Registration form

Mosquito Control CEU Training

48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL $50.00

Rush service does not include overnight delivery or FedEx fees.

Start and finish dates: _____

You will have 90 days from this date in order to complete this course

Print Name_____

I have read and understood the disclaimer notice found on page 4. Signature is required.

Signature _____

Address: _____

City_____ State _____Zip_____

Phone:
Home (_____) _____ Work (_____)_____

Fax (_____) _____ Email_____

License ID #_____Exp. Date_____

Class/Grade_____

Please circle/check which certification you are applying the course CEU's.

Commercial Applicator____ Residential Applicator____ Industrial Applicator____

Pesticide Handler____ Agricultural Applicator____ Adviser____ Other _____

Technical Learning College TLC PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 email info@tlch2o.com

If you've paid on the Internet, please write your Customer#_____

We will stop mailing the certificate of completion so we need either your fax number or e-mail address. We will e-mail the certificate to you, if no e-mail address; we will fax it to you.

DISCLAIMER NOTICE

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error or my lack of submitting paperwork. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

You can obtain a printed version of the course manual from TLC for an additional $169.95 plus shipping charges.

AFFIDAVIT OF EXAM COMPLETION

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

Grading Information

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Do not solely depend on TLC's Approval list for it may be outdated.

Some States and many employers require the final exam to be proctored.
http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf

All downloads are electronically tracked and monitored for security purposes.

No refunds.

CUSTOMER SERVICE RESPONSE CARD

Mosquito Control Training Course

NAME: _____

E-MAIL_____PHONE_____

PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.

1. Please rate the difficulty of your course.
Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.
Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.
Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course?_____

5. What would you do to improve the Course?

_____

_____

How about the price of the course?

Poor_____ Fair ____ Average ____ Good____ Great_____

How was your customer service?

Poor___ Fair ____ Average ____ Good _____ Great_____

Any other concerns or comments.

_____

_____

_____

Important Information about this Course (Disclaimer Notice)

This CEU course has been prepared to educate pesticide applicators and operators in general safety awareness of dealing with the often-complex and various pesticide treatment sprays, devices, methods, and applications. This course (manual) will cover general laws, regulations, required procedures and accepted policies relating to the use of pesticides and herbicides. It should be noted, however, that the regulation of pesticides and hazardous materials is an ongoing process and subject to change over time. For this reason, a list of resources is provided to assist in obtaining the most up-to-date information on various subjects. This manual is a not a guidance document for applicators or operators who are involved with pesticides. It is not designed to meet the requirements of the United States Environmental Protection Agency or your local State environmental protection agency or health department. This course manual will provide general pesticide safety awareness and should not be used as a basis for pesticide treatment method/device guidance. This document is not a detailed pesticide informational manual or a source or remedy for poison control.

Technical Learning College or Technical Learning Consultants, Inc. makes no warranty, guarantee or representation as to the absolute correctness or appropriateness of the information in this manual and assumes no responsibility in connection with the implementation of this information. It cannot be assumed that this manual contains all measures and concepts required for specific conditions or circumstances. This document should be used for educational purposes only and is not considered a legal document. Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property or plants being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked. Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. You should never burn pesticide containers.

Individuals who are responsible for pesticide storage, mixing and application should obtain and comply with the most recent federal, state, and local regulations relevant to these sites and are urged to consult with the EPA and other appropriate federal, state and local agencies.

USE PESTICIDES WISELY: ALWAYS READ THE ENTIRE PESTICIDE LABEL CAREFULLY, FOLLOW ALL MIXING AND APPLICATION INSTRUCTIONS AND WEAR ALL RECOMMENDED PERSONAL PROTECTIVE GEAR AND CLOTHING. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR ANY ADDITIONAL PESTICIDE USE REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS.

NOTICE: MENTION OF PESTICIDE PRODUCTS IN THIS COURSE DOES NOT CONSTITUTE ENDORSEMENT OF ANY MATERIAL OR SUPPLEMENT. ALWAYS FOLLOW THE PRODUCT'S LABEL INSTRUCTIONS.

NOTICE
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Grading Information
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All downloads are electronically tracked and monitored for security purposes.

CERTIFICATION OF COURSE PROCTOR

Technical Learning College requires that our students who takes a correspondence or home study program course must pass a proctored course reading, quiz and final examination. The proctor must complete and provide to the school a certification form approved by the commission for each examination administered by the proctor.

Instructions. When a student completes the course work, fill out the blanks in this section and provide the form to the proctor with the examination.

Name of Course:_____

Name of Licensee:_____

Instructions to Proctor. After an examination is administered, complete and return this certification and examination to the school in a sealed exam packet or in pdf format.

I certify that:

1. I am a disinterested third party in the administration of this examination. I am not related by blood, marriage or any other relationship to the licensee which would influence me from properly administering the examination.
2. The licensee showed me positive photo identification prior to completing the examination.
3. The enclosed examination was administered under my supervision on _____. The licensee received no assistance and had no access to books, notes or reference material.
4. I have not permitted the examination to be compromised, copied, or recorded in any way or by any method.
5. Provide an estimate of the amount of time the student took to complete the assignment.

Time to complete the entire course and final exam. _____

Notation of any problem or concerns:

Name and Telephone of Proctor (please print):

_____

_____

Signature of Proctor

Mosquito Control Answer Key

Name _____

Telephone_____

You are responsible to ensure that this course is accepted for credit by your State. No refunds. Did you check with your State agency to ensure this course is accepted for credit?

Method of Course acceptance confirmation. Please fill this section

Website __ Telephone Call___ Email____ Spoke to_____

Did you receive the approval number, if applicable? _____

You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized $50 per day.

Multiple Choice. Pick only one answer per question.
Circle or Mark off, Underline or Bold the answer.
Please circle the number of the assignment version 1 or 2 or 3 or 4 or 5 or 6

Topic 1 – Mosquito Introduction Section

1. A B C D	6. A B C D	11. A B C D
2. A B C D	7. A B C D	12. A B C D
3. A B C D	8. A B C D	13. A B C D
4. A B C D	9. A B C D	14. A B C D
5. A B C D	10. A B C D	15. A B C D

Topic 2 – Mosquito Identification Section

1. A B C D	6. A B C D	11. A B C D
2. A B C D	7. A B C D	12. A B C D
3. A B C D	8. A B C D	13. A B C D
4. A B C D	9. A B C D	14. A B C D
5. A B C D	10. A B C D	15. A B C D

Topic 3– Mosquito-Borne Diseases Section

1. A B C D	6. A B C D	11. A B C D
2. A B C D	7. A B C D	12. A B C D
3. A B C D	8. A B C D	13. A B C D
4. A B C D	9. A B C D	14. A B C D
5. A B C D	10. A B C D	15. A B C D

Topic 4– Mosquito Control Section

1. A B C D	6. A B C D	11. A B C D
2. A B C D	7. A B C D	12. A B C D
3. A B C D	8. A B C D	13. A B C D
4. A B C D	9. A B C D	14. A B C D
5. A B C D	10. A B C D	15. A B C D

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. A B C D	6. A B C D	11. A B C D
2. A B C D	7. A B C D	12. A B C D
3. A B C D	8. A B C D	13. A B C D
4. A B C D	9. A B C D	14. A B C D
5. A B C D	10. A B C D	15. A B C D

You are finished with your assignment. Please fax this answer key and your registration page along with the customer survey to TLC.

I understand that I am 100 percent responsible to ensure that TLC receives the Assignment and Registration Key. I understand that TLC has a zero tolerance towards not following their rules, cheating or hostility towards staff or instructors. I need to complete the entire assignment for credit. The exam was proctored.

There is no credit for partial assignment completion. I will contact TLC if I do not hear back from them within 2 days of assignment submission. I will forfeit my purchase costs and will not receive credit or a refund if I do not abide with TLC's rules.

Please Sign that you understand and will abide with TLC's Rules.

_____

Signature

INSTRUCTIONS
We will require all students to fax or e-mail a copy of their driver's license with the registration form.

You will need to pick one of the following five assignments to complete. This selection process is based upon your last name.

Assignment #1 for all pest applicators whose names start with the letter A-E pages 11-18.

Assignment #2 for all pest applicators whose last names start with F-K you will find your assignment on pages 19-28.

Assignment #3 for all pest applicators whose last name starts with the letter L-P, your assignment is found on pages 29-37.

Assignment #4 for all pest applicators whose last name starts with the letter Q-R, your assignment is found on pages 39-47.

Assignment #5 for all pest applicators whose last name starts with the letter S-Z, your assignment is found on pages 49-57.

Assignment #6 for repeat students, your assignment is found on pages 59-67.

Write down any questions that you had problems.

When Finished with Your Assignment

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions
If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX
If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

If you are a California DPR or Nevada student, we will require a photocopy of your driver's license.

California DPR Requirement

The Assignment must be submitted to TLC by December 27 in order to be submitted to DPR by the 31st. If it is late, you will be penalized $50 per day.

Grading Information

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Rush Grading Service

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of $50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line.

Mosquito Control CEU Training Awareness Assignment #1
Last Names A to E

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Assignment #1 for all pest applicators whose names start with the letter A- E.

Assignment #2 for all pest applicators whose last names start with F-K.

Assignment #3 for all pest applicators whose last name starts with the letter L-P.

Assignment #4 for all pest applicators whose last name starts with the letter Q-R.

Assignment #5 for all pest applicators whose last name starts with the letter S-Z.

Assignment #6 for repeat students.

Topic 1 – Mosquito Introduction Section
Integrated Pest Management -Introduction

1. IPM is a science-based and common-sense approach for_____, vectors, such as mosquitoes.

A. Managing pests C. Pest monitoring
B. Surveillance D. None of the above

2. IPM relies heavily on resident education and _____.

A. Pests and vectors C. Pest monitoring
B. Pest prevention D. None of the above

3. _____ is a important component to any successful IPM program because the results from the surveillance will help determine the appropriate response to an infestation.

A. Surveillance C. Lower levels of infestations
B. Pest prevention D. None of the above

4. Once mosquitoes have landed, they rely on _____to determine if we are an acceptable blood meal host.

A. Transient waters C. A number of short-range attractants
B. Torpor D. None of the above

5. Mosquitoes that hibernate in the adult stage live for 6-8 months, but spend most of that time in a_____.

A. Its life cycle C. State of torpor
B. Cocoon D. None of the above

6. Aedes adults will oviposit near the edge of the swamp or within tussocks of vegetation, requiring later flooding to _____.
A. Begin its life cycle C. Inundate the eggs for hatching
B. Look for a blood meal D. None of the above

Mosquito Life Cycle Section
7. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.
A. Nest C. Eggs
B. Raft D. None of the above

8. Sections of marshes, swamps, clogged ditches, and temporary pools and puddles are all prolific mosquito breeding sites. Other locations in which some species lay their _____ include tree holes and containers such as old tires, buckets, toys, potted plant trays, and saucers and plastic covers or tarpaulins.
A. Nest C. Eggs
B. Raft D. None of the above

9. The mosquito goes through three distinct stages during its life cycle.
A. True B. False

Wrigglers and Tumblers
10. After the female mosquito obtains a blood meal, she lays her eggs directly on the surface of stagnant water, in a depression, or on the edge of a container where rainwater may collect and flood the eggs.
A. True B. False

11. The larva lives in the water, feeds, and develops into the third stage of the life cycle called a pupa or "_____".
A. Ergatoids C. Wrigglers
B. Tumbler D. None of the above

12. Mosquitoes may overwinter as eggs or,_____.
A. Fertilized adult females or larvae C. Wriggler
B. Ergatoids D. None of the above

13. Mosquitoes belonging to the genus Culex lay their _____ in bunches or "rafts."
A. Tumblers C. Eggs
B. Cocoons D. None of the above

Weather
14. Mosquito development and population dynamics are closely tied to weather. When and how much rain is received, wind speed and direction, maximum and minimum temperatures, and the total amount of heat energy accumulated are all critical to mosquito development.
A. True B. False

Water Source

15. The water (or lack thereof) in a habitat directly does not affects mosquito reproduction. Very few mosquitoes need standing water to complete their development.

A. True B. False

Topic 2 – Mosquito Identification Section

1. Culiseta melanura is critical because of its role in the transmission cycle of eastern equine encephalitis virus and potentially _____.

A. SLE C. WNV (West Nile virus)
B. Malaria D. None of the above

2. Culiseta melanura is a medium-sized mosquito that resembles Culex species because of its _____.

A. Bluntly rounded abdominal tip C. Brownish color with pale bands
B. Distinct ring around the proboscis D. None of the above

3. Culex pipiens the Northern House Mosquito has a distribution that roughly includes the _____of the United States.

A. Out-of-doors at night C. Northern half
B. Southern parts D. None of the above

4. Although they occur in_____, Culex pipiens reach their greatest numbers in urban and suburban areas and readily enter homes.

A. Out-of-doors at night C. Rural environments
B. Temporary ground water D. None of the above

5. Catch basins and storm drains provide ideal habitat for Cx. pipiens. The species becomes particularly abundant in areas where raw sewage leaks into_____.

A. Treeholes C. Effluent from sewage treatment plants
B. Subterranean drainage systems D. None of the above

6. Malaria was a serious plague in the United States for centuries until its final eradication in the 1950s. Despite the ostensible eradication, there are occasional cases of autochthonous (local) transmission in the U.S. vectored by An. quadrimaculatus in the east and Anopheles freeborni in the west.

A. True B. False

7. Culex pipiens can be found in a fairly limited range of larval habitats, but are generally associated with water that has a low organic content.

A. True B. False

8. Culex pipiens' main host is wild donkeys, but it also feeds freely on a wide variety of warm-blooded vertebrates, including birds.

A. True B. False

9. Culex pipiens is a serious pest, called the "house mosquito" because it commonly develops in small containers around the home. It shows great skill in finding ways to get into the house, where it feeds on_____.

A. Birds C. Effluent from sewage treatment plants
B. The occupants at night D. None of the above

10. Culex tarsalis breeds in nearly every freshwater source except _____. Larvae are found in all but the most polluted ground pools.
A. Treeholes C. Effluent from sewage treatment plants
B. Ground water D. None of the above

11. Culex tarsalis is the most important carrier of _____ in much of the western U.S.
A. WEE C. Western equine and Saint Louis encephalitis
B. Malaria D. None of the above

12. As mosquitoes go, the Western Encephalitis Mosquito is one of the more easily recognizable, with its _____.
A. Distinctive scale patterns C. High pitched scream
B. Distinct ring around the proboscis D. None of the above

13. Species in the genus Culex are known as “snowpool” mosquitoes.
A. True B. False

14. Woodland Malaria mosquitoes have four life stages: egg, larva, pupa, and adult. The immature stages need standing water to complete their life cycle.
A. True B. False

Effective Mosquito-Control Program

15. Initial surveys identify the species of mosquitoes present and provide general information on locations, densities and disease potential. With this knowledge it may be possible to determine life cycles and feeding preferences; predict larval habitats, adult resting places and flight ranges; and perhaps even make preliminary recommendations for control programs.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Zika disease is spread mostly by the bite of an infected Aedes species mosquito (Ae. aegypti and Ae. albopictus). These mosquitoes bite_____.
A. Birds as blood meal hosts C. During the day and night
B. Infected dogs D. None of the above

2. Encephalitis is _____, and serious disease carried by mosquitoes. Its symptoms are severe headache, fever, vomiting, disorientation, chills, muscle aches and pains. It usually occurs in warm wet weather.
A. A birth defect C. An untreatable, sometimes deadly
B. Fever and joint pain D. None of the above

3. _____ is a dangerous parasitic disease common in tropical and subtropical areas. It is transmitted by the female Anopheles mosquito.
A. EEE virus C. Malaria
B. Dog heartworm D. None of the above

4. _____ is spread to people by the bite of an infected mosquito. The most common symptoms of infection are fever and joint pain.
A. EEE virus C. Chikungunya virus
B. Dog heartworm D. None of the above

5. If a fully engorged mosquito with _____positive blood is squashed on the skin, there would be insufficient transfer of virus to produce infection.
A. EEE virus C. HIV
B. Dog heartworm D. None of the above

Canine Heartworm
6. Adult heartworms live in a dog's liver, but young forms of the worm are found in their excrement. Mosquitoes transmit the infection when they feed on the blood of an infected dog.
A. True B. False

7. The dog heartworm parasite does not develop properly in humans and is not regarded as a human health problem. A closely related parasite, however, produces human elephantiasis in some tropical areas of the world, a debilitating mosquito-borne affliction that results in grossly swollen arms, legs, and genitals.
A. True B. False

8. _____ is a Bunyavirus and is a zoonotic pathogen cycled between the daytime-biting treehole mosquito, Aedes triseriatus, and vertebrate amplifier hosts (chipmunks, tree squirrels) in deciduous forest habitats.
A. LAC virus C. Brokebone fever
B. Dog heartworm D. None of the above

9. _____is maintained over the winter by transovarial transmission in mosquito eggs. If the female mosquito is infected, she may lay eggs that carry the virus, and the adults coming from those eggs may be able to transmit the virus to chipmunks and to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

10. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.
A. Eastern equine encephalitis (EEE) C. Beaver fever
B. Dog heartworm D. None of the above

11. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

12. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

13. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

14. In this usual cycle of transmission, virus does not escape from these areas because the mosquito involved prefers to feed upon birds and does not usually bite humans or other mammals.
A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit _____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

Topic 4– Mosquito Control Section

1._____ include the bacterial insecticides Bacillus thuringiensis israelensis and Bacillus sphaericus, the insect growth inhibitor methoprene, and the organophosphate insecticide temephos.
A. Oils C. Tablet formulations
B. Larvicides D. None of the above

2. _____ are applied directly to water using backpack sprayers and truck or aircraft-mounted sprayers.
A. Oxygen formulations C. Insect growth inhibitor methoprene
B. Liquid larvicide products D. None of the above

3. _____ of larvicides are also applied by mosquito controllers to breeding areas.
A. Naled C. Tablet, pellet, granular, and briquette formulations
B. Sulfur dioxide D. None of the above

4. Oils have always been used as a product of last resort for the control of mosquito pupae, since this stage does not feed but does require _____.
A. Oxygen C. Insect growth inhibitor naled
B. Liquid larvicide products D. None of the above

5. _____is another safe material for control of mosquito larvae. It is an insect hormone that retards the development of larvae and prevents mosquitoes from developing into adults.
A. Methoprene (Altosid XR) C. Insect spray
B. Liquid products D. None of the above

Microbial Insecticides

6. When the bacteria Bti encysts, it produces a protein crystal toxic to mosquito and midge larvae. Once the bacteria have been ingested, the toxin disrupts the lining of the larvae's intestine. It has no effect on a vast array of other aquatic organisms except midges in the same habitat.

A. True B. False

7. _____ mimics a natural juvenile hormone, and when present in the larval habitat, it keeps immature insects from maturing into adults. Unable to metamorphose, the mosquitoes die in the pupal stage.

A. Methoprene C. Organophosphate insecticide
B. Liquid larvicide products D. None of the above

8. The _____kills the mosquitoes without upsetting the septic system's bacterial digestive processes.

A. Altosid C. Organophosphate insecticide
B. Methoprene D. None of the above

9. Mosquito adulticides are applied as ultra-high volume (UHV) sprays. UHV sprayers dispense very coarse aerosol droplets that stay aloft and kill flying mosquitoes on contact.

A. True B. False

10. The mosquito goes through four distinct stages during its life cycle: egg, larva, pupa, and adult. Malathion is an adulticide, used to kill adult mosquitoes.

A. True B. False

11. Space sprays or aerosol "bombs," containing _____, are effective against adult mosquitoes. Frequent treatments may be needed during problem periods.

A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

12. _____, typically applied as high volume (low concentration) liquids with hand-held spray equipment using compounds with residual characteristics, are common in some U.S. locations and their use is growing.

A. An adulticide C. Barrier treatments
B. Naled D. None of the above

13. _____ is an insecticide of relatively low human toxicity; however recent studies have shown that children with higher levels of malathion in their urine seem to be at an increased risk of attention deficit hyperactivity disorder.

A. ULV applications C. An organophosphate (OP) insecticide
B. Malathion D. None of the above

14. Naled is a(n) _____ that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but Naled is also used on food and feed crops, and in greenhouses.

A. Chemical C. An organophosphate parasympathomimetic
B. Organophosphate insecticide D. None of the above

15. Naled is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact. ULV applications involve small quantities of pesticide active ingredient in relation to the size of the area treated.
A. True B. False

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. _____ do not bite, and contrary to popular belief, they do not eat mosquitoes.
A. Crane flies C. Dance Flies
B. Fleas D. None of the above

2. When humans come in contact with _____infested vegetation, the larvae swarm over the entire body and it might be several hours before they settle down to feed.
A. Redbugs C. Chiggers
B. Dixid Midge larvae D. None of the above

3. _____ are common around moist areas where vegetation is abundant and may be seen swarming at dusk along the edges of streams and lakes. The adults are short lived, usually being active less than a week.
A. Crane flies C. Mosquitoes
B. Dixid Midges D. None of the above

4. The _____are found in slow moving water, at the surface, and swim in a characteristic "U" shape. These midges lack a proboscis and scales on the wings.
A. Redbugs C. Dance Flies
B. Dixid Midge larvae D. None of the above

5. _____ do not fly, but have strong hind legs which they use to jump from host to host. Dogs and cats are at risk of getting these creatures.
A. Redbugs C. Dance Flies
B. Fleas D. None of the above

6. In the U.S., the most common flea species carried by both cats and dogs is the_____.
A. Dog flea C. Cat flea, Ctenocephalides felis
B. Red flea D. None of the above

7. Dance fleas are small (about ¼ inch long), black flies commonly found around decaying vegetation. They have large wings and long antennae, but they are weak flyers and do not move far from the breeding site.
A. True B. False

8. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Host sources D. None of the above

9. _____ (Psychodidae) are small hairy flies that can move about very nimbly, but are weak fliers.
A. Crane flies C. Mosquitoes
B. Owl Midges D. None of the above

10. _____ are of considerable public health importance because of their ability to transmit several viral, bacterial, and protozoal disease-causing organisms of humans and other animals.
A. Gnats C. Phlebotomine sand flies
B. Owl Midges D. None of the above

11. The _____ males and females feed on nectar and other plant juices, but females require a blood meal in order to mature a second batch of eggs.
A. Crane flies C. Mosquitoes
B. Phlebotomine sand flies D. None of the above

12. _____ (Trichoceridae) are often quite abundant during winter and spring. They so closely resemble mosquitoes that they are frequently mistaken for them.
A. Winter Crane Flies C. Gnats
B. Owl Midges D. None of the above

13. _____ do not bite humans, and they don't carry disease. But these species still can be annoying to homeowners.
A. Crane flies C. Gnats
B. Winter Crane Flies D. None of the above

14. _____ (Anisopodidae) are some of the better known gnats, for they are attracted to light and can be found near windows, especially in spring time.
A. Winter Gnats C. Wood Gnats
B. Owl Gnats D. None of the above

15. _____ adults are found on foliage in or near damp places, some are found around flowing sap. They are sometimes seen in small swarms. Adults appear in two variations: grayish black or reddish.
A. Winter Crane Flies C. Wood Gnats
B. Owl Midges D. None of the above

When Finished with Your Assignment

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions
If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX
If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

Mosquito Control CEU Training Awareness Assignment #2
Last Names - F to K

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 – Mosquito Introduction Section

Integrated Pest Management -Introduction

1. IPM uses a combination of ways to control mosquito populations with decisions based on _____, such as keeping track or count of the numbers and types of mosquitoes in an area.

A. Surveillance C. Pests and vectors
B. Pest prevention D. None of the above

2. _____ is a critical component to any successful IPM program because the results from the surveillance will help determine the appropriate response to an infestation.

A. Pests and vectors C. Water quality
B. Surveillance D. None of the above

3. Once mosquitoes have landed, they rely on _____to determine if we are an acceptable blood meal host.

A. Transient waters C. A number of short-range attractants
B. Its life cycle D. None of the above

4. Canines are quite susceptible to_____, a nematode that can be transmitted by certain mosquitoes.

A. SLE C. WNV
B. Canine heartworm D. None of the above

Mosquito Life Cycle Section

5. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Eggs D. None of the above

6. The presence of beneficial predators such as fish and dragonfly nymphs in permanent ponds, lakes, and streams usually keep these bodies of water relatively free of _____.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Nest D. None of the above

Wrigglers and Tumblers

7. The mosquitoes in the United States, all of which live in specific habitats, exhibit unique behaviors and bite different types of animals. Despite these differences, all mosquitoes share some common traits, such as _____.

A. A two-year life span
B. A four-stage life cycle
C. Prolific mosquito breeding sites
D. None of the above

8. After the female mosquito obtains a blood meal, she lays her eggs directly on the surface of stagnant water, in a depression, or on the edge of a container where rainwater may collect and flood the eggs.

A. True B. False

9. Eggs, larvae, and pupae must have a mother to develop.

A. True B. False

10. Each raft may contain up to 1000 individual eggs.

A. True B. False

11. The larva lives in the water, feeds, and develops into the third stage of the life cycle called a pupa or "_____". The pupa also lives in the water, but no longer feeds.

A. Adults
B. Tumbler
C. Wriggler
D. None of the above

12. Finally, the mosquito emerges from the pupal case and the water as a_____, ready to bite.

A. Ergatoids
B. Alates
C. Fully developed adult female
D. None of the above

13. Single On Water: Anopheles and Toxorhynchites lay their eggs one at a time on _____.

A. The water surface
B. Above the waterline
C. The leaves of certain floating aquatic plants.
D. None of the above

14. Single in Soil: most Aedes and Psorophora lay their eggs one at a time on a moist substrate, such as_____.

A. Decomposing leaf litter
B. Extremely polluted water
C. Mud and decomposing leaf litter
D. None of the above

Weather

15. Mosquito development and population dynamics are closely tied to weather. When and how much rain is received, wind speed and direction, maximum and minimum temperatures, and the total amount of heat energy accumulated are all critical to mosquito development.

A. True B. False

Topic 2 – Mosquito Identification Section

1. The _____ of most mosquito species have a siphon (breathing tube) for acquiring air from just above the surface of water while submerged.

A. Pupas
B. Eggs
C. Larvae
D. None of the above

2. Other identifying characteristics of Culiseta melanura larvae are a row of 8-14 setae running horizontally down the siphon and a double row of brown scales located on the sixth section of the abdomen.
A. True B. False

3. Malaria was a serious plague in the United States for centuries until its final eradication in the 1950s. Despite the ostensible eradication, there are occasional cases of autochthonous (local) transmission in the U.S. vectored by An. quadrimaculatus in the east and Anopheles freeborni in the west.
A. True B. False

4. Anopheles quadrimaculatus is historically the most important vector of _____ in the eastern United States.
A. SLE C. WNV
B. Malaria D. None of the above

5. Culex pipiens, the Northern House Mosquito has a distribution that roughly includes the _____of the United States.
A. Treeholes C. Effluent from sewage treatment plants
B. Northern half D. None of the above

6. Although they occur in_____, Culex pipiens reach their greatest numbers in urban and suburban areas and readily enter homes.
A. Treeholes C. Effluent from sewage treatment plants
B. Rural environments D. None of the above

7. The species utilizes temporary ground water that ranges from mildly to grossly polluted. The species also deposits its eggs in artificial containers, including tin cans, tires, and any refuse that allows stagnant water to puddle. The species is decidedly urban and reaches greatest numbers in large urban centers.
A. True B. False

8. Meat packing plants and slaughter house drainage ponds support high populations of this species. Culex pipiens can always be collected in the _____ .
A. Treeholes C. Effluent from sewage treatment plants
B. Temporary ground water D. None of the above

9. In northern California, it currently plays only a lesser role as a carrier of human disease, while in southern California and the Gulf Coast region, it is a major carrier of Saint Louis encephalitis. It is also the best known carrier of _____, a severe encephalitis virus newly arrived in the Americas that is spreading along the eastern seaboard.
A. SLE C. WNV
B. WEE D. None of the above

10. Culex tarsalis breeds in nearly every freshwater source except _____. Larvae are found in all but the most polluted ground pools.
A. Treeholes C. Effluent from sewage treatment plants
B. Out-of-doors at night D. None of the above

11. Mosquitoes of the Culex tarsalis species have a _____.
A. Bluntly rounded abdominal tip C. Brownish strip with pale bands
B. Distinct ring around the proboscis D. None of the above

12. As mosquitoes go, the Western Encephalitis Mosquito is one of the more easily recognizable, with its _____.
A. Bluntly rounded abdominal tip C. Brownish hair with pale bands
B. Distinctive scale patterns D. None of the above

13. Species in the genus Culex are known as “standing-water” mosquitoes.
A. True B. False

Effective Mosquito-Control Program

14. Surveys are essential for the planning, operation and evaluation of an effective mosquito-control program, whether for the prevention of mosquito-borne diseases or to reduce mosquito populations to levels permitting normal activities without undue discomfort.
A. True B. False

15. Initial surveys identify the species of mosquitoes present and provide general information on locations, densities and disease potential. With this knowledge it may be possible to determine life cycles and feeding preferences; predict larval habitats, adult resting places and flight ranges; and perhaps even make preliminary recommendations for control programs.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Zika disease can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects.
A. True B. False

2. Encephalitis is _____, and serious disease carried by mosquitoes. Its symptoms are severe headache, fever, vomiting, disorientation, chills, muscle aches and pains. It usually occurs in warm wet weather.
A. A birth defect C. An untreatable, sometimes deadly
B. An infection D. None of the above

3. _____is caused by viruses that are carried by mosquitoes. Symptoms appear three to six days after the person is bit by a mosquito. Dengue fever is mostly found in the tropics.
A. EEE virus C. Dengue fever
B. Dog heartworm D. None of the above

4. _____ usually doesn’t cause death, but the symptoms can be severe and debilitating.
A. EEE virus C. Chikungunya
B. Dog heartworm D. None of the above

Canine Heartworm

5. Adult heartworms live in a dog's heart, but young forms of the worm are found in their blood. Mosquitoes transmit the infection when they feed on the blood of an infected dog.
A. True B. False

6. The dog heartworm parasite does not develop properly in humans and is not regarded as a human health problem.
A. True B. False

7. _____ is a Bunyavirus and is a zoonotic pathogen cycled between the daytime-biting treehole mosquito, Aedes triseriatus, and vertebrate amplifier hosts (chipmunks, tree squirrels) in deciduous forest habitats.
A. LAC virus C. Brokebone fever
B. Dog heartworm D. None of the above

8. _____is maintained over the winter by transovarial transmission in mosquito eggs. If the female mosquito is infected, she may lay eggs that carry the virus, and the adults coming from those eggs may be able to transmit the virus to chipmunks and to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

9. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.
A. Eastern equine encephalitis (EEE) C. Beaver fever
B. Dog heartworm D. None of the above

10. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

11. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

12. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

13. In this usual cycle of transmission, virus does not escape from these areas because the mosquito involved prefers to feed upon birds and does not usually bite humans or other mammals.
A. True B. False

14. For reasons not fully understood, the virus may escape from enzootic foci in swamp areas in birds or bridge vectors such as Coquilletidia perturbans and Aedes sollicitans. These species feed on both birds and mammals and can transmit the virus to humans, horses, and other hosts.
A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit _____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

Topic 4– Mosquito Control Section

1. _____ include the bacterial insecticides Bacillus thuringiensis israelensis and Bacillus sphaericus, the insect growth inhibitor methoprene, and the organophosphate insecticide temephos.
A. Naled C. Oil formulations
B. Larvicides D. None of the above

2. _____ of larvicides are also applied by mosquito controllers to breeding areas.
A. Naled C. Tablet, pellet, granular, and briquette formulations
B. Oxygen D. None of the above

3. _____can be applied by hand and the product is labeled for use in known fish habitats.
A. Altosid XR Briquettes C. Oil formulations
B. Naled products D. None of the above

Microbial Insecticides

4. _____ is an insect growth regulator widely used by abatement districts to control mosquito larvae.
A. Naled C. Methoprene (sold under the name Altosid)
B. Liquid oil D. None of the above

5. _____ mimics a natural juvenile hormone, and when present in the larval habitat, it keeps immature insects from maturing into adults. Unable to metamorphose, the mosquitoes die in the pupal stage.
A. Methoprene C. Bti (Bacillus thuringiensis israelensis)
B. Naled D. None of the above

6. Pellets can be flushed down toilets into underground septic tanks known to be breeding house mosquitoes. The _____kills the mosquitoes without upsetting the septic system's bacterial digestive processes.
A. Methoprene C. Naled
B. Liquid products D. None of the above

7. _____, typically applied as high volume (low concentration) liquids with hand-held spray equipment using compounds with residual characteristics, are common in some U.S. locations and their use is growing.
A. ULV application C. Barrier treatments
B. An adulticide D. None of the above

8. _____ is an organophosphate parasympathomimetic that binds irreversibly to cholinesterase.
A. Naled C. An organophosphate parasympathomimetic
B. Malathion D. None of the above

9. _____ is an insecticide of relatively low human toxicity; however, recent studies have shown that children with higher levels of malathion in their urine seem to be at an increased risk of attention deficit hyperactivity disorder.
A. Organophosphate insecticide C. Malathion
B. Naled D. None of the above

10. _____ is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide.
A. Organophosphate insecticide C. An Phosphate parasympathomimetic
B. Malathion D. None of the above

11. _____ is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact.
A. Synergized pyrethrins 0.1% C. Phosphate insecticide
B. Malathion D. None of the above

12. The mosquito goes through four distinct stages during its life cycle: egg, larva, pupa, and adult. Malathion is an adulticide, used to kill adult mosquitoes.
A. True B. False

13. ULV applications involve small quantities of pesticide active ingredient in relation to the size of the area treated.
A. True B. False

14. Naled is an _____ that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but Naled is also used on food and feed crops, and in greenhouses.
A. 0.1% Synergized pyrethrins C. Organophosphate insecticide
B. Treatment D. None of the above

15. Naled is _____ used to kill adult mosquitoes. In mosquito control programs conducted by state or local authorities, Naled is applied by truck-mounted or aircraft-mounted sprayers.
A. An ULV C. A larvicide
B. An adulticide D. None of the above

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. _____ are long, gangly insects that commonly resemble mosquitoes with their slender, jointed legs and elongated thorax.
A. Mosquitoes C. Crane flies
B. Redbugs D. None of the above

2. When humans come in contact with _____infested vegetation, the larvae swarm over the entire body and it might be several hours before they settle down to feed.
A. Bedbugs C. Chiggers
B. Dixid Midge larvae D. None of the above

3. Dance Flies appear like _____ by the way they swarm in sunlit areas in backyards and other sheltered situations. The vertical movement of the swarming adults gives them their common name of Dance Flies.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

4. The _____are found in slow moving water, at the surface, and swim in a characteristic "U" shape. These midges lack a proboscis and scales on the wings.
A. Mosquitoes C. Dance Flies
B. Dixid Midge larvae D. None of the above

5. In the U.S., the most common flea species carried by both cats and dogs is the_____.
A. Dog flea C. Cat flea, Ctenocephalides felis
B. Red flea D. None of the above

6. Compared with other flea species, the _____ has a very wide host range. Wild animals carrying cat fleas include raccoons, opossum, skunks and foxes.
A. Dog flea C. Cat flea
B. Red flea D. None of the above

7. Mayflies (Ephemeroptera) are small (about ¼ inch long), black flies commonly found around decaying vegetation. They have large wings and long antennae, but they are weak flyers and do not move far from the breeding site.
A. True B. False

8. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Sewage habitats D. None of the above

9. The nymphs of mayflies develop in _____ where they form an important part of the food chain. Adults are among the shortest lived in the insect world.
A. Flowing sap C. Winter and spring
B. All types of aquatic habitats D. None of the above

10. _____ (Psychodidae) are small hairy flies that can move about very nimbly, but are weak fliers.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

11. The _____ males and females feed on nectar and other plant juices, but females require a blood meal in order to mature a second batch of eggs. The blood meal hosts include white-tailed deer, horses, donkeys, mules, cattle, swine, raccoons, rodents, birds and humans.
A. Phlebotomine sand flies C. Spring Crane Flies
B. Red fleas D. None of the above

12. _____ (Trichoceridae) are often quite abundant during winter and spring. They so closely resemble mosquitoes that they are frequently mistaken for them.
A. Winter Crane Flies C. Spring Crane Flies
B. Owl Midges D. None of the above

13. _____ larvae are found in roots, fungi, decaying vegetation, rotting leaves, manure, and other vegetative material. The adults are readily attracted to lights.
A. Winter Crane Flies C. Spring Crane Flies
B. Owl Midges D. None of the above

14. _____ do not bite humans, and they don't carry disease. But these species still can be annoying to homeowners.
A. Winter Crane Flies C. Red fleas
B. Spring Crane Flies D. None of the above

15. _____ adults are found on foliage in or near damp places, some are found around flowing sap. They are sometimes seen in small swarms. Adults appear in two variations: grayish black or reddish.
A. Red fleas C. Wood Gnats
B. Owl Gnats D. None of the above

When Finished with Your Assignment

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions
If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX
If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

Mosquito Control CEU Training Awareness Assignment #3
Last Names L to P

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 – Mosquito Introduction Section

1. Aedes adults will oviposit near the edge of the swamp or within tussocks of vegetation, requiring later flooding to _____. As with transient waters, there is a seasonal change in the vegetation, water quality, and mosquito species present.

A. Begin its life cycle C. Inundate the eggs for hatching
B. Look for a blood meal D. None of the above

Mosquito Life Cycle Section

2. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.

A. Nest C. Eggs
B. Raft D. None of the above

3. The presence of beneficial predators such as fish and dragonfly nymphs in permanent ponds, lakes, and streams usually keep these bodies of water relatively free of _____.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Raft D. None of the above

4. The mosquito goes through four distinct stages during its life cycle.

A. True B. False

Wrigglers and Tumblers

5. After the female mosquito obtains a blood meal, she lays her eggs directly on the surface of stagnant water, in a depression, or on the edge of a container where rainwater may collect and flood the eggs.

A. True B. False

6. The eggs hatch and a mosquito larva or "_____" emerges.

A. Alates C. Wriggler
B. Ergatoids D. None of the above

7. Finally, the mosquito emerges from the pupal case and the water as a_____, ready to bite.

A. Ergatoids C. Fully developed adult female
B. Alates D. None of the above

8. Some female mosquitoes lay their _____directly on the water surface.

A. Ergatoids C. Eggs
B. Raft D. None of the above

9. Each raft may contain up to 400 individual eggs.
A. True B. False

10. Some mosquitoes have only one generation per year, whereas others may have four or more.
A. True B. False

11. Adults may fly 1 to 2 miles, but usually rest in grass, shrubbery, or other foliage close to the water breeding area.
A. True B. False

12. _____ are ready to bite one to two days after adult emergence.
A. Ergatoids C. Female mosquitoes
B. Alates D. None of the above

Mosquito Egg Classification
13. Single On Water: Anopheles and Toxorhynchites lay their eggs one at a time on _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

14. Single On Cavity Walls: Wyeomyia, Orthopodomyia, and certain Aedes deposit eggs in tree holes, water-holding plants, or artificial containers. The eggs are placed _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

15. On Plants: Mansonia eggs are deposited on the underside, and sometimes on top of _____.
A. The trees C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

Topic 2 – Mosquito Identification Section

1. The black-tailed mosquito, Culiseta melanura, belongs to the family Culicidae. This species of mosquito is considered unusual because it overwinters as larvae while most mosquito species overwinter as_____.
A. Adults C. Either adults or eggs
B. Pupas D. None of the above

2. Culiseta melanura is important because of its role in the transmission cycle of eastern equine encephalitis virus and potentially _____.
A. SLE C. WNV (West Nile virus)
B. WEE D. None of the above

3. The _____ of most mosquito species have a siphon (breathing tube) for acquiring air from just above the surface of water while submerged.
A. Pupas C. Larvae
B. Eggs D. None of the above

4. Malaria was a serious plague in the United States for centuries until its final eradication in the 1950s. Despite the ostensible eradication, there are occasional cases of autochthonous (local) transmission in the U.S. vectored by An. quadrimaculatus in the east and Anopheles freeborni in the west.
A. True B. False

5. Culex pipiens, the Northern House Mosquito has a distribution that roughly includes the _____of the United States.
A. Out-of-doors at night C. Northern half
B. Southern parts D. None of the above

6. Although they occur in_____, Culex pipiens reach their greatest numbers in urban and suburban areas and readily enter homes.
A. Treeholes C. Effluent from sewage treatment plants
B. Rural environments D. None of the above

7. Culex pipiens are known to vector _____
A. SLE C. WNV
B. WEE D. None of the above

8. The species utilizes temporary ground water that ranges from mildly to grossly polluted. The species also deposits its eggs in artificial containers, including tin cans, tires, and any refuse that allows stagnant water to puddle. The species is decidedly urban and reaches greatest numbers in large urban centers.
A. True B. False

9. Catch basins and storm drains provide ideal habitat for Cx. pipiens. The species becomes particularly abundant in areas where raw sewage leaks into_____.
A. Treeholes C. Effluent from sewage treatment plants
B. Subterranean drainage systems D. None of the above

10. Meat packing plants and slaughter house drainage ponds support high populations of this species. Culex pipiens can always be collected in the _____ .
A. Treeholes C. Effluent from sewage treatment plants
B. Temporary ground water D. None of the above

11. In northern California, it currently plays only a lesser role as a carrier of human disease, while in southern California and the Gulf Coast region, it is a major carrier of Saint Louis encephalitis. It is also the best known carrier of _____, a severe encephalitis virus newly arrived in the Americas that is spreading along the eastern seaboard.
A. SLE C. WNV
B. WEE D. None of the above

12. Culex pipiens is a serious pest, called the "house mosquito" because it commonly develops in small containers around the home. It shows great skill in finding ways to get into the house, where it feeds on_____. It also occurs in containers and sumps on farms and industrial plants, in polluted waters, and will feed out-of-doors at night.
A. Mammals C. The occupants at night
B. Temporary ground water D. None of the above

13. Mosquitoes of the Culex tarsalis species have a _____.
A. Bluntly rounded abdominal tip C. Brownish strip with pale bands
B. Distinct ring around the proboscis D. None of the above

14. Western Encephalitis Mosquito (Culex tarsalis) is medium-sized, dark mosquito that has a broad white band across the middle of the proboscis and the lower leg segments. In addition to being a potential vector of _____ this species is the most important vector of Western Equine encephalitis (WEE) and SLE.
A. SLE C. WNV
B. WEE D. None of the above

15. Species in the genus Culex are known as “standing-water” mosquitoes.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Yellow fever is a virus infection of monkeys that can either be transmitted from monkey to human or from human to human in tropical areas of the world.
A. True B. False

2. Encephalitis is _____, and serious disease carried by mosquitoes. Its symptoms are severe headache, fever, vomiting, disorientation, chills, muscle aches and pains. It usually occurs in warm wet weather.
A. A birth defect C. An untreatable, sometimes deadly
B. Dangerous parasite D. None of the above

3. _____ is a dangerous parasitic disease common in tropical and subtropical areas. It is transmitted by the female Anopheles mosquito.
A. EEE virus C. Malaria
B. Dog heartworm D. None of the above

4. _____ is spread to people by the bite of an infected mosquito. The most common symptoms of infection are fever and joint pain.
A. EEE virus C. Chikungunya virus
B. Dog heartworm D. None of the above

5. If a fully engorged mosquito with _____positive blood is squashed on the skin, there would be insufficient transfer of virus to produce infection.
A. EEE virus C. HIV
B. Dog heartworm D. None of the above

Canine Heartworm

6. The dog heartworm parasite does not develop properly in humans and is not regarded as a human health problem.
A. True B. False

7. _____ is a Bunyavirus and is a zoonotic pathogen cycled between the daytime-biting treehole mosquito, Aedes triseriatus, and vertebrate amplifier hosts (chipmunks, tree squirrels) in deciduous forest habitats.
A. LAC virus C. Brokebone fever
B. Dog heartworm D. None of the above

8. _____is maintained over the winter by transovarial transmission in mosquito eggs. If the female mosquito is infected, she may lay eggs that carry the virus, and the adults coming from those eggs may be able to transmit the virus to chipmunks and to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

9. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.
A. Eastern equine encephalitis (EEE) C. Beaver fever
B. Dog heartworm D. None of the above

10. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

11. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

12. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

13. In this usual cycle of transmission, virus does not escape from these areas because the mosquito involved prefers to feed upon birds and does not usually bite humans or other mammals.
A. True B. False

14. For reasons not fully understood, the virus may escape from enzootic foci in swamp areas in birds or bridge vectors such as Coquilletidia perturbans and Aedes sollicitans. These species feed on both birds and mammals and can transmit the virus to humans, horses, and other hosts.
A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit_____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

Topic 4– Mosquito Control Section

1. _____ include the bacterial insecticides Bacillus thuringiensis israelensis and Bacillus sphaericus, the insect growth inhibitor methoprene, and the organophosphate insecticide temephos.
A. DDT and Chlordane C. Hydrogen sulfide
B. Larvicides D. None of the above

2. _____ are applied directly to water using backpack sprayers and truck or aircraft-mounted sprayers.
A. Oxygen C. Hydrogen sulfide
B. Liquid larvicide products D. None of the above

3. _____, a light-viscosity oil that spreads quickly and evenly over the water surface, preventing larvae and pupae from obtaining oxygen through the surface film.
A. Mosquito Dunks C. DDT and Chlordane
B. Golden Bear 1111 D. None of the above

4. _____is another safe material for control of mosquito larvae. It is an insect hormone that retards the development of larvae (disrupts molting) and prevents mosquitoes from developing into adults.
A. Methoprene (Altosid XR) C. Hydrogen sulfide
B. Liquid larvicide products D. None of the above

5. _____can be applied by hand and the product is labeled for use in known fish habitats.
A. Altosid XR Briquettes C. Tablet, pellet, granular, and briquette formulations
B. Hydrogen sulfide D. None of the above

Microbial Insecticides
6. The product known as **Bti** (Bacillus thuringiensis israelensis) is not as effective as chemical insecticides.
A. True B. False

7. _____ is an insect growth regulator widely used by abatement districts to control mosquito larvae.
A. Oil C. Methoprene (sold under the name Altosid)
B. DDT and Chlordane D. None of the above

8. Pellets can be flushed down toilets into underground septic tanks known to be breeding house mosquitoes. The _____kills the mosquitoes without upsetting the septic system's bacterial digestive processes.
A. DDT and Chlordane C. Naled
B. Methoprene D. None of the above

9. Space sprays or aerosol "bombs," containing _____, are effective against adult mosquitoes. Frequent treatments may be needed during problem periods.
A. Synergized pyrethrins 0.1% C. Phosphate insecticide
B. DDT and Chlordane D. None of the above

10. _____ is an organophosphate parasympathomimetic that binds irreversibly to cholinesterase.
A. Naled C. Synergized pyrethrins 0.1%
B. Malathion D. None of the above

11. _____ is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide.
A. Naled C. Synergized pyrethrins 0.1%
B. Malathion D. None of the above

12. ULV applications involve large quantities of pesticide active ingredient in relation to the size of the pest target treated.
A. True B. False

13. Naled is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact. ULV applications involve small quantities of pesticide active ingredient in relation to the size of the area treated.
A. True B. False

14. Naled is an _____ that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but Naled is also used on food and feed crops, and in greenhouses.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Treatment D. None of the above

15. Naled is _____ used to kill adult mosquitoes. In mosquito control programs conducted by state or local authorities, Naled is applied by truck-mounted or aircraft-mounted sprayers.
A. ULV application C. An organophosphate (OP) insecticide
B. An adulticide D. None of the above

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. _____ are long, gangly insects that commonly resemble mosquitoes with their slender, jointed legs and elongated thorax.
A. Mosquitoes C. Crane flies
B. Bedbugs D. None of the above

2. When humans come in contact with _____infested vegetation, the larvae swarm over the entire body and it might be several hours before they settle down to feed.
A. Bedbugs C. Chiggers
B. Dixid Midge larvae D. None of the above

3. Dance Flies appear like _____ by the way they swarm in sunlit areas in backyards and other sheltered situations. The vertical movement of the swarming adults gives them their common name of Dance Flies.
A. Mosquitoes C. Crane flies
B. Redbugs D. None of the above

4. The _____are found in slow moving water, at the surface, and swim in a characteristic "U" shape. These midges lack a proboscis and scales on the wings.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

5. In the U.S., the most common flea species carried by both cats and dogs is the_____.
A. Dog flea C. Cat flea, Ctenocephalides felis
B. Red flea D. None of the above

6. Compared with other flea species, the _____ has a very wide host range. Wild animals carrying cat fleas include raccoons, opossum, skunks and foxes.
A. Dog flea C. Cat flea
B. Red flea D. None of the above

7. Fungus Gnats (Sciaridae) are small (about ¼ inch long), black flies commonly found around decaying vegetation.
A. True B. False

8. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Host sources D. None of the above

9. The nymphs of mayflies develop in _____ where they form an important part of the food chain. Adults are among the shortest lived in the insect world.
A. Flowing sap C. Land breeding site
B. All types of aquatic habitats D. None of the above

10. _____ (Psychodidae) are small hairy flies that can move about very nimbly, but are weak fliers.
A. Crane flies C. Winter Crane Flies
B. Owl Midges D. None of the above

11. _____ are of considerable public health importance because of their ability to transmit several viral, bacterial, and protozoal disease-causing organisms of humans and other animals.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

12. _____ larvae are found in roots, fungi, decaying vegetation, rotting leaves, manure, and other vegetative material. The adults are readily attracted to lights.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

13. _____ do not bite humans, and they don't carry disease. But these species still can be annoying to homeowners.
A. Crane flies C. Mosquitoes
B. Winter Crane Flies D. None of the above

14. _____ (Anisopodidae) are some of the better known gnats, for they are attracted to light and can be found near windows, especially in spring time. The adults can be found all year long, though.

A. Crane flies
B. Wood Gnats
C. Mosquitoes
D. None of the above

15. _____ adults are found on foliage in or near damp places, some are found around flowing sap. They are sometimes seen in small swarms. Adults appear in two variations: grayish black or reddish.

A. Winter Crane Flies
B. Owl Midges
C. Wood Gnats
D. None of the above

When Finished with Your Assignment

REQUIRED DOCUMENTS

Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions

If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX

If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

Mosquito Control CEU Training Awareness Assignment #4
Last Names Q to R

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 – Mosquito Introduction Section

Integrated Pest Management -Introduction

1. IPM is a science-based and common-sense approach for_____, vectors, such as mosquitoes.

A. Managing pests
B. Surveillance
C. Resident education and pest monitoring
D. None of the above

2. _____ is a critical component to any successful IPM program because the results from the surveillance will help determine the appropriate response to an infestation.

A. Surveillance
B. Pest prevention
C. Lower levels of infestations
D. None of the above

3. Once mosquitoes have landed, they rely on _____to determine if we are an acceptable blood meal host.

A. Transient waters
B. Water quality
C. A number of short-range attractants
D. None of the above

4. Canines are quite susceptible to_____, a nematode that can be transmitted by certain mosquitoes.

A. SLE
B. Canine heartworm
C. WNV
D. None of the above

Mosquito Life Cycle Section

5. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.

A. Eggs, larvae, and pupae
B. Eggs
C. Mosquito larva
D. None of the above

6. The presence of beneficial predators such as fish and dragonfly nymphs in permanent ponds, lakes, and streams usually keep these bodies of water relatively free of _____.

A. Eggs, larvae, and pupae
B. Nests
C. Mosquito larva
D. None of the above

Wrigglers and Tumblers

7. The mosquitoes in the United States, all of which live in specific habitats, exhibit unique behaviors and bite different types of animals. Despite these differences, all mosquitoes share some common traits, such as _____.

A. A two-year life span
B. A four-stage life cycle
C. Prolific mosquito breeding sites
D. None of the above

8. Mosquitoes may overwinter as eggs,_____.
A. Fertilized adult females or larvae C. Ergatoids
B. Female mosquitoes D. None of the above

9. Some female mosquitoes lay their eggs directly on the water surface.
A. True B. False

10. Eggs, larvae, and pupae must have water to develop.
A. True B. False

11. Adults may fly 500 to 1000 miles, but usually rest in grass, shrubbery, or other foliage close to the water breeding area.
A. True B. False

Mosquito Egg Classification
12. Mosquito eggs are generally square in shape, tapered at the top and square at the bottom.
A. True B. False

13. Each mosquito species prefers certain localities for depositing eggs. Some prefer very clean water, others slightly polluted water, while others thrive in _____.
A. Population dynamics C. Decomposing leaf litter
B. Extremely polluted water D. None of the above

14. Single On Water: Anopheles and Toxorhynchites lay their eggs one at a time on _____.
A. Underground C. Standing water
B. The water surface D. None of the above

15. Single in Soil: most Aedes and Psorophora lay their eggs one at a time on a moist substrate, such as_____.
A. Decomposing leaf litter C. Mud and decomposing leaf litter
B. Extremely polluted water D. None of the above

Topic 2 – Mosquito Identification Section

1. Culiseta melanura larvae have long siphons that can be distinguished from those of other mosquito larvae by the presence of two or three setae (hairs) located at the very base of their siphons.
A. True B. False

2. Culiseta melanura is a medium-sized mosquito that resembles Culex species because of its _____.
A. Bluntly rounded abdominal tip C. Brownish color with pale bands
B. Its distinctive scale patterns D. None of the above

3. Malaria was a serious plague in the United States for centuries until its final eradication in the 1950s. Despite the ostensible eradication, there are occasional cases of autochthonous (local) transmission in the U.S. vectored by An. quadrimaculatus in the east and Anopheles freeborni in the west.
A. True B. False

4. Culex pipiens, the Northern House Mosquito has a distribution that roughly includes the _____of the United States.
A. Treeholes C. Northern half
B. Southern parts D. None of the above

5. Culex pipiens species is _____around the abdominal segments. The quickly developing larvae may be continuously present spring through fall.
A. Bluntly colored C. Medium-sized, brownish with pale bands
B. Distinctive, scale patterns D. None of the above

6. Catch basins and storm drains provide ideal habitat for Cx. pipiens. The species becomes particularly abundant in areas where raw sewage leaks into_____.
A. Treeholes C. Effluent from sewage treatment plants
B. Subterranean drainage systems D. None of the above

7. Meat packing plants and slaughter house drainage ponds support high populations of this species. Culex pipiens can always be collected in the _____ .
A. Treeholes C. Effluent from sewage treatment plants
B. Subterranean drainage systems D. None of the above

8. Culex pipiens' main host is humans, but it also feeds freely on a wide variety of warm-blooded vertebrates, including birds.
A. True B. False

9. In northern California, it currently plays only a lesser role as a carrier of human disease, while in southern California and the Gulf Coast region; it is a major carrier of Saint Louis encephalitis. It is also the best known carrier of _____, a severe encephalitis virus newly arrived in the Americas that is spreading along the eastern seaboard.
A. SLE C. WNV
B. WEE D. None of the above

10. Mosquitoes of the Culex tarsalis species have a _____.
A. Bluntly rounded abdominal tip C. Brownish strip with pale bands
B. Distinct ring around the proboscis D. None of the above

11. Western Encephalitis Mosquito (Culex tarsalis) is medium-sized, dark mosquito that has a broad white band across the middle of the proboscis and the lower leg segments. In addition to being a potential vector of _____ this species is the most important vector of Western Equine encephalitis (WEE) and SLE.
A. SLE C. WNV
B. WEE D. None of the above

12. The legs have white banding on each side of the joints, and the proboscis is adorned with a_____ .
A. Distinctive scale pattern
B. Distinct ring around the proboscis
C. Bright white band of scales in the middle
D. None of the above

13. Culex eggs are laid one at a time, but attached together to form_____.
A. Larvae
B. A raft of 100 or more eggs
C. A raft of 100 or less eggs
D. None of the above

14. Woodland Malaria mosquitoes have three life stages: egg, larva, and adult. The immature stages need standing water to complete their life cycle.
A. True B. False

Effective Mosquito-Control Program

15. Initial surveys identify the species of mosquitoes present and provide general information on locations, densities and disease potential. With this knowledge it may be possible to determine life cycles and feeding preferences; predict larval habitats, adult resting places and flight ranges; and perhaps even make preliminary recommendations for control programs.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Zika disease is spread mostly by the bite of an infected Aedes species mosquito (Ae. aegypti and Ae. albopictus). These mosquitoes bite_____.
A. Birds as blood meal hosts
B. Infected dogs
C. During the day and night
D. None of the above

2. Zika disease can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects.
A. True B. False

3. Encephalitis is _____, and serious disease carried by mosquitoes. Its symptoms are severe headache, fever, vomiting, disorientation, chills, muscle aches and pains. It usually occurs in warm wet weather.
A. A birth defect
B. An slight infection
C. An untreatable, sometimes deadly
D. None of the above

4. _____ is spread to people by the bite of an infected mosquito. The most common symptoms of infection are fever and joint pain.
A. Chikungunya virus
B. Dog heartworm
C. LAC virus
D. None of the above

5. _____ usually doesn't cause death, but the symptoms can be severe and debilitating.
A. EEE virus
B. Dog heartworm
C. Chikungunya
D. None of the above

6. If a fully engorged mosquito with _____positive blood is squashed on the skin, there would be insufficient transfer of virus to produce infection.
A. EEE virus C. HIV
B. Dog heartworm D. None of the above

Canine Heartworm

7. _____ is a Bunyavirus and is a zoonotic pathogen cycled between the daytime-biting treehole mosquito, Aedes triseriatus, and vertebrate amplifier hosts (chipmunks, tree squirrels) in deciduous forest habitats.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

8. _____is maintained over the winter by transovarial transmission in mosquito eggs. If the female mosquito is infected, she may lay eggs that carry the virus, and the adults coming from those eggs may be able to transmit the virus to chipmunks and to humans.
A. LAC virus C. Brokebone fever
B. Dog heartworm D. None of the above

9. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.
A. Eastern equine encephalitis (EEE) C. Beaver fever
B. Dog heartworm D. None of the above

10. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

11. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

12. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

13. In this usual cycle of transmission, virus does not escape from these areas because the mosquito involved prefers to feed upon birds and does not usually bite humans or other mammals.
A. True B. False

14. For reasons not fully understood, the virus may escape from enzootic foci in swamp areas in birds or bridge vectors such as Coquilletidia perturbans and Aedes sollicitans.
A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit _____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

Topic 4– Mosquito Control Section

Microbial Insecticides
1. The product known as **Bti** (Bacillus thuringiensis israelensis) can be as effective as chemical insecticides.
A. True B. False

2. When the bacteria Bti encysts, it produces a protein crystal toxic to mosquito and midge larvae. Once the bacteria have been ingested, the toxin disrupts the lining of the larvae's intestine. It has no effect on a vast array of other aquatic organisms except midges in the same habitat.
A. True B. False

3. _____ is an insect growth regulator widely used by abatement districts to control mosquito larvae.
A. Naled C. Methoprene (sold under the name Altosid)
B. Oxygen D. None of the above

4. _____ mimics a natural juvenile hormone, and when present in the larval habitat, it keeps immature insects from maturing into adults. Unable to metamorphose, the mosquitoes die in the pupal stage.
A. Methoprene C. Naled
B. Liquid larvicide products D. None of the above

5. Vector control technicians sometimes use _____ to reach larval sources that would otherwise be difficult or dangerous to treat.
A. Naled C. Bti strains
B. Methoprene D. None of the above

6. Pellets can be flushed down toilets into underground septic tanks known to be breeding house mosquitoes. The _____kills the mosquitoes without upsetting the septic system's bacterial digestive processes.
A. Altosid XR Briquettes C. Naled
B. Methoprene D. None of the above

7. State and local agencies commonly use the organophosphate insecticides Malathion and Naled and the synthetic pyrethroid insecticides _____ for adult mosquito control. Always follow the pesticide label’s instructions.
A. Malathion and Naled C. Permethrin, Resmethrin, and Sumithrin
B. Synergized pyrethrins 0.1% D. None of the above

8. Mosquito adulticides are applied as ultra-low volume (ULV) sprays. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill flying mosquitoes on contact.
A. True B. False

9. Space sprays or aerosol "bombs," containing _____, are effective against adult mosquitoes. Frequent treatments may be needed during problem periods.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

10. _____, typically applied as high volume (low concentration) liquids with hand-held spray equipment using compounds with residual characteristics, are common in some U.S. locations and their use is growing.
A. An adulticide C. Barrier treatments
B. Naled D. None of the above

11. _____ is an organophosphate parasympathomimetic which binds irreversibly to cholinesterase.
A. Naled C. An organophosphate parasympathomimetic
B. Malathion D. None of the above

12. _____ is an insecticide of relatively low human toxicity; however recent studies have shown that children with higher levels of malathion in their urine seem to be at an increased risk of attention deficit hyperactivity disorder.
A. ULV application C. An organophosphate (OP) insecticide
B. Malathion D. None of the above

13. _____ is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

14. The mosquito goes through five distinct stages during its life cycle: egg, larva, Wigglier, pupa, and adult. Malathion is an adulticide, used to kill adult mosquitoes.
A. True B. False

15. Naled is _____ used to kill adult mosquitoes. In mosquito control programs conducted by state or local authorities, Naled is applied by truck-mounted or aircraft-mounted sprayers.
A. An adulticide C. Malathion
B. Spray D. None of the above

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. Larvae of chiggers, commonly called _____, attack humans and dogs during the larval stage.
A. Mosquitoes C. Crane flies
B. Redbugs D. None of the above

2. _____ are long, gangly insects that commonly resemble mosquitoes with their slender, jointed legs and elongated thorax.
A. Mosquitoes C. Crane flies
B. Redbugs D. None of the above

3. Dance Flies appear like _____ by the way they swarm in sunlit areas in backyards and other sheltered situations. The vertical movement of the swarming adults gives them their common name of Dance Flies.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

4. The _____are found in slow moving water, at the surface, and swim in a characteristic "U" shape. These midges lack a proboscis and scales on the wings.
A. Redbugs C. Dance Flies
B. Dixid Midge larvae D. None of the above

5. Applications of insecticides targeting the Dixid Midges adult stage are not efficient. While this type of application may kill biting midges active on a given night, they are continually dispersing from the larval habitat and entering areas of human activity.
A. True B. False

6. _____ do not fly, but have strong hind legs which they use to jump from host to host. Dogs and cats are at risk of getting these creatures.
A. Crane flies C. Mosquitoes
B. Fleas D. None of the above

7. In the U.S., the most common flea species carried by both cats and dogs is the_____.
A. Dog flea C. Cat flea, Ctenocephalides felis
B. Red flea D. None of the above

8. Compared with other flea species, the _____ has a very wide host range. Wild animals carrying cat fleas include raccoons, opossum, skunks and foxes.
A. Dog flea C. Cat flea
B. Red flea D. None of the above

9. Adult Fungus Gnats are recognized by the way they hold their wings at rest and the presence of two or three long "caudal" filaments at the tip of the abdomen.
A. True B. False

10. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Lights D. None of the above

11. _____ (Psychodidae) are small hairy flies that can move about very nimbly, but are weak fliers.
A. Crane flies C. Mosquitoes
B. Owl Midges D. None of the above

12. The _____ males and females feed on nectar and other plant juices, but females require a blood meal in order to mature a second batch of eggs. The blood meal hosts include white-tailed deer, horses, donkeys, mules, cattle, swine, raccoons, rodents, birds and humans.

A. Spring Crane Flies
B. Owl Midges
C. Phlebotomine sand flies
D. None of the above

13. _____ (Trichoceridae) are often quite abundant during winter and spring. They so closely resemble mosquitoes that they are frequently mistaken for them.

A. Winter Crane Flies
B. Spring Crane Flies
C. Phlebotomine sand flies
D. None of the above

14. _____ (Anisopodidae) are some of the better known gnats, for they are attracted to light and can be found near windows, especially in spring time. The adults can be found all year long, though.

A. Spring Crane Flies
B. Owl Midges
C. Wood Gnats
D. None of the above

15. _____ adults are found on foliage in or near damp places, some are found around flowing sap. They are sometimes seen in small swarms. Adults appear in two variations: grayish black or reddish.

A. Winter Crane Flies
B. Owl Midges
C. Wood Gnats
D. None of the above

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Mosquito Control CEU Training Awareness Assignment #5
Last Names S to Z

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Topic 1 – Mosquito Introduction Section

Integrated Pest Management -Introduction

1. IPM uses a combination of ways to control mosquito populations with decisions based on _____, such as keeping track or count of the numbers and types of mosquitoes in an area.

A. Lower levels of infestations
B. Surveillance
C. Resident education
D. None of the above

2. Once mosquitoes have landed, they rely on _____to determine if we are an acceptable blood meal host.

A. Its life cycle
B. A number of short-range attractants
C. Water quality
D. None of the above

3. Aedes adults will oviposit near the edge of the swamp or within tussocks of vegetation, requiring later flooding to _____. As with transient waters, there is a seasonal change in the vegetation, water quality, and mosquito species present.

A. Begin its life cycle
B. Begin the reproduction
C. Inundate the eggs for hatching
D. None of the above

Mosquito Life Cycle Section

4. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.

A. Eggs, larvae, and pupae
B. Eggs
C. Mosquito larva
D. None of the above

5. The presence of beneficial predators such as fish and dragonfly nymphs in permanent ponds, lakes, and streams usually keep these bodies of water relatively free of _____.

A. Eggs, larvae, and pupae
B. Eggs
C. Mosquito larva
D. None of the above

Wrigglers and Tumblers

6. The mosquitoes in the United States, all of which live in specific habitats, exhibit unique behaviors and bite different types of animals. Despite these differences, all mosquitoes share some common traits, such as _____.

A. A two-year life span
B. A four-stage life cycle
C. Prolific mosquito breeding sites
D. None of the above

7. After the female mosquito obtains a blood meal, she lays her eggs directly on the surface of stagnant water, in a depression, or on the edge of a container where rainwater may collect and flood the eggs.
A. True B. False

8. All female mosquitoes lay their eggs directly on the water surface.
A. True B. False

9. Mosquitoes belonging to the genus Culex lay their _____ in bunches or "rafts."
A. Tumblers C. Eggs
B. Cocoon D. None of the above

10. _____ are ready to bite one to two days after adult emergence.
A. Adults C. Wrigglers
B. Female mosquitoes D. None of the above

11. All mosquitoes have only one generation per year.
A. True B. False

12. Adults may fly 500 to 1000 miles, but usually rest in grass, shrubbery, or other foliage close to the water breeding area.
A. True B. False

13. On Plants**:** Mansonia eggs are deposited on the underside, and sometimes on top of _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

Weather
14. Mosquito development and population dynamics are closely tied to weather. When and how much rain is received, wind speed and direction, maximum and minimum temperatures, and the total amount of heat energy accumulated are all critical to mosquito development.
A. True B. False

Water Source
15. The water (or lack thereof) in a habitat directly affects mosquito reproduction. All mosquitoes need standing water to complete their development.
A. True B. False

Topic 2 – Mosquito Identification Section

1. The black-tailed mosquito, Culiseta melanura, belongs to the family Culicidae. This species of mosquito is considered unusual because it overwinters as larvae while most mosquito species overwinter as_____.
A. Ergatoids C. Either adults or eggs
B. Pupas D. None of the above

2. Culiseta melanura larvae have long siphons that cannot be distinguished from those of other mosquito larvae.
A. True B. False

3. Anopheles quadrimaculatus is historically the most important vector of _____ in the eastern United States.
A. SLE C. WNV
B. Malaria D. None of the above

4. Culex pipiens, the Northern House Mosquito has a distribution that roughly includes the _____of the United States.
A. Treeholes C. Northern half
B. Southern parts D. None of the above

5. Culex pipiens species is _____around the abdominal segments. The quickly developing larvae may be continuously present spring through fall.
A. Bluntly colored C. Medium-sized, brownish with pale bands
B. Red and white D. None of the above

6. Culex pipiens can be found in a fairly small range of larval habitats, but are generally associated with water that has a low organic content.
A. True B. False

7. Culex pipiens is a serious pest, called the "house mosquito" because it commonly develops in small containers around the home. It shows great skill in finding ways to get into the house, where it feeds on_____. It also occurs in containers and sumps on farms and industrial plants, in polluted waters, and will feed out-of-doors at night.
A. Birds C. The occupants at night
B. Dogs D. None of the above

8. Culex tarsalis breeds in nearly every freshwater source except _____. Larvae are found in all but the most polluted ground pools.
A. Treeholes C. Effluent from sewage treatment plants
B. Running water D. None of the above

9. Culex tarsalis is the most important carrier of _____ in much of the western U.S.
A. WEE C. Western equine and Saint Louis encephalitis
B. Malaria D. None of the above

10. Mosquitoes of the Culex tarsalis species have a _____.
A. Bluntly rounded abdominal tip C. Brownish strip with pale bands
B. Distinct ring around the proboscis D. None of the above

11. Western Encephalitis Mosquito (Culex tarsalis) is medium-sized, dark mosquito that has a broad white band across the middle of the proboscis and the lower leg segments. In addition to being a potential vector of _____ this species is the most important vector of Western Equine encephalitis (WEE) and SLE.
A. SLE C. WNV
B. WEE D. None of the above

12. As mosquitoes go, the Western Encephalitis Mosquito is one of the more easily recognizable, with its _____.
A. Distinctive scale patterns
B. Distinct ring around the proboscis
C. High pitched buzz
D. None of the above

13. The legs have white banding on each side of the joints, and the proboscis is adorned with a_____ .
A. Bluntly rounded abdominal tip
B. Bright white band of scales in the middle
C. Brownish pale band
D. None of the above

14. Species in the genus Culex are known as “Dampwood” mosquitoes.
A. True B. False

15. Woodland Malaria mosquitoes have four life stages: egg, larva, pupa, and adult. The immature stages need standing water to complete their life cycle.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Zika disease can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects.
A. True B. False

2. Encephalitis is _____, and serious disease carried by mosquitoes. Its symptoms are severe headache, fever, vomiting, disorientation, chills, muscle aches and pains. It usually occurs in warm wet weather.
A. A birth defect
B. Fever and joint pain
C. An untreatable, sometimes deadly
D. None of the above

3. _____is caused by viruses that are carried by mosquitoes. Symptoms appear three to six days after the person is bit by a mosquito. Dengue fever is mostly found in the tropics.
A. EEE virus
B. Dog heartworm
C. Dengue fever
D. None of the above

4. _____ is spread to people by the bite of an infected mosquito. The most common symptoms of infection are fever and joint pain.
A. LAC virus
B. Chikungunya virus
C. Usual cycle of transmission
D. None of the above

5. _____ usually doesn’t cause death, but the symptoms can be severe and debilitating.
A. EEE virus
B. Dog heartworm
C. Chikungunya
D. None of the above

6. If a fully engorged mosquito with _____positive blood is squashed on the skin, there would be insufficient transfer of virus to produce infection.
A. LAC virus
B. HIV
C. Usual cycle of transmission
D. None of the above

Canine Heartworm

7. _____ is a Bunyavirus and is a zoonotic pathogen cycled between the daytime-biting treehole mosquito, Aedes triseriatus, and vertebrate amplifier hosts (chipmunks, tree squirrels) in deciduous forest habitats.

A. LAC virus C. Brokebone fever
B. Beaver fever D. None of the above

8. _____is maintained over the winter by transovarial transmission in mosquito eggs. If the female mosquito is infected, she may lay eggs that carry the virus, and the adults coming from those eggs may be able to transmit the virus to chipmunks and to humans.

A. LAC virus C. Brokeback fever
B. EEE virus D. None of the above

9. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.

A. LAC virus C. Brokebone fever
B. Eastern equine encephalitis (EEE) D. None of the above

10. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.

A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

11. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.

A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

12. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.

A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

13. In this usual cycle of transmission, virus does not escape from these areas because the mosquito involved prefers to feed upon birds and does not usually bite humans or other mammals.

A. True B. False

14. For reasons not fully understood, the virus may escape from enzootic foci in swamp areas in birds or bridge vectors such as Coquilletidia perturbans and Aedes sollicitans. These species feed on both birds and mammals and can transmit the virus to humans, horses, and other hosts.

A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit _____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

Topic 4– Mosquito Control Section

1. _____ are applied directly to water using backpack sprayers and truck or aircraft-mounted sprayers.
A. DDT C. Insect growth inhibitor methoprene
B. Liquid larvicide products D. None of the above

2. Homeowners may apply _____ (made with Bacillus thuringiensis Berliner var. israelensis or B.t.i.) to kill mosquito larvae in the water. This natural ingredient is harmless to other living things and is biodegradable.
A. Mosquito Dunks C. DDT and Chlordane
B. Golden Bear 1111 D. None of the above

3. _____ and other materials form a thin film on the surface of the water, which cause larvae and pupae to drown.
A. Mineral oils C. Altosid XR Briquettes
B. Mosquito Dunks D. None of the above

4. Chlorinated hydrocarbons like DDT and Chlordane are very much a thing of the past, as are the use of_____.
A. Mosquito Dunks C. Organophosphate and carbamate insecticides
B. Golden Bear 1111 D. None of the above

5. _____is another safe material for control of mosquito larvae. It is an insect hormone that retards the development of larvae (disrupts molting) and prevents mosquitoes from developing into adults.
A. Methoprene (Altosid XR) C. An adulticide
B. Liquid larvicide products D. None of the above

6. _____ can be placed even on ice for season-long control. Treat swamps, ponds, and marsh areas in early spring before thawing. These extended-release briquettes will provide up to 150 days of uninterrupted mosquito control once they hit the water.
A. Mineral oils C. Altosid XR Briquettes
B. DDT and Chlordane D. None of the above

7. _____can be applied by hand and the product is labeled for use in known fish habitats.
A. Altosid XR Briquettes C. An adulticide
B. Oxygen D. None of the above

Microbial Insecticides

8. Bti strains are sold under the names Bactimos, Teknar and Vectobac.
A. True B. False

9. _____ is an insect growth regulator widely used by abatement districts to control mosquito larvae.
A. Methoprene (sold under the name Altosid) C. An adulticide
B. Liquid larvicide products D. None of the above

10. _____ mimics a natural juvenile hormone, and when present in the larval habitat, it keeps immature insects from maturing into adults. Unable to metamorphose, the mosquitoes die in the pupal stage.
A. Methoprene C. Bti (Bacillus thuringiensis israelensis)
B. Liquid larvicide products D. None of the above

11. State and local agencies commonly use the organophosphate insecticides Malathion and Naled and the synthetic pyrethroid insecticides _____ for adult mosquito control. Always follow the pesticide label's instructions.
A. Malathion and Naled C. Permethrin, Resmethrin, and Sumithrin
B. Malathion D. None of the above

12. _____ is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

13. _____ is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

14. ULV applications involve small quantities of pesticide active ingredient in relation to the size of the area treated.
A. True B. False

15. Naled is _____ used to kill adult mosquitoes. In mosquito control programs conducted by state or local authorities, Naled is applied by truck-mounted or aircraft-mounted sprayers.
A. An adulticide C. Malathion
B. Spray D. None of the above

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. When humans come in contact with _____infested vegetation, the larvae swarm over the entire body and it might be several hours before they settle down to feed.
A. Bedbugs C. Chiggers
B. Dixid Midge larvae D. None of the above

2. Dance Flies appear like _____ by the way they swarm in sunlit areas in backyards and other sheltered situations. The vertical movement of the swarming adults gives them their common name of Dance Flies.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

3. _____ are common around moist areas where vegetation is abundant and may be seen swarming at dusk along the edges of streams and lakes. The adults are short lived, usually being active less than a week.
A. Redbugs C. Dance Flies
B. Dixid Midges D. None of the above

4. _____ do not fly, but have strong hind legs which they use to jump from host to host. Dogs and cats are at risk of getting these creatures.
A. Redbugs C. Dance Flies
B. Fleas D. None of the above

5. In the U.S., the most common flea species carried by both cats and dogs is the_____.
A. Dog flea C. Cat flea, Ctenocephalides felis
B. Red flea D. None of the above

6. Compared with other flea species, the _____ has a very wide host range. Wild animals carrying cat fleas include raccoons, opossum, skunks and foxes.
A. Dog flea C. Cat flea
B. Red flea D. None of the above

7. Mayflies (Ephemeroptera) can be quite abundant near creeks, flood control channels and other water sources throughout the United States. Their larvae are found in most aquatic habitats and can live in_____.
A. Land breeding site habitats C. Moving water
B. Host to host D. None of the above

8. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Host sources D. None of the above

9. The nymphs of mayflies develop in _____ where they form an important part of the food chain. Adults are among the shortest lived in the insect world.
A. Sewage C. Public health importance
B. All types of aquatic habitats D. None of the above

10. _____ are of considerable public health importance because of their ability to transmit several viral, bacterial, and protozoal disease-causing organisms of humans and other animals.
A. Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

11. The _____ males and females feed on nectar and other plant juices, but females require a blood meal in order to mature a second batch of eggs. The blood meal hosts include white-tailed deer, horses, donkeys, mules, cattle, swine, raccoons, rodents, birds and humans.
A. Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

12. _____ (Trichoceridae) are often quite abundant during winter and spring. They so closely resemble mosquitoes that they are frequently mistaken for them.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Summer crane flies D. None of the above

13. _____ larvae are found in roots, fungi, decaying vegetation, rotting leaves, manure, and other vegetative material. The adults are readily attracted to lights.
A. Winter Crane Flies C. Summer crane flies
B. Owl Midges D. None of the above

14. _____ do not bite humans, and they don't carry disease. But these species still can be annoying to homeowners.
A. Summer crane flies C. Mosquitoes
B. Winter Crane Flies D. None of the above

15. _____ (Anisopodidae) are some of the better known gnats, for they are attracted to light and can be found near windows, especially in spring time. The adults can be found all year long, though.
A. Ticks C. Wood Gnats
B. Midges D. None of the above

When Finished with Your Assignment

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions
If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX
If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

Mosquito Control CEU Training Awareness Assignment #6
For Repeat Students

You will have 90 days from the start of this course to have successfully passed this assignment with a score of 70 %. You may e mail the answers to TLC, info@tlch2o.com or fax the answers to TLC, (928) 272-0747. This assignment is available to you in a Word Format on TLC's Website. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers. Once you have paid the course fee, you will be provided complete course support from Student Services (928) 468-0665.

Topic 1 – Mosquito Introduction Section

Integrated Pest Management -Introduction

1. _____ is a critical component to any successful IPM program because the results from the surveillance will help determine the appropriate response to an infestation.

A. Pests and vectors C. Surveillance
B. Pest prevention D. None of the above

2. Extensive infestations or those where_____, merit a different response than will lower levels of infestations.

A. Disease is present C. Surveillance
B. Pest prevention D. None of the above

Mosquito Life Cycle Section

3. The type of standing water in which the mosquito chooses to lay her _____depends upon the species.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Eggs D. None of the above

4. The presence of beneficial predators such as fish and dragonfly nymphs in permanent ponds, lakes, and streams usually keep these bodies of water relatively free of _____.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Nest D. None of the above

5. Portions of marshes, swamps, clogged ditches, and temporary pools and puddles are all prolific mosquito breeding sites. Other sites in which some species lay their _____ include tree holes and containers such as old tires, buckets, toys, potted plant trays, and saucers and plastic covers or tarpaulins.

A. Eggs, larvae, and pupae C. Mosquito larva
B. Eggs D. None of the above

6. The mosquito goes through four distinct stages during its life cycle.

A. True B. False

Wrigglers and Tumblers

7. Mosquitoes may overwinter as eggs, and as _____.

A. Fertilized adult females or larvae C. Wrigglers
B. Ergatoids D. None of the above

8. Eggs, larvae, and pupae must have water to develop.
A. True B. False

9. _____ are ready to bite one to two days after adult emergence.
A. Ergatoids C. Wrigglers
B. Female mosquitoes D. None of the above

Mosquito Egg Classification
10. Each mosquito species prefers certain localities for depositing eggs. Some prefer very clean water, others slightly polluted water, while others thrive in _____.
A. On the water surface C. Decomposing leaf litter
B. Extremely polluted water D. None of the above

11. Single On Water: Anopheles and Toxorhynchites lay their eggs one at a time on _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

12. Single in Soil: most Aedes and Psorophora lay their eggs one at a time on a moist substrate, such as_____.
A. Decomposing leaf litter C. Mud and decomposing leaf litter
B. Extremely polluted water D. None of the above

13. Single On Cavity Walls: Wyeomyia, Orthopodomyia, and certain Aedes deposit eggs in tree holes, water-holding plants, or artificial containers. The eggs are placed _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

14. Rafts On Water: Most Culex, Culiseta, Coquillettidia, and Uranotaenia lay eggs in masses, called rafts or boats, _____.
A. Population dynamics C. On the water surface
B. Decomposing leaf litter D. None of the above

15. On Plants: Mansonia eggs are deposited on the underside, and sometimes on top of _____.
A. The water surface C. The leaves of certain floating aquatic plants.
B. Above the waterline D. None of the above

Topic 2 – Mosquito Identification Section

1. The _____ of most mosquito species have a siphon (breathing tube) for acquiring air from just above the surface of water while submerged.
A. Pupas C. Larvae
B. Eggs D. None of the above

2. Culiseta melanura is a medium-sized mosquito that resembles Culex species because of its _____.
A. Bluntly rounded abdominal tip C. Brownish color with pale bands

B. Its distinctive scale patterns D. None of the above

3. Anopheles quadrimaculatus is historically the most important vector of _____ in the eastern United States.
A. SLA C. WNV
B. Malaria D. None of the above

4. Culex pipiens species is _____around the abdominal segments. The quickly developing larvae may be continuously present spring through fall.
A. Bluntly colored C. Medium-sized, brownish with pale bands
B. Distinct ring around the proboscis D. None of the above

5. Culex pipiens are known to vector _____
A. SLE C. WNV
B. WEE D. None of the above

6. Catch basins and storm drains provide ideal habitat for Cx. pipiens. The species becomes particularly abundant in areas where raw sewage leaks into_____.
A. Treeholes C. Effluent from sewage treatment plants
B. Subterranean drainage systems D. None of the above

7. Meat packing plants and slaughter house drainage ponds support high populations of this species. Culex pipiens can always be collected in the _____ .
A. Treeholes C. Effluent from sewage treatment plants
B. Temporary ground water D. None of the above

8. Culex pipiens' main host is wild birds, but it also feeds freely on a wide variety of warm-blooded vertebrates, including man.
A. True B. False

9. Culex tarsalis breeds in nearly every freshwater source except _____. Larvae are found in all but the most polluted ground pools.
A. Treeholes C. Effluent from sewage treatment plants
B. Out-of-doors at night D. None of the above

10. Culex tarsalis is the most important carrier of _____ in much of the western U.S.
A. WEE C. Western equine and Saint Louis encephalitis
B. Malaria D. None of the above

11. Mosquitoes of the Culex tarsalis species have a _____.
A. Bluntly rounded abdominal tip C. Brownish strip with pale bands
B. Distinct ring around the proboscis D. None of the above

12. Western Encephalitis Mosquito (Culex tarsalis) is medium-sized, dark mosquito that has a broad white band across the middle of the proboscis and the lower leg segments. In addition to being a potential vector of _____ this species is the most important vector of Western Equine encephalitis (WEE) and SLE.

A. WLE C. WNV
B. WEE D. None of the above

13. As mosquitoes go, the Western Encephalitis Mosquito is one of the more easily recognizable, with its _____.
A. Bluntly rounded abdominal tip C. Brownish hair with pale bands
B. Distinctive scale patterns D. None of the above

14. The legs have white banding on each side of the joints, and the proboscis is adorned with a_____ .
A. Distinctive scale patterns C. Bright white band of scales in the middle
B. Distinct ring around the proboscis D. None of the above

15. Species in the genus Culex are known as “standing-water” mosquitoes.
A. True B. False

Topic 3– Mosquito-Borne Diseases Section

1. Zika disease is spread mostly by the bite of an infected Aedes species mosquito (Ae. aegypti and Ae. albopictus). These mosquitoes bite_____.
A. Birds as blood meal hosts C. During the day and night
B. Infected dogs D. None of the above

2. Encephalitis is a virus of the central nervous system that is passed from infected birds to humans by mosquitoes that accept _____ in addition to humans.
A. Birds as blood meal hosts C. Day and night feedings
B. Nectar D. None of the above

3. _____ is a dangerous parasitic disease common in tropical and subtropical areas. It is transmitted by the female Anopheles mosquito.
A. PEE virus C. Malaria
B. Dog heartworm D. None of the above

4. _____is caused by viruses that are carried by mosquitoes. Symptoms appear three to six days after the person is bit by a mosquito. Dengue fever is mostly found in the tropics.
A. EEE virus C. Dengue fever
B. Dog heartworm D. None of the above

5. _____ is spread to people by the bite of an infected mosquito. The most common symptoms of infection are fever and joint pain.
A. EEE virus C. Chikungunya virus
B. Dog heartworm D. None of the above

6. _____ usually doesn’t cause death, but the symptoms can be severe and debilitating.
A. DEE virus C. Chikungunya
B. Cat heartworm D. None of the above

7. If a fully engorged mosquito with _____positive blood is squashed on the skin, there would be insufficient transfer of virus to produce infection.
A. LAC virus C. HIV
B. Dog heartworm D. None of the above

Canine Heartworm
8. Adult heartworms live in a dog's heart, but young forms of the worm are found in their blood. Mosquitoes transmit the infection when they feed on the blood of an infected dog.
A. True B. False

9. Dog heartworm is a large filarial worm that lives in the heart of dogs, but produces a blood stage small enough to develop in a mosquito.
A. True B. False

10. _____is also caused by a virus transmitted to humans and equines by the bite of an infected mosquito.
A. LAC virus C. Brokebone fever
B. Eastern equine encephalitis (EEE) D. None of the above

11. _____ is an alphavirus that was first identified in the 1930's and currently occurs in focal locations along the eastern seaboard, the Gulf Coast and some inland Midwestern locations of the United States.
A. FEE virus C. Beaver fever
B. EEE virus D. None of the above

12. _____ occurs in natural cycles involving birds and Culiseta melanura, in some swampy areas nearly every year during the warm months.
A. EEE virus C. Beaver fever
B. Dog heartworm D. None of the above

13. Where _____ resides or how it survives in the winter is unknown. It may be introduced by migratory birds in the spring or it may remain dormant in some yet undiscovered part of its life cycle.
A. LAC virus C. Brokeback fever
B. EEE virus D. None of the above

14. For reasons not fully understood, the virus may escape from enzootic foci in swamp areas in birds or bridge vectors such as Coquilletidia perturbans and Aedes sollicitans. These species feed on both birds and mammals and can transmit the virus to humans, horses, and other hosts.
A. True B. False

15. Other mosquito species such as Ae. vexans and Culex nigripalpus can also transmit _____. When health officials maintain surveillance for EEE virus activity, this movement out of the swamp can be detected, and if the level of activity is sufficiently high, can recommend and undertake measures to reduce the risk to humans.
A. LAC virus C. Brokebone fever
B. EEE virus D. None of the above

Topic 4– Mosquito Control Section

1. _____ include the bacterial insecticides Bacillus thuringiensis israelensis and Bacillus sphaericus, the insect growth inhibitor methoprene, and the organophosphate insecticide temephos.

A. ULV application
B. Larvicides
C. Naled .50 percent formulation
D. None of the above

2. _____is another safe material for control of mosquito larvae. It is an insect hormone that retards the development of larvae (disrupts molting) and prevents mosquitoes from developing into adults.

A. ULV application
B. Methoprene (Altosid XR)
C. Tablet, pellet, granular, and briquette formulations
D. None of the above

3. _____ can be placed even on ice for season-long control. Treat swamps, ponds, and marsh areas in early spring before thawing. These extended-release briquettes will provide up to 150 days of uninterrupted mosquito control once they hit the water.

A. Mineral oils
B. DDT and Chlordane
C. Altosid XR Briquettes
D. None of the above

4. _____can be applied by hand and the product is labeled for use in known fish habitats.

A. Altosid XR Briquettes
B. Naled .50 percent formulation
C. ULV application
D. None of the above

Microbial Insecticides

5. _____ is an insect growth regulator widely used by abatement districts to control mosquito larvae.

A. ULV application
B. Oxygen
C. Methoprene (sold under the name Altosid)
D. None of the above

6. _____ mimics a natural juvenile hormone, and when present in the larval habitat, it keeps immature insects from maturing into adults. Unable to metamorphose, the mosquitoes die in the pupal stage.

A. Methoprene
B. Liquid products
C. ULV application
D. None of the above

7. Vector control technicians sometimes use _____ to reach larval sources that would otherwise be difficult or dangerous to treat.

A. Methoprene
B. Liquid products
C. Naled .50 percent formulation
D. None of the above

8. Space sprays or aerosol "bombs," containing _____, are effective against adult mosquitoes. Frequent treatments may be needed during problem periods.

A. Malathion and Naled
B. Synergized pyrethrins 0.1%
C. ULV application
D. None of the above

9. _____, typically applied as high volume (low concentration) liquids with hand-held spray equipment using compounds with residual characteristics, are common in some U.S. locations and their use is growing.
A. An adulticide C. Barrier treatments
B. Naled D. None of the above

10. _____ is an organophosphate parasympathomimetic which binds irreversibly to cholinesterase.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Malathion D. None of the above

11. _____ is an insecticide of relatively low human toxicity; however recent studies have shown that children with higher levels of malathion in their urine seem to be at an increased risk of attention deficit hyperactivity disorder.
A. An adulticide C. Malathion
B. Naled D. None of the above

12. _____ is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide.
A. Synergized pyrethrins 0.1% C. Naled .50 percent formulation
B. Malathion D. None of the above

13. The mosquito goes through four distinct stages during its life cycle: egg, larva, pupa, and adult. Malathion is an adulticide, used to kill adult mosquitoes.
A. True B. False

14. _____ is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact.
A. Naled C. An organophosphate parasympathomimetic
B. Malathion D. None of the above

15. Naled is an _____ that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but Naled is also used on food and feed crops, and in greenhouses.
A. Synergized pyrethrins 0.1% C. Organophosphate insecticide
B. Treatment D. None of the above

Topic 5- Insects Commonly Mistaken for Mosquitoes

1. _____ are long, gangly insects that commonly resemble mosquitoes with their slender, jointed legs and elongated thorax.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

2. _____ do not bite, and contrary to popular belief, they do not eat mosquitoes. Some species of crane flies emerge from aquatic sources and others from terrestrial or decaying vegetation sources.
A. Cat flea C. Mosquitoes
B. Crane flies D. None of the above

3. Larvae of chiggers, commonly called _____, attack humans and dogs during the larval stage.
A. Redbugs C. Dance Flies
B. Dixid Midge larvae D. None of the above

4. When humans come in contact with _____infested vegetation, the larvae swarm over the entire body and it might be several hours before they settle down to feed.
A. Redbugs C. Chiggers
B. Dixid Midge larvae D. None of the above

5. Dance Flies appear like _____ by the way they swarm in sunlit areas in backyards and other sheltered situations. The vertical movement of the swarming adults gives them their common name of Dance Flies.
A. Mosquitoes C. Crane flies
B. Dixid Midge larvae D. None of the above

6. Cat fleas are small (about ¼ inch long), black flies commonly found around decaying vegetation. They have large wings and long antennae, but they are weak flyers and do not move far from the breeding site.
A. True B. False

7. Adult mayflies though not even closely resembling mosquitoes, their seasonal occurrence at porch lights and on the walls of buildings near their _____invariably attracts the attention of some concerned residents.
A. Land breeding site C. Aquatic breeding sources
B. Host sources D. None of the above

8. The nymphs of mayflies develop in _____ where they form an important part of the food chain. Adults are among the shortest lived in the insect world.
A. Flowing sap C. Winter and spring
B. All types of aquatic habitats D. None of the above

9. _____ (Psychodidae) are small hairy flies that can move about very nimbly, but are weak fliers.
A. Crane flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

10. _____ are of considerable public health importance because of their ability to transmit several viral, bacterial, and protozoal disease-causing organisms of humans and other animals.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

11. _____ (Trichoceridae) are often quite abundant during winter and spring. They so closely resemble mosquitoes that they are frequently mistaken for them.
A. Winter Crane Flies C. Phlebotomine sand flies
B. Owl Midges D. None of the above

12. _____ larvae are found in roots, fungi, decaying vegetation, rotting leaves, manure, and other vegetative material. The adults are readily attracted to lights.
A. Crane flies C. Winter Crane Flies
B. Owl Midges D. None of the above

13. _____ do not bite humans, and they don't carry disease. But these species still can be annoying to homeowners.
A. Crane flies C. Mosquitoes
B. Winter Crane Flies D. None of the above

14. _____ (Anisopodidae) are some of the better known gnats, for they are attracted to light and can be found near windows, especially in spring time. The adults can be found all year long, though.
A. Winter Crane Flies C. Wood Gnats
B. Owl Midges D. None of the above

15. _____ adults are found on foliage in or near damp places, some are found around flowing sap. They are sometimes seen in small swarms. Adults appear in two variations: grayish black or reddish.
A. Winter Crane Flies C. Wood Gnats
B. Owl Midges D. None of the above

When Finished with Your Assignment

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email it to info@TLCH2O.com.

IPhone Scanning Instructions
If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, info@TLCH2O.com.

FAX
If you are unable to scan and email, please fax these to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**