



TICK

AWARENESS



PART OF THE
AHEIA "O.W.L. SERIES"

OUTDOOR WILDLIFE LEARNING

MODULE #5



TICK

AWARENESS

This workbook is designed to provide tick safety for all Albertans. It is designed as a workbook to be done by both parents and adults. There are tick safety awareness activities to capture the interest of the youth and there are details at a level to train adults on what to watch for. We suggest this workbook be done with parents and their children together as an awareness activity on an important aspect of enjoying Alberta's great outdoors.

What is a Tick? What Does it Look Like? Do I Have One On Me?

Ticks have been around for awhile! Did you know that the fossil record indicates that they have been around for at least 90 million years? These pesky little critters belong to the same class as spiders and mites, characterized by having four pairs of legs and no antennae. Ticks fall into two families:

- 1) Hard Ticks - (Ixodidae - these have a hard plate on their backs) and
- 2) Soft Ticks - (Argasidae - these do not have a hard plate)

Both categories flourish throughout North America, though the most commonly occurring types in Canada are hard ticks.

There are well over 800 species of ticks identified worldwide. These pesky parasites may enter your home when feeding on your pet! It is not uncommon for your dog to bring ticks into your home. They can also come into your home on your clothes or body. Some species may not survive indoors while some species such as brown dog ticks are capable of surviving and breeding indoors. Most ticks are external parasites on mammals, birds, and reptiles and need to suck the blood





Photo credit: Ron Kemp

Common tick species found throughout Canada include the black-legged tick, more commonly known as the deer tick, the brown dog tick, the American dog tick, and the Rocky Mountain wood tick.

Ticks are commonly thought of as an insect but a tick is not an insect. Insects possess three segmented body parts or regions, six legs, and generally have wings. Ticks do not have wings, only possesses two body regions, and has eight legs after reaching full maturity. Ticks have external mouthparts which extend from their heads. Unlike insects, which have heads capable of moving independently, the heads of ticks are fused to the thorax. The body, called an idiosoma, is the region that expands with blood when feeding. On hard ticks, the body is covered by a thick plate called a scutum. Males possess larger scuta than females, which restrict the expansion during blood feeding. Depending on the species, colouration may vary from browns and blacks to variations of greys and whites. Most ticks range in size comparable to a small seed to the size of a pea, though when engorged with blood, the tick may appear larger.



Photo Credit: Dr. Brendan Dever

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Can I Get Sick if I am Bitten by a Tick?

Ticks are blood-sucking parasites commonly found throughout Canada and they carry bacteria and viruses known to cause serious illness in both humans and animals. American dog ticks are known carriers for such diseases as Rocky Mountain spotted fever and tularemia. Lyme Disease is the most common we experience from Ticks but there are several others:

Anaplasmosis, Babesiosis, Bartonella, Borrelia Mayonii, Borrelia Miyamotoi, Bourbon Virus, Colorado Tick Fever, Ehrlichiosis, Heartland Virus, Powassan Disease, Ricket Parkeri, Rocky Mountain Spotted Fever, STARI (Southern tick-associated rash illness, 364D Rickettsiosis and there are many more!!!

Bottom line... Ticks are not our friends!!



LEARN ABOUT DIFFERENT TICKS

Following are three types of ticks commonly found in Alberta and they can all carry transmissible illnesses.

What do you notice about each one that looks different? Do you see different colors or patterns on the ticks' backs?

Blacklegged (Deer) Tick



American Dog Tick



Rocky Mountain Wood Tick



- Alberta has 22 known tick species. Many more ticks are brought to Alberta every spring on migratory birds.
- Most ticks do not have eyes and rely on their senses to find you. They can sense vibration, body heat and carbon dioxide (your breathing).
- Ticks are easily transported to different areas on animals such as birds, mice, squirrels, rabbits, skunks, foxes, coyotes, deer, moose and any other animal, including humans.
- It is important to be aware of your surroundings and always check yourself and your clothing & gear for ticks during and after spending time outdoors.
- Ticks don't have a bedtime, they can be active during the day and night.
- Some ticks like the cool, damp areas while other ticks can thrive in dryer areas.

Tick Season? How Do I get Ticks on me? Where Do They Live?

Peak tick season for nymphs (Early and immature stage of the Tick life cycle) usually occurs during the spring and summer months, while adults are generally more of a threat in the late fall. The pests are usually found in wooded areas that provide lots of shade or in areas overgrown with tall grasses.



Most species of ticks found throughout Canada typically occupy diverse habitats, ranging from densely wooded areas and forests to grasslands. However, the Rocky Mountain tick usually lives at higher elevations and prefers areas of brush in the foothills and mountain regions. Each species finds hosts in different ways, though all ticks are parasitic and need a host to survive. For instance, the American dog tick remains solitary by nature, moving from host to host between each developmental stage. Climbing to the top of a blade of grass, the tick waits for a passing mammal and grasps on with a free pair of legs. Deer ticks utilize ambush techniques and wait for hosts to brush up against the object on which they are resting. Finally, the Rocky Mountain wood tick experiences stimuli from the environment, such as changes in humidity, temperature, and carbon dioxide levels, which typically represent the presence of a host.

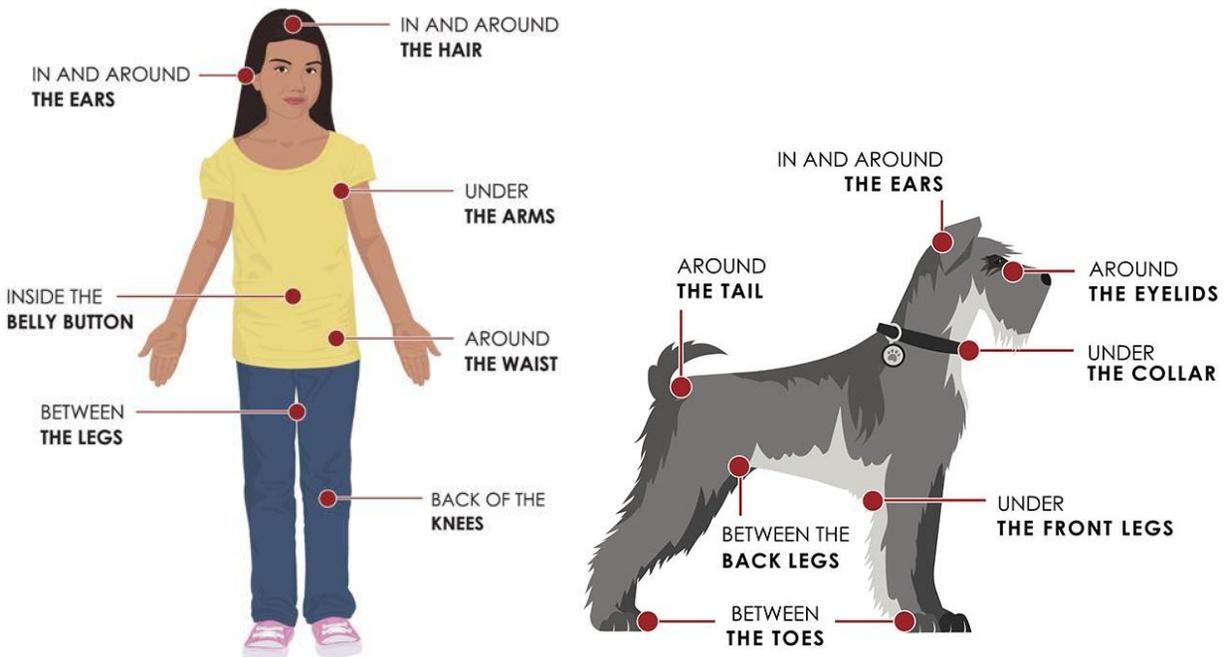
What can I do to Prevent a Tick from Biting me?

Ticks do not jump or fly or drop. They simply reach out with their legs and grab or crawl onto a host. To attach themselves to a host, ticks either grasp onto random animals as they pass over their habitat or lie in wait for potential hosts to brush up against them.

After engorging on the blood of the host, the tick will usually fall off and find shelter somewhere until the need to take another meal becomes imperative.

Since Ticks need access to your skin in order to effectively bite and latch on to you it is wise to cover exposed skin as much as possible. Wear close-toed shoes, long sleeves, and long pants. Tucking pants into socks limits the amount of exposed skin. Repellents can help - For example, when hiking, use an appropriately registered and approved bug repellent. Upon returning home after outdoor activity, and before going inside, perform a full-body search for ticks to ensure no ticks have attached to your body or pets

WHERE TO CHECK FOR TICKS



I Have Been Bitten by a Tick... Now What?!

Symptoms

Tick bite symptoms vary. The exact symptoms depend on the species of tick and the severity of the allergic reaction to the bite. Tick bites frequently produce blisters or rashes on the skin of the victim. A distinctive red spot commonly develops at the site of the bite, as well.



Other common symptoms of tick bites include uncoordinated movement and general weakness. The bites of certain tick species can also generate severe pain or swelling. In serious cases which demand immediate medical attention, tick bites may cause the victim to develop chest pain or heart palpitations, laboured breathing, a severe headache, or even paralysis. Medical attention should also be sought for the development of a fever, stiff neck, joint pain or muscle aches, sensitivity to light, swollen lymph nodes, or flu-like symptoms, as these indicators may signal the incubation of a tick-borne disease.

Two Most Common Tick Diseases:

A. Lyme Disease

Of all the diseases Ticks carry, Lyme disease is the most common. Lyme disease is a serious illness capable of afflicting humans as well as pets. Symptoms range from little or no effects to recurring arthritis, numbness or paralysis, and problems with the nervous system. When left untreated, Lyme disease symptoms

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can persist for years and may even result in death, though fatalities are rare. This disease is caused by bacteria carried by the tick and spread via the bites of infected black-legged ticks, western black-legged ticks, and the tick species *Ixodes angustus*, which has no common name. Early symptoms of Lyme disease include fatigue, fever, headaches, and rashes. If left untreated, it attacks the joints, nervous system, and heart.

Lyme Disease Symptoms

Early symptoms of Lyme disease are flu-like. Infected individuals may experience fever, chills, sweats, muscle aches, fatigue, nausea, and joint pain. Some more serious symptoms include numbness, swollen lymph nodes, muscle spasms, abnormal heartbeats, and cognitive dysfunction. Though cases can vary from person to person, the average individual starts experiencing symptoms within a few days. If left untreated for too long, the disease can cause permanent damage. Extreme cases may result in death.



About half of Lyme patients get this irregular “Bullseye Rash”. These can vary greatly in size and it is wise to seek advice from your doctor.

Black-legged Tick Bites

Black-legged ticks also spread illnesses. In addition to Lyme disease, these hazardous pests have the ability to transmit Human Granulocytic Anaplasmosis (HGA), human babesiosis and encephalitis. These ticks can be introduced by migrating birds.

B. Rocky Mountain Spotted Fever

American dog ticks and Rocky Mountain wood ticks spread another serious disease: Rocky Mountain spotted fever. Humans contract the virus when bitten by infected ticks. Symptoms vary from headaches and muscle pains to vomiting and

rashes. The ailment can cause blood vessels to leak or form clots, which leads to inflammations of the brain, heart, or lungs. This tick disease can be fatal.

Here's 10 Things You Can do to Avoid Getting Bitten by a Tick:

1. Avoid “bushwhacking” and heavily wooded areas in the summer

The majority of tick infestations occur in the summer in heavily wooded areas and grassy trails. The nymphs and larvae of Deer ticks are active during spring and early summer while adults may remain active during winter and fall as well.



Clear paths and open trails such as (left) are a better choice than the wooded paths to the (right)

2. Stay in the center of the trails and choose cleared ones where possible

Deer ticks climb on their human hosts through direct contact only; they do not fall or drop on them. Once they come in contact with humans, they crawl until they find a shaded protective spot. So, the best way to avoid tick infestations is to walk on less dense, non-wooded, less bushy and well travelled trails only.

3. Avoid tick bites using protective clothing

The best way to avoid tick bites is to wear long sleeved shirts, full pants, socks and shoes. Ticks also can be seen easily on lighter colored clothes. It is also a good idea to tuck the pants inside the sock cuffs and also tape open sleeves or loose ends so ticks cannot crawl inside them.

4. Insect Repellents to avoid tick infestations

One of the best insect repellents proven to effectively stop ticks in their tracks is DEET. You can buy DEET in the form of sprays, lotions or creams. You can directly spray DEET on clothing and body while avoiding eyes and mouth. Never spray DEET based repellent on sunburns, rashes, or cuts. Also, DEET and permethrin pre-treated clothing and fabrics are also available in the market and can be worn on hikes or nature walks. Health Canada recommends using a product containing no more than 10% DEET for children under 12 years old. For children over 12 year of age and adults a repellent containing up to 30% DEET can be used. Read product labels on all repellents.

5. Check yourself frequently

Workers or hikers who spend time in tick infested areas must check each other frequently for ticks. They must avoid sitting down in areas having grass piles or leaf litter as this is a sure fire way of inviting ticks.

6. Check your hair

Ticks can also come in contact with humans through one's hair. It is best to keep long hair braided and tucked inside a scarf or a hat. Once you are home, dust the hair and shower immediately to remove hidden ticks if any.



7. Wash the clothing

Once you are back after visiting heavily tick infested areas, toss all clothing in the dryer on its hottest setting for a minimum of 20 minutes. Also shower immediately to avoid tick bites from hidden ticks.

8. Remove ticks immediately to avoid getting bitten

(See section “How to Remove a Tick” beginning on page 12 for specifics)

9. What to do if you get bitten

Tick bites must not be ignored. Make sure you wash the site of the bite with warm water and antibacterial soap solution. Also watch out for rashes, chills, fever, body aches etc. and if these signs are present, visit a doctor immediately.

10. Get treated immediately

Lyme disease can be effectively treated and cured using antibiotics provided you seek treatment in its early stages. Delaying treatment can lead to permanent after-effects of the disease. Chronic conditions like joint and muscle aches have been reported in patients and they take years to improve.



How to Remove a Tick (and How Not To)

The best way to remove a tick that has embedded itself into skin is with a pair of fine-tipped tweezers. These should become part of your survival pack while travelling in the outdoors, as ticks can be found most anywhere and are active for much longer during the year than most people think. Some companies have developed an angled tool with fine-tipped tweezers on one end and a slotted spoon on the other. The slotted spoon is useful for removal of engorged ticks most often found on pets or livestock.

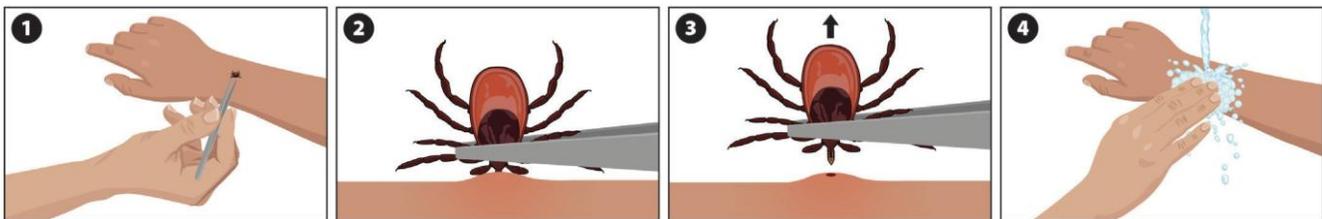
1. Using those fine-tipped tweezers, grasp the tick by the head, getting as close to the victim's skin as possible.
2. Pull straight out using a consistent, steady force.
3. Look for any mouth or head parts left in the skin and remove those with the tweezers after disposing of the body of the tick.
4. Immediately wash the bite area and your hands with soap and water or an alcohol-based hand sanitizer.
5. Save the tick by placing it in a sealed plastic container such as a pill bottle or a sealable plastic bag and store in your freezer. Should you become sick in the following days, you will want to take the tick to your doctor for investigation of potential tick-borne diseases.
6. Have your family doctor or another health care professional remove the tick if you are not comfortable doing it yourself, or if it is buried too deeply into your skin for you to remove.
7. Watch for signs of tick-borne diseases in the following days. If any exist, see your doctor as quickly as possible. If none develop, simply dispose of the dead tick in your regular garbage.
8. To kill a tick, drown it in rubbing alcohol or freeze it for several hours.



9. If you are concerned about ticks on clothing or bedding, wash them in hot water and throw them in the dryer on high heat. Studies show that these will kill the adults and any eggs or nymphs that may have hatched.

Cautions

- Do not squeeze a tick, especially when removing it from the skin. Squeezing it will inject even more blood-clot inhibiting saliva and potential disease into the hosts body. Wide-tipped tweezers (designed for hair removal) could do this, so use fine-tipped if at all possible.
- Do not twist the tick to remove it. This could break off the head which could cause infection which may complicate the diagnosis of potential diseases the tick may have passed on.
- Do not use home remedies such as coating the tick with nail polish or rubbing alcohol, or applying heat to try to get the tick to disengage. These methods are not nearly as effective as removing it with fine-tipped tweezers.
- If you have been bitten by a tick, read up on the many diseases that ticks carry and familiarize yourself with their symptoms. See your doctor if any of those symptoms develop, taking the dead tick with you for further examination.





AHEIA gratefully acknowledges the contributions of these two Alberta residents who have graciously provided these testimonials for use in this learning workbook.

Connor's Journey

THANK YOU for this opportunity to share our story and the positive direction it has taken us.

Everyone who enjoys the outdoors needs to read and remember how easily a tick bite can happen, how hard it will be to get a correct diagnoses and proper treatment if you become sick.

I would like to tell you a little about my son, Connor. He was a happy, always energetic and busy kid. He would spend endless hours outside, either helping with chores, or spending time with friends and family, quading, camping and hunting.

In April 2008, at the age of 13, Connor started experiencing odd symptoms – light & hearing sensitivity, crushing headaches, fatigue, numbness in his arms and hands and an overall just 'not feeling well'. At first we thought it was another germ from school, but as the days passed, off to the doctor we went. During the first year of his symptoms, the doctor ran the usual blood tests (they were within normal range), he would tell my son to “drink more water”, “drink less water”, “eat healthier”, “get more rest” but nothing we tried made any improvements.

In 2009, Connor was eventually referred to a Neurologist, diagnosed with Chiari Malformation and underwent a 6 hour brain surgery, craniectomy and laminectomy, at age 15. The recovery was long and there was no improvement.

The following year, 2010, he was referred to an Otolaryngologist and underwent an extensive sinus surgery. Yet again, no improvement. His symptoms just increased as time passed. Throughout this time, Connor was also prescribed countless medications to address his pain, insomnia, and mounting symptoms but most had little or no positive effect.

Fast forward to 2013. Five years had passed, and Connor's list of symptoms had grown substantially including cognitive, digestive and mobility issues, balance and heart issues, roaming crippling pain, profound fatigue, stabbing headaches and multiple skin rashes. At this point Connor had been to see over 15 specialist, numerous hospital visits, and countless office visits and was eventually sent to see a psychiatrists as it was “all in his head”. I was told by numerous specialists to “stop looking for the cause of my sons symptoms” and just keep him on one drug or another. This Mama bear was not going to do that!

His symptoms would be severe one week and mild the next, but he persevered with life.



Connor had started a career as an Electrical Apprentice but, due to his fluctuating health, he was unable to attend work on a regular basis and he was laid off.

In the fall of 2013 while sitting around a campfire with some friends, one fella stated that Connor's ailments sounded a lot like his wife's who had contracted Lyme disease from a tick bite. I investigated the possibility and, WOW, Connor seemed to have many of the same symptoms. I brought it up to his doctor and the idea was immediately dismissed. The doctor stated that there is no Lyme disease in Alberta but I pushed for the test to be done. The test was sent away and was reported back to us as negative. Little did I know that the testing used in Canada is highly inaccurate and a negative result does not rule out a Lyme infection. In fact, a 2018 research paper determined Canada's Lyme testing to be missing over 90% of positive case!

Through more research, I found out there was reliable testing available in the U.S. so that is the route we had to take. The cost of his testing was over \$2,000.00 as it had to be done through a private clinic in Calgary.

On February 5, 2014, Connor's results came back, and he tested positive for Lyme disease, as well as coinfections. You see, Connor had been misdiagnosed for the past 6 years, enduring unnecessary invasive surgeries, procedures and medications. He was suffering with Lyme disease and numerous coinfections from a tick bite.

I thought my prayers had been answered, finally a diagnosis! I soon found out that was only the beginning of an even bigger medical/political battle. Lyme treatment is not readily available from most physicians if you test positive in Canada and Canadian physicians are directed to not acknowledge any out-of-country testing results.

Over the last six years, we have since connected with countless others, children and adults alike, who are suffering with tick-borne illnesses and their families are met with poverty trying to save them. To date we have spent well over \$50,000 on testing, treatments and homecare. Connor's struggle to regain some semblance of health continues, he is still plagued with cognitive, digestive, balance and mobility issues and organ failure. It is extremely distressing that there are no mainstream physicians willing or knowledgeable enough to provide treatment and we can no longer afford the costly private healthcare options available in Canada or out of country. Thousands just like Connor will continue to suffer with lack of proper treatment and misdiagnoses.

We have taken part in a couple of Lyme patient support organizations but I needed to do more. I delved into research, attended conferences, made contacts with entomologists and Lyme literate physicians and started collecting ticks for testing. The first tick collection I did turned out to be a species not previously known to be in Alberta!

This is when **Tick Awareness Canada (TACA)** was born! **TACA's** vision is to ensure that every Canadian is made aware and understands the prevalence and life-altering seriousness of tick-



borne illnesses, including Lyme disease (the number one zoonotic illness in Canada), Bartonella, and Anaplasma, Babesia, RMSF and others, through our nationwide, proactive presentations to occupational, recreational and educational entities.

TACA's Occupational and Recreational tick safety presentations are adapted for schools, businesses, outdoor workers, outdoor enthusiasts, as well as gardeners, pet owners and the general public. Through **TACA's** presentations, participants learn about ticks in Canada, essential best practice tick bite prevention strategies and what to do should they get a tick bite.

Tick Awareness Canada has been very active over the past year providing tick safety education to youth groups, community groups, municipalities and the general public. **TACA** has also developed and provides an essential, self-contained Tick Removal Kit with the only tweezers designed specifically to remove ticks, **TickEase**. Our kits contain everything you will need to safely remove and contain ticks, treat the bite site, a direct discount with Canada's only public access tick testing lab, **Geneticks**, and additional information.

Due to the fact that Provincial tick testing facilities only test and report on two of the Ixodes species of ticks and then only test for one strain of Lyme, **TACA** saw the need to step up. We collect ticks from across Canada and work with private research facilities to determine what transmissible infections all tick species collected are carrying. Most of the ticks we collect are from hunters, hunted game, livestock and the general public. Through our contributions to tick research, Public Health and Wellness educational outreach and on-site safety presentations we will achieve heightened tick awareness and safety for all Canadians.

If this awareness can save just one person from years of suffering it will be worth it.
Please know, just one bite from an infected tick can rob you of your life.

Become informed:

Tick Awareness Canada

Awareness – Education – Prevention

<https://www.tickawarenesscanada.com/shop>

<https://www.facebook.com/tickawarenesscanada>

<https://www.instagram.com/tickawarenesscanada/>

Jill McAllister

Tick Awareness Canada

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For further reading and investigation we suggest you visit the Tick Awareness Association who is dedicated to providing tick safety education for all outdoor enthusiasts. Please visit their site at www.tickawarenesscanada.com.



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Living with Lyme Disease

Living with symptoms of Lyme Disease is extremely difficult, but the journey to diagnosis can be as equally difficult for those trying to determine what has led to a multitude of debilitating symptoms and ailments. Kelly Culliton was diagnosed with Lyme Disease in 2018, but this was only achieved from her own research, working with doctors and naturopaths for over three years.

Lyme Disease attacks the immune system. After being bitten by a tick, the body goes into immune response and tries to fight off the microbe from this foreign invasion. The microbe, *Borrelia burgdorferi*, moves from the blood stream very quickly and lies dormant in tissues and organs, which makes the accuracy of blood tests very low. Unless being tested within days of being infected, achieving diagnosis is often difficult.

Kelly admittedly is not an outdoorsy person. Other than taking her dog to the off-leash park and working in her flowerbeds and backyard garden, she doesn't venture into the wilderness. So how did she contract Lyme Disease? Kelly believes she must have been bitten in 2014 on a trip to Ireland where she and her family were traipsing through fields exploring castles and ruins. She never found a tick, nor did she get a rash, which are known to be clues even though less than 50% of those infected have neither experience.

Because the disease often lies dormant, it is awakened by an assault on the immune system. Kelly's symptoms started to show after a series of surgeries in 2015 which resulted in infections and complications. Her immune system was in a state of fatigue and was not able to fight the microbe that brought on her symptoms.

Kelly did not feel well over the years following her surgeries. She continued to get infections, developed dizziness and vertigo. She experienced headaches and migraines as well as extreme muscle and dental pain. She began having blurred vision, but the optometrist could find nothing wrong with her eyes. She experienced chest pain, shortness of breath often becoming sweaty, sometimes while being active or simply watching tv, but following treadmill stress tests and angiograms she was given the all-clear for heart disease. She visited the dentist on many occasions, convinced that she must have something wrong due to the pain in her teeth, gums and jaw. But there never was.



Kelly developed short-term memory loss and brain fog, as she describes it, when words get lost or stuck. Her mind knew what she was trying to say but the words would just not come out. Often she would be driving somewhere and simply forget where she was going. Almost everything had to be written down.

It was upon her own suggestion that her family doctor test for Lyme Disease, but her diagnosis was negative. For Kelly, her diagnosis came from Germany. Her naturopath took a blood sample and sent it to ArminLabs, a world-leading authority on tick borne diseases with advanced diagnosis capabilities. Within two weeks she was diagnosed with 2 European strains and 1

North American strain of the disease. This news indicated that Kelly was most likely bitten in Ireland and also at home in Alberta, yet she will never know when or where.

Since her diagnosis Kelly has worked hard to support and boost her immune system, every day taking supplements and herbs. She has a healthy, natural diet in order to remove inflammatory processes in the body, which release byproducts and drain the immune system. She has created a healthier foundation to fight her symptoms by removing inflammation-causing foods such as those with sugar, gluten and dairy. Hyperthermic therapy treatments, such as infra-red saunas, are recommended 3-5 times a week during the winter. During the warmer weather simply sitting in the sun and absorbing vitamin D and heat have positive and proven effects.

Unfortunately the symptomatic effects of Lyme Disease never end. Cold is especially hard on those with Lyme, and the winter months become isolating. Kelly recalls a time when she was watching her son play ball hockey from some bleachers on a windy day, and at the end of the game she was unable to lift her legs which resulted in someone having to carry her to her vehicle. Her muscular pain comes in waves, which ranges from being able to walk unassisted, to walking with canes, or only being able to crawl on days with severe symptoms. Sleep is often disturbed which contributes to her brain fog, and she cannot recall a day when she didn't have a headache or migraine. Lyme Disease erodes one's pride, independence and identity – the fatigue and pain is overwhelming and loss of mobility is humiliating.

Most governing medical boards do not recognize or acknowledge the legitimacy of chronic Lyme Disease in North America, as they cannot test and diagnose the vast number of changing symptoms. Many symptoms are similar to those of ALS, Multiple Sclerosis and even Mononucleosis and are often mis-diagnosed. There is nothing concrete that can identify the many migrating symptoms that occur. To this day there are still reports that there is no Lyme Disease in Alberta, however with more and more diagnosis from labs from abroad, there will hopefully be an increase in research of this debilitating disease.

Kelly Culliton is a registered Nurse living in Okotoks, Alberta and is the owner of K.R.A. Wellness. She continues to move forward with her life running her home-based business and tending to her magazine-worthy flower gardens.



Common symptoms of Lyme Disease:

- Chronic fatigue.
- Migrating arthritis/joint pain.
- Muscle pain.
- Chronic back pain and disc degeneration.
- Chronic flu-like symptoms.
- Headache/neck stiffness and creaking.
- Bell's Palsy.
- Brain fog/decreased cognitive function.
- Noise and sound intolerance.
- Ringing in ears.
- Disturbed sleep.
- Blurry vision/floaters/eye discomfort.
- Eye pain.
- Tooth pain.
- Dizziness and instability.
- Muscle twitching.
- Paresthesia (burning, tingling in feet and hands).
- Tremor (head and hands).
- Chest pain/irregular heartbeat.
- Shortness of breath/difficulty catching breath (Rawls, 2017, p. 29).

References

Rawls, W. (2017). *Unlocking lyme: Myths, truths, and practical solutions for chronic lyme disease*. Cary, NC: FirstDoNoHarm Publishing.



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Tick Awareness

WORD SEARCH



L Y M E D I S E A S E A V L T
E T B W O P V T W V R G A N A
X N R F N A R Z E A I R E Y L
S S I E G R K O C P V L G G L
S H W L E A O H T A L X A L G
R P O H R S N Q E E G X A S R
E M O S P I G M P N C M B I A
Z Y D A D T A E I O S T E B S
E N S R S E R H G K B Q I I S
E Z D O B T T E L I P D O O W
W B C S C O D E E R T I C K N
T K G E L W R I X S E V A E L
S O S C B L O O D N W O R B R
D N M M Y H T M S C E Z K Q Y
I S F I O V B R M Q H K C M A

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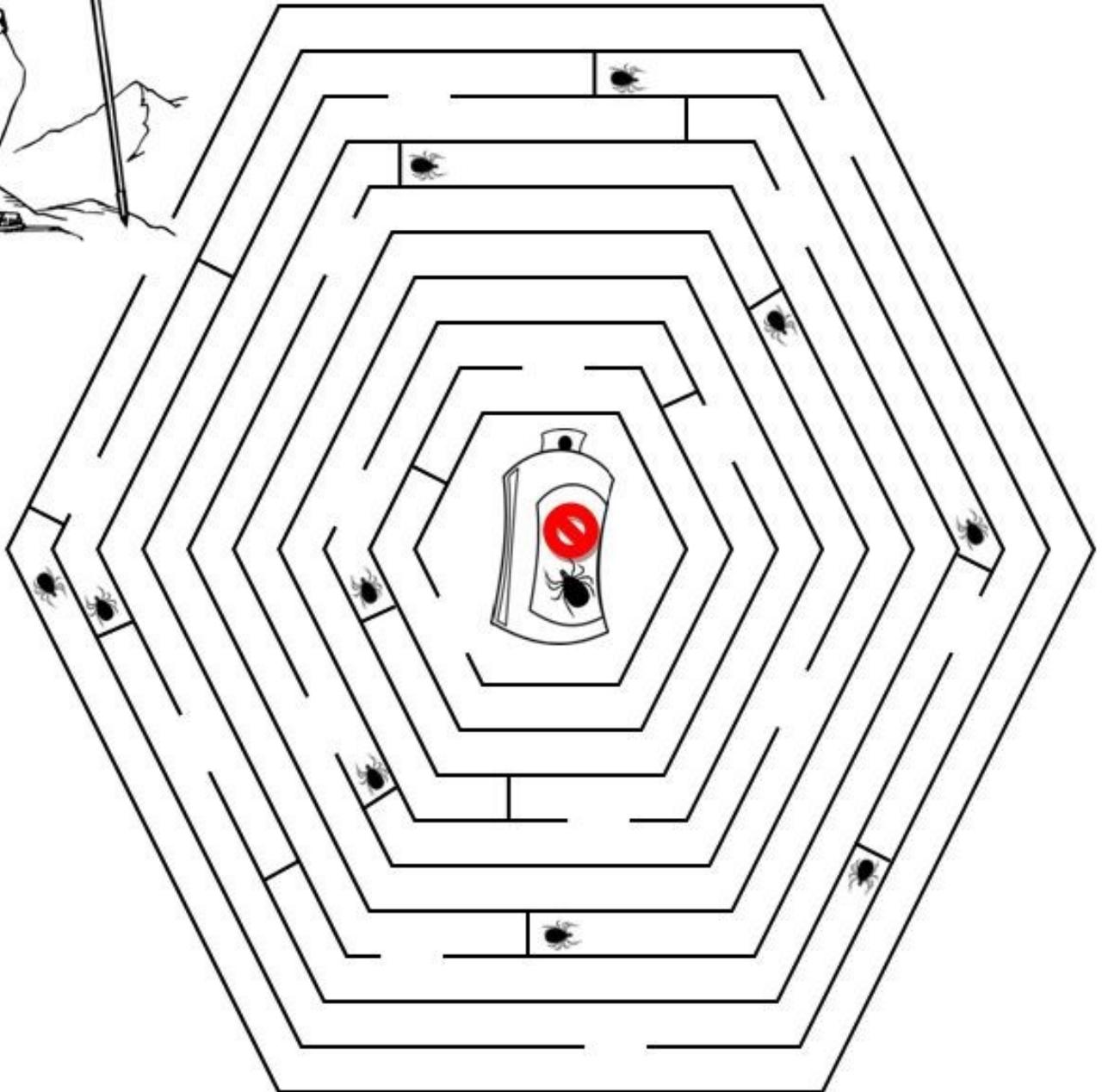
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CLOTHING
HAIRLINE
LEAVES
PARASITE
RASH
SOCKS
TWEEZERS

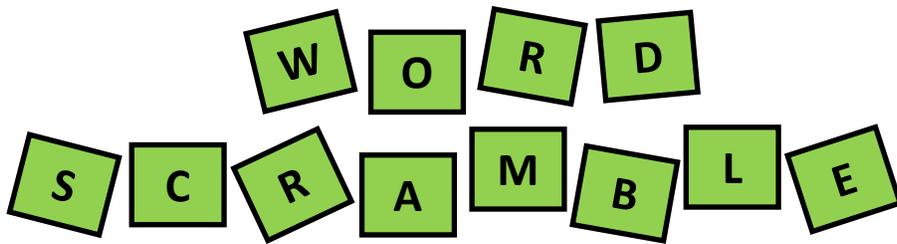
BLOOD
DEER TICK
INSECT REPELLENT
LYME DISEASE
PETS
SALIVA
TALL GRASS
WOODPILE

BROWN
DOGS
LARVAE
NYMPHS
PROTECTION
SMALL
TREES
WOODS

MAZE ACTIVITY

Help the lady hiker through the maze to reach her insect repellent. Watch out for those ticks!!





Unscramble the words to learn about tick prevention!

ewar nolg eleessv

eb itck arwae

utkc pnats otin ockss

citk hkcec

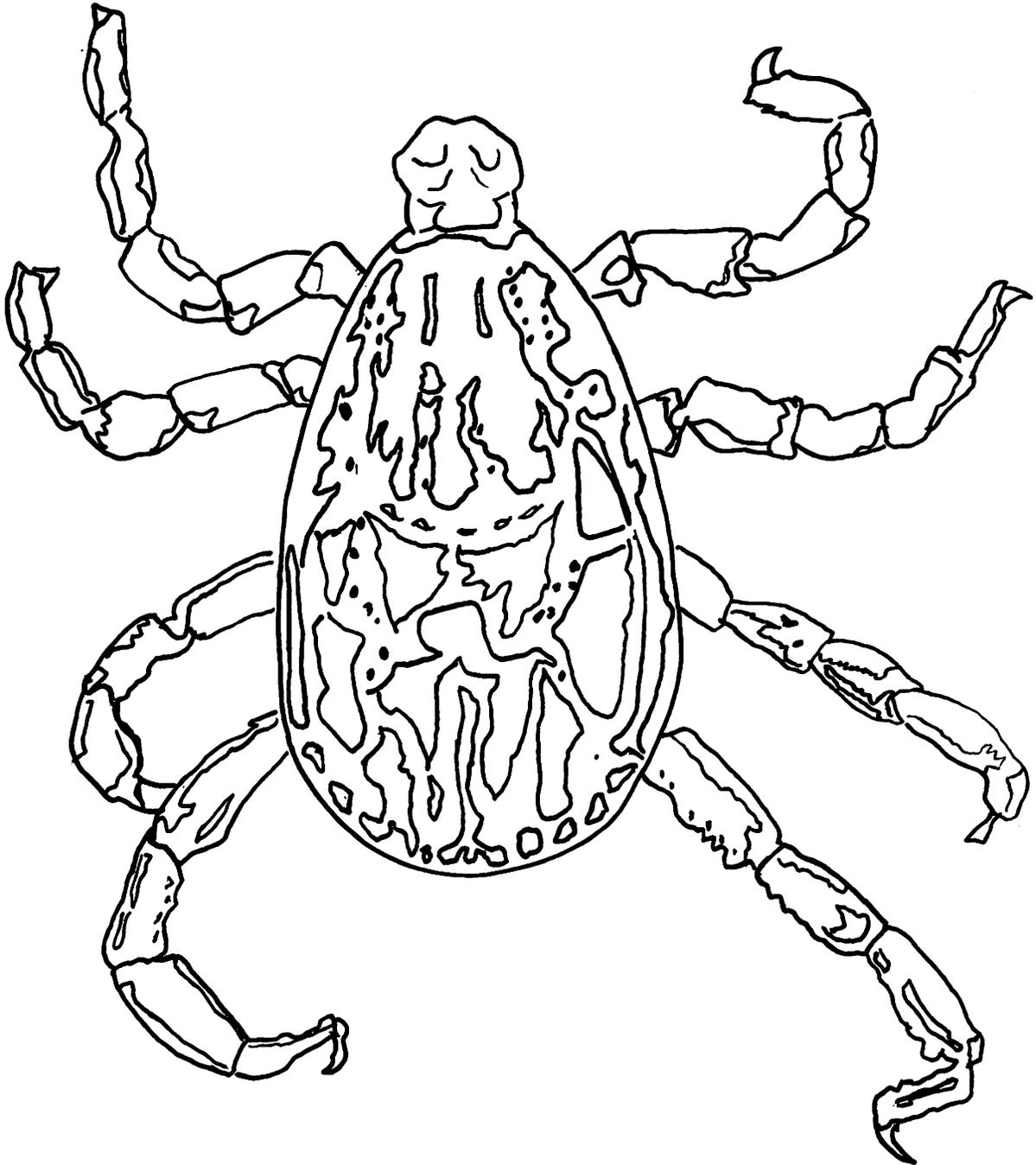
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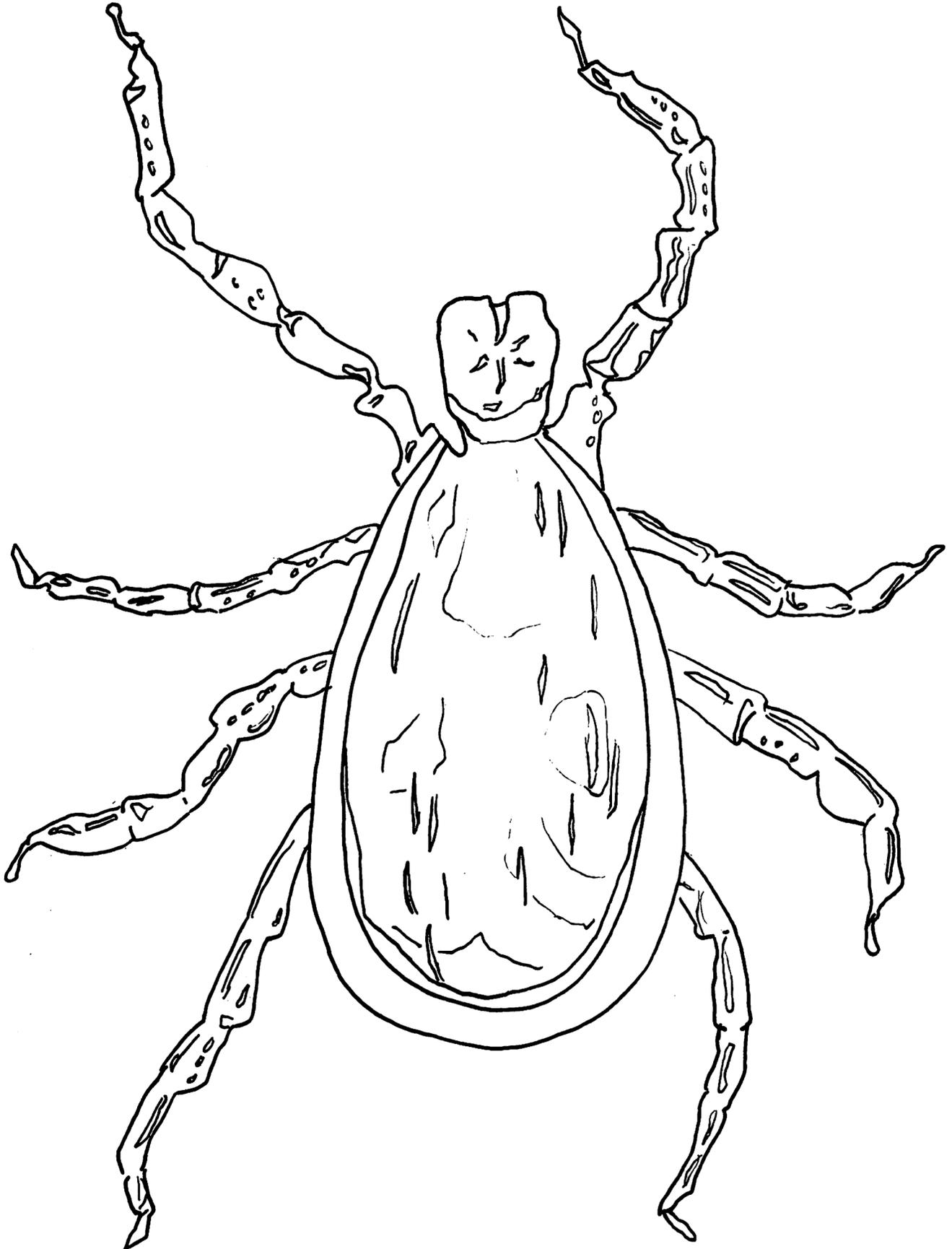
COLOURING PAGE

(AMERICAN DOG TICK)



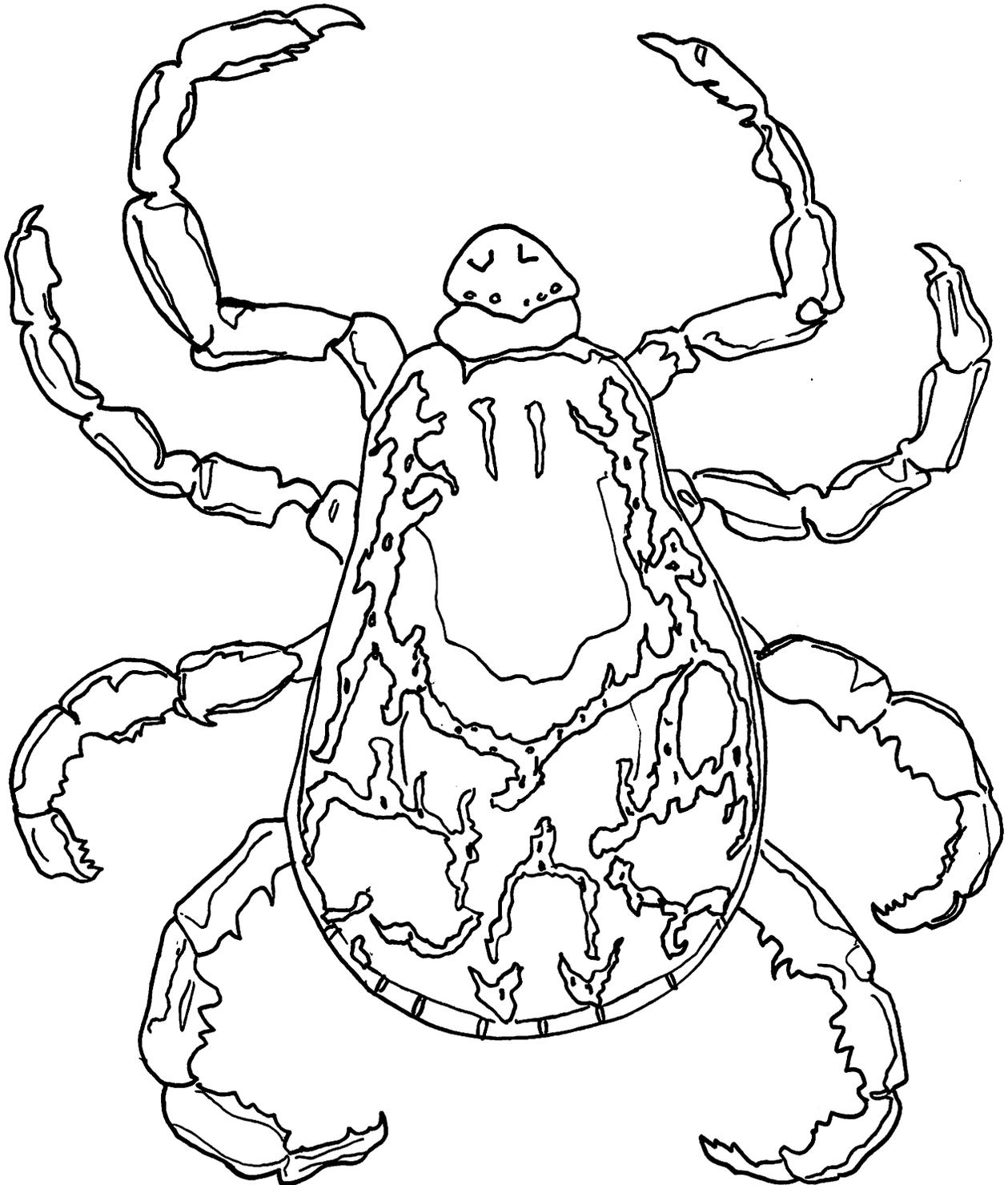
COLOURING PAGE

(BLACK LEGGED WOOD TICK)



COLOURING PAGE

(ROCKY MOUNTAIN WOOD TICK)



GLOSSARY

Ixodidae	A family of ticks (as the deer tick, American dog tick) that have a hard outer shell.	<i>Page 1</i>
Argasidae	A family of ticks that have a soft outer shell.	<i>Page 1</i>
Scutum	A bony, horny, or chitinous plate.	<i>Page 2</i>
Idiosoma	The main part of the body of a mite or tick, consisting of the abdomen and internal organs.	<i>Page 2</i>
Parasite	An organism that lives in or on an organism of another species (its host) and benefits by deriving nutrients at the other's expense.	<i>Page 3</i>
Nymph	The nymph form is the second stage of a tick's lifecycle. Ticks hatch from eggs as larva. Once the larva obtains a blood meal from a host, it molts and becomes a nymph.	<i>Page 5</i>
Habitat	The natural home or environment of an animal, plant, or other organism.	<i>Page 5</i>
Paralysis	The loss of the ability to move (and sometimes to feel anything) in part or most of the body.	<i>Page 7</i>
Bacteria	Microscopic living organisms, usually one-celled, that can be found everywhere. They can be dangerous, such as when they cause infection, or beneficial, as in the process of fermentation	<i>Page 8</i>
Cognitive Dysfunction	The loss of intellectual functions such as thinking, remembering, and reasoning of sufficient severity to interfere with daily functioning.	<i>Page 8</i>
Bullseye Rash	An expanding rash often seen in the early stage of Lyme disease, and can also (but less commonly) be caused by southern tick-associated rash illness (STARI).	<i>Page 8</i>
Inflammation	A physical condition in which the body becomes reddened, swollen, hot, and often painful, especially as a reaction to injury or infection.	<i>Page 9</i>
Infestation	The presence of an unusually large number of insects or animals in a place, typically so as to cause damage or disease.	<i>Page 9</i>
DEET	A colourless oily liquid insect and tick repellent.	<i>Page 10</i>
Permethrin	A synthetic pesticide used especially against insects, ticks, and mites.	<i>Page 10</i>



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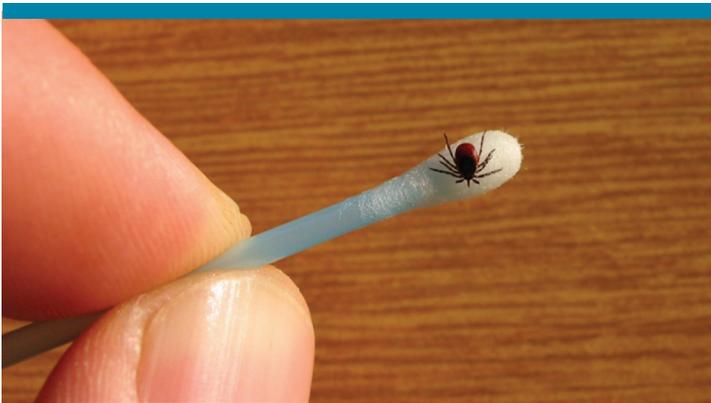
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TICK



If you find ticks on livestock, pets, or other animals –
CONTACT YOUR VETERINARIAN.

Veterinarians can have ticks tested to check the risk of Lyme disease.



For more information, visit
agriculture.alberta.ca/ticks
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