplane-2/17/2013

<https://www.youtube.com/watch?v=hPRyrWMUSOQ>

- III. Please notice the 20 **essay questions** below. There will be **two** essay questions on the exam selected from this list. We recommend you study and write responses to each of these questions beforehand.

Essay Questions

1. What are the differences between pathogen/parasite tolerance and pathogen/parasite resistance?
2. Describe colony mortality numbers over the last few years in light of the info collected from the Bee Informed Partnership.
3. Explain the life cycle of *Varroa destructor*.

4. Describe colony collapse disorder and what was its likely cause or causes?
5. Describe the annual life cycle of a honey bee colony.
6. What is a neonicotinoid pesticide and explain how it is different from pesticides in other classes?
7. A local municipality wishes to ban beekeeping by ordinance due to the risk from AHBs. As a master beekeeper you are asked to oppose the ordinance; what are your arguments to the City Council?
8. Explain the findings of the Mullin study et al 2010 and its implications to beekeeping. (<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0009754>)
9. Describe the unique nature of migratory beekeeping in the U.S. (total number of colonies in US, what numbers go where, when and why).
10. Compare and contrast the differences between *N. apis* and *N. ceranae*?
11. Describe the various levels of immunity exhibited by a honey bee colony as a superorganism (i.e. individual immunity, nest immunity, social immunity etc.).
12. Describe Queen Mandibular Pheromones and their regulation of colony function.
13. List and describe the two primary honey bee dances for resource collection.
14. What are the inherent problems associated with treatment free beekeeping in regards to the Varroa mite?
15. There are many drivers responsible for the Africanized bee success in colonizing S. America. List and describe 4 of them.
16. Describe how nectar is processed into honey.
17. List in chronological order the behaviors associated with colony fission.
18. You are at a local club meeting and a new member asks you as a master beekeeper to explain what the heck Integrated Pest Management is? What do you tell her?
19. Explain the differences between VSH behavior and the more general hygienic behavior of honey bees.
20. Contrast and compare the behavioral differences between temperate and tropically evolved bees.

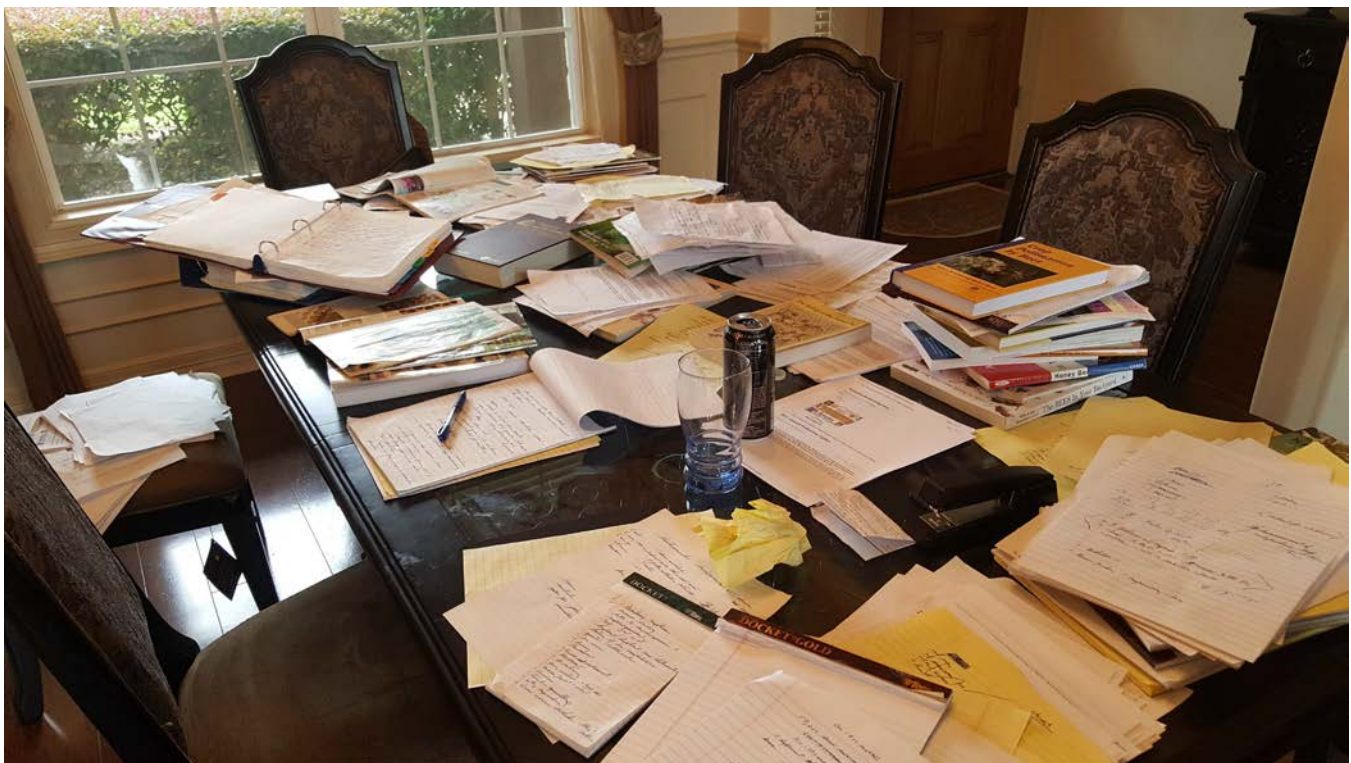
IV. If given a diagram of the bee's interior organs and/or bee's exterior, be able to identify and label any 15 different body parts, your choice. Leg, wing, eye are not specific enough but "hindleg" for example will work. You can name individual parts of the legs like "tarsal claw". "Wing will not be sufficient but "forewing" will work. If it is an interior diagram common or scientific names will also be fine.

In conclusion, I would like to remind all candidates that you will need to bring all your Majors and Public Service Credit documentation with you in a binder or binders. Please watch the video on the TMBP site to ensure that it is formatted properly so that it will be accepted (<https://masterbeekeeper.tamu.edu/public-service-credit-2/>).

I will be available for a phone conference with each of you if wanted, to answer any questions you might have about the exam or about the items you should be studying. Email me to set up a phone appointment. In addition I would recommend you send me your answers to the essay questions for review. You can contact me at lw@ausapts.com.

The Master Level in the Texas Master Beekeeping Program is a very big deal! But if you pass it, it is something you can really be proud of. If you don't pass....no worries just study and take it again.

Here is hoping your study work station looks something like this by now:



Good luck!

Lance Wilson-TMBP Board