

Chapter 1 : D.K. Sullivan (Author of Ask Kermit all about the human body)

Ask Kermit: Do Flies Have Eyes? by D. K. Sullivan; illustrated by Joe Ewers and John Carrozza. Published April by Golden books. Written in English.

Horse Fly Illustration Length: They are black or gray in color. Often have large, brilliant green eyes. All horse flies have antennae that are shorter than the head. Mouthparts The blood feeding female horse fly is equipped with blade-like mouthparts, which slash tissues and blood vessels and cause blood to flow to wounds. Females then use their sponge-like mouthparts for sucking up blood. Males only feed on pollen and nectar and have similar, but much weaker mouthparts. Horse fly vs deer fly Horse flies are similar to deer flies , and both are in the family Tabanidae. The two ways to tell them apart is to look at their overall size and their wings. Horse flies tend to be much larger with a stouter body and a very large head with very large eyes. Their wings are usually clear or cloudy whereas deer flies have dark bands or spots across their wings. Female horse flies feed on the blood of humans and other animals, while the males do not feed on blood. These pests can detect humans by movement, color, or carbon dioxide output. They do not feed indoors, but sometimes enter homes on accident through open windows and doors. These flies are only active during the day and are usually more abundant in the summer and around pools, lakes or other bodies of water. How Serious Are Horse Flies? Horse fly bites are painful and may cause allergic reactions and at times secondary bacterial infections if the bite is not properly treated. However, the blood-sucking pests are not frequently implicated in disease transmission, unlike mosquitoes and ticks. Insect repellents rarely deter horse flies. Chemical and source reduction control of horse flies is very difficult since they develop in natural habitats where insecticides, if legal to apply, offer little more than a minor, short-term degree of effectiveness. In addition, the extent of their developmental habitat is extremely wide-spread. Therefore, if a property owner needs to control horse flies, it is best to contact your local Orkin branch office for advice on methods that are effective and to find out what can legally and practically be done for control. One method that is moderately helpful is the use of traps, although their effect is limited to a somewhat small scale. Tap here to give us a call: Call Signs Of A Horse Fly Infestation The most obvious sign of a horse fly infestation is the bothersome and painful biting caused by the adult female flies and the symptoms and reactions to their bites. Horse fly females are aggressive blood feeders, while males do not consume blood but feed on pollen and plant nectars. How do they find their prey? Similar to other blood-sucking insects such as mosquitoes for example, female horse flies use both chemical and visual cues to locate hosts. Carbon dioxide expelled by warm-blooded animals provides a long-range cue to attract flies from a distance, while visual cues such as motion, size, shape and dark color function to attract horse flies from shorter distances. Horse fly bites They rarely bite near the head. Horse flies have a range of hosts that include mammals of almost all sizes, livestock, humans, pets and birds. Should a female horse fly be interrupted when attempting to feed, they will fly off but quickly return to bite again, or go to another host to consume a complete blood meal. Horse fly bites vs deer fly bites Female horse flies usually bite large, nonmoving mammals on the legs or body. Deer flies, in contrast, attack moving hosts and typically target high on the body, like the head or neck. Symptoms When bitten, the symptoms and bite reactions can include: Localized swelling and an itchy red area around the bite. Persistent itching and scratching of bite wounds that can cause secondary bacterial infections if the bite is not kept clean and disinfected. Since horse flies inject anticoagulant-containing saliva during blood feeding, some serious reactions may occur in people that are highly allergic to the anticoagulant compounds. Symptoms may include a rash on the body, wheezing, swelling around the eyes, swelling of the lips and dizziness or weakness. Can they transmit diseases to humans? Disease transmission to livestock is another matter. Adult flies may pass a number of disease agents and nematode parasites to animals. Equine infectious anemia EIA , sometimes referred to as swamp fever, occurs in the southeastern United States and is mechanically transmitted to horses and other equines by horse fly bites. Symptoms in animals include lethargy, weight loss and sometimes death. Females usually deposit egg masses on wet soil or vegetation that overhangs water. Larvae are active in moist or wet organic matter and look similar to house fly maggots. Horse flies have from larval stages, depending on the species. The final

larval stage overwinters and then enters the pupal stage in the spring. The pupal stage only lasts about weeks after which the adults emerge in the late spring or early summer. Fertile females will lay their eggs on the underside of leaves, and in about days the larvae hatch out and drop from the leaf. Most horse fly species have only one generation per year, but others may take up to years to complete their development. Horse fly larvae vs deer fly larvae Horse fly larvae studied by field researchers feed on midges, crane flies and even other horse fly larvae. Because of their cannibalistic behaviors, horse fly larvae are usually found living alone. Deer fly larvae, on the other hand, usually live in groups. Pupae do not feed. Female horse flies must consume a blood meal in order to yield fertile fly eggs. One female can lay from eggs per year. Distribution Horse flies are found in most areas of the United States with more than various species. Prevention Tips Insect repellents are helpful, but even the best repellents are not overly effective. A better prevention option is to clothe and protect exposed parts of the body to reduce the likelihood of horse fly bites. Enter a zip code below to view local branches. Go Give us a call:

Chapter 2 : Through the Compound Eye | Ask an Entomologist

Click to read more about ASK KERMIT: Do Flies Have Eyes? a book about bugs by D. K. Sullivan. LibraryThing is a cataloging and social networking site for booklovers All about ASK KERMIT: Do Flies Have Eyes? a book about bugs by D. K. Sullivan.

Horse Fly Family tabanidae Horse flies are a particular pest to livestock. Relentless biting attacks by females can result in reduced weight gain in some animals. Male horse flies are mainly pollen and nectar feeders and are most active during daylight hours. Horse fly bites can be very painful for humans too. They have mouth parts that work like miniature knives, which they use to slash open the skin with a scissor-like motion. **Key Facts** Adults can be up to 25 mm long. Black to dark brown in color with green or black eyes. The males have contiguous eyes, which easily differentiates them from females where the eyes are widely separated. Horse fly bites can be very painful. **Lifecycle** Mating is initiated in the air and completed on the ground where the female then deposits an egg mass sometimes with a shiny or chalky secretion, which aids in water protection. Eggs are laid in masses ranging from to eggs on a vertical surface overhanging water or wet ground favorable to larvae development. The eggs hatch in 5-7 days. They overwinter in the larval stage and pupate during the spring and early summer. Adult life cycle is 30 to 60 days. **Bluebottle Fly Calliphora vomitoria** Bluebottle flies also known as Blow fly can often be seen hovering around garbage cans. These scavengers are attracted to pet feces and dead animals and as such are known carriers of disease. Their name originates from their iridescent colors that are similar to colored bottles. **Larva** Similar to the house fly larva in all respects except size. They take 7-12 days to mature. **Lifecycle** Eggs hatch 0-18 hrs partial development may occur within the female. Breeds in mostly meat derived substances, sometimes cheese. **Cluster Fly Pollenia rudis** Cluster flies are commonly found in quiet, undisturbed parts of your home, such as attics and wall voids. They require warm places to hibernate over winter. You may see a large group of cluster flies around a window, as they are attracted to the light on sunny winter days. **Key Facts** Dark grey-olive thorax clothed with crinkled golden-brown hairs. Wings overlap when at rest. **Lifecycle** Eggs laid in soil in late summer or early autumn. Larva develops in earthworms feeding on their host for several days. Then they molt and pupate in the soil. Development time from egg to adult is about 27 to 39 days. They live on sandy riverbanks with an open habitat free of shading trees. Females prefer to lay their eggs in damp soil or in the water. **Key Facts** Body has a pale grey color. **Life Cycle** The larvae can take up to two years to develop and live in loose sand. **Key Facts** Yellow-brown or mottled in color. Abdomen hangs down in flight, which is slow. They can breed in rotten fruit, unclean drains and even cleaning utensils. Develops to adult in 7-30 days. Adult lives 2-9 weeks.

Chapter 3 : Do flies have eyes? | Open Library

Kermit the Frog and Robin embark on a bug hunt, and explain the various types of insects and arthropods, from bees and ants to spiders.. Joe Ewers supplied the Muppet character art, while John Carrozza worked on the realistic insect illustrations.

Posted on February 25, by SciBugs Written by Nancy Miorelli Eyes are remarkable structures that have evolved independently at least three times. These three animals all have eyes but they all work in very different ways! The overall effectiveness and subsequent modifications to the compound eye is summarized very well by Nilsson. It is only a small exaggeration to say that evolution seems to be fighting a desperate battle to improve a basically disastrous design. A male Big Eyed Fly. Its entire head is a pair of eyes. That is, of course, if the organism needs to see. Eyes are usually the first things to disappear if you live in caves. All insects that have eyes have compound eyes. This Dobsonfly has both compound eyes and ocelli. Nancy Miorelli There are about , described species of described true flies Diptera with an estimated total number of fly species to be around , So, this is going to be very generalized and does not at all encompass every organism. What Is a Compound Eye? Nancy Miorelli The compound eye is nothing like the human eye. We have two eyeballs and in each one we have a lens that focuses the image on our retina. Cones help us see color and rods help us see in the dark. The optic nerve is the cable that runs from the eyeball “the data center” to our brain “the interpreter. The ommatidium structure PC: Each one is kind of like an eyeball in the fact that it has a lens which focuses light and has pigments opsins for detecting color. One advantage of this system is that the image is projected in each ommatidium right side up, unlike our eyes. This setup, for most insects, removes obvious blind spots and is part of the reason flies can see you coming and dodge your unsuccessful swatting attempts. Flies Make a Bad System Better An early estimate about the size of compound eyes humans would need to obtain the same resolution we have. Although, in reality, it would have to be bigger than this. You can just add more units. Some subterranean insects only have You can make bigger units. You can modify your units. Flies that rely heavily on their vision, for the most part, have cashed in on all of the options. In fact, this pattern is readily seen in two other families of flies, the Flesh Flies Sarcophagidae and the Blow Flies Calliphoridae. Male and female of a Blow Fly. True flies the order Diptera have their rhabdom split into seven parts. The rhabdom broken into its rhabdomeres. There are technically eight, but 7 and 8 sit on top of each other. They sacrifice depth perception and the ability to focus to see a lot of stuff wide-angle vision and perceive contrast. Therefore, something called visual acuity is very important. Basically, the greater their visual acuity the more detail the insect can see on an object. Obviously, the more detail you can see, the better. Some insects are at the maximum limits of their resolution so they have some other nifty tricks up their sleeves. This is where sight lines come in. Therefore, certain areas of their eyes are allocated to see things with greater acuity while sacrificing the image quality of other parts of their eyes. This helps them snatch their prey. Male flies, in addition to having bigger eyes, have more specialized acuity zones than their female counterparts. He literally stalks her. We can see about 10 million different colors with three types of cones. Insects and crustaceans use opsins to detect light. Mantis shrimp have 16 opsins and were previously thought to hold the world record, being able to see trillions of colors, until some dragonflies butted in. Certain species of dragonflies were found to have over 30 opsins, but we are uncertain of their specific ability to distinguish colors. Using the mantis shrimp , the color differentiation capabilities of the compound eye is being reconsidered. In both of these cases, these animals are fast predators and need to be able to distinguish edible things from not edible things. Their resolution may be worse than ours, but they can see harmful and damaging UV wavelengths. This is used by pollinators many of which are pollinators like hover flies! Insects can also see polarized light, and many use it to navigate and for mating. A flower photographed under white and UV light. The UV image shows the nectar guide for insects like a landing strip. Normally, the inside of the ommatidium is lined with pigment cells. This prevents light seeping into the adjacent ommatida. Usually this is good because the more light that floods in makes your resolution shoot down the tubes. This allows light from adjacent ommatidia to stimulate one rhabdom to make a better image. Generally day flying insects

have one rhabdom associated with one ommatidium. In night flying insects, one rhabdom can receive information from several ommatidia. Warrent et al, ; Found in *Physiological Systems in Insects*, Edited by Nancy Miorelli Many little gnats and mosquitoes are crepuscular meaning they fly at dawn and at dusk but flies generally have eye modifications for frolicking around in the sunlight. Specifically for gnats and mosquitoes, it gives them an extra 15 or so minutes before dawn and after sunset. Some Bizarre Modifications Prey Gazers: Most often seen in dragonflies but some flies have this as well , the top part of the eye is a darker color than the rest of the eye. Lots of flies have crazy color patterns on their eyes. For some it may play a part in mating. Horse Flies Tabanidae probably use it as a convenient color filter. Horse flies are blood feeders and the things they attack are big, bulky, grass feeders that are usually surrounded by lots of vegetation. By having green eyes, Horse Flies effectively put on green glasses that make the background appear grey and their hosts stand out from the background. Thomas Shahan CC by 2. Stalk Eyed Fly PC: However, insects and flies specifically have some pretty nifty tricks to compensate. *The Journal of Experimental Biology* Why cross the web: *Biological Journal of the Linnean Society* 94 2: *The American Naturalist* 1. Extraordinary diversity of visual opsin genes in dragonflies. *Physiological Systems in Insects*. Visual Acuity in Insects. Vision through colored eyes. Optics and evolution of the compound eye. Do linguistic categories affect color perception? A comparison of English and Turkish perception of blue. Ribak G and Swallow JG. Color in the eyes of insects. *Journal of Comparative Physiology*. Ommatidia of blow fly, house fly, and flesh fly: Russian blues reveal effects of language on color discrimination.

Chapter 4 : Common Types of Flies | Ehrlich Pest Control

Ask Kermit: Do Flies Have Eyes? A Book About Bugs by D. K. Sullivan; illustrated by Joe Ewers and John Carrozza. Published by Western Publishing Co. in [Racine, WI].

Tap here to give us a call: How do I get rid of gnats? They are really, really tiny and look like black dots. I bought a house spray and have been spraying about times a week. They are only in my kitchen at the base of my back door. What must I do? My home is new construction. Would this be a factor? If you have gnats in the house, it usually means the presence of one or both of these small flies: If the flies are small, black, and flying around windows or potted plants; then they are probably fungus gnats. These flies are the most common small fly in houses. They are small, delicate black flies that are weak flyers and often collect at windows. The immature stages are small and maggot-like, but with dark brown heads. They live in the soil of potted plants. The immature stages feed on the decaying organic material in the soil. They generally do no harm to the plant roots. The larvae are common in the moist soil of the plants that have been overwatered and the soil remains wet or very moist. This may occur in the fall when plants are brought inside for the winter, or in the winter when house plants or office plants are overwatered. Read more about gnat control. If the flies are small, light brown and seem to be attracted to places in the kitchen, then they are probably fruit flies. To control these flies you have to start with the removal of overripe fruit and vegetables; this is where the larvae live. To remove the adults, which can live for a few weeks, you can place a small amount of vinegar in a shallow pan, and place this pan in locations where the flies are common. They are attracted to the vinegar and some may get trapped in the liquid, and you can use an aerosol to spray the others that are waiting there. Read more about fruit fly control from Orkin. If the flies are small, light brown to black, and have a rather jerky or erratic walking behavior when they are on a surface they run in a zig-zag rather than a straight line then they may be phorid flies. These are sometimes called sewer flies. They are similar in size to fruit flies, but the walking separates them, and they seem to be active at night, while fruit flies are not. Phorid flies usually have a direct connection to a broken sewer line inside or outside the house. If these are the flies you have, it is best to get the sewer or septic tank system looked at. Read more about phorid fly control [Phorid fly illustration](#) Enter a zip code below to view local branches. The Orkin Man used the information above to also answer the following questions submitted by Orkin. I live in the area, and I have a BIG problem with gnats. What can I do? I have small black flies in my home. I notice them in the bathroom and on the window sills. We recently bought two new house plants and it seems that most of the flies are in the same room. I have done research, I think they are gnats or fruit flies no fruits lying exposed. Can you help me identify what type of flies I may have? Also, what measures can I take to get rid of them? How can I kill gnats? How much is your service usually? I have gnats, I think, and I want to know how to get rid of them or how much it would be for you to get rid of them. They are out of control. We have these pesky, small flies. We have no fruit plants. I have these tiny green bugs with wings that I keep finding in one room in my house. I find them dead in the windows, around the floors and on the top of the table. They look like a super tiny mosquito. These are probably midges that are active this time of year outside and are attracted to lights at night – so it might be helpful to turn off outside lights. I have a ton of them on my front door and around my windows at night. I have these small flies in my bathroom and kitchen areas. They are very small and they show up in bunches and die within a day. I clean the areas but they are back the next day in small amounts and build up. My apartment has been invaded by these tiny flying insects I think they are gnats. How do you control little flying gnats? What can we do to get rid of gnats in our office? My apartment has become a home to these tiny flying insects. They buzz by my ear, making that tiny high-pitched buzzing sound. I have killed at least 30 of them, but they are next to impossible to catch and kill. I first started noticing them in my bathroom, but now they have taken over the entire place. I want to have someone come out and get rid of them! What are they, and what should I do? I have a problem with tiny flying gnats. They are very small – smaller than fruit flies. I have them year round. They are attracted to light and white surfaces. I live in Ohio and there are woods about 50 feet from my house. Where do gnats come from? Do they live in the fruits? Our Pest Library Find out more about your suspects Our Pest Library is full of

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up-to-date information on termites, ants, and cockroaches as well as more than 25 common household pests. Find out more information about their behavior, habits, and other cool facts. For service and billing questions please message us here.

Chapter 5 : Do flies have eyes? : a book about bugs (Book,) [www.nxgvision.com]

Auto Suggestions are available once you type at least 3 letters. Use up arrow (for mozilla firefox browser alt+up arrow) and down arrow (for mozilla firefox browser alt+down arrow) to review and enter to select.

Gwen Pearson on March 20, This question was relayed to me by Zoologix from a young reader. The answer is yes, insects do have eyes-they even have two kinds of eyes! The first kind of eye that insects have are called Ocelli. This photo of a wasp head shows the characteristic arrangement of 3 ocelli in a triangle between the larger compound eyes. Most adult insects have two compound eyes, just like we humans have two eyes. Both kinds of insect eyesâ€”ocelli and compound eyesâ€”function to detect light and movement, just like our eyes. Unfortunately, there are so many different kinds of insects, and kinds of insect eyes, that a discussion of them all without boring everyone, or sounding like a textbook, is going to be impossible. Insect compound eyes are very differentâ€”but also similarâ€”to human eyes. Human eyes are mostly liquid, and use the iris to adjust how much light gets in. You can see this at work if you look at a bright light and then away when looking in a mirrorâ€”your pupil will get smaller and bigger, depending on the light. Insect eyes are mostly solid, and are made up of many individual parts. They use pigments traveling up and down inside the eye to regulate how much light gets in. This can make some really neat patterns on the insect eye. Freaky-cool insect eye modifications: Whirligig beetles Gyrinidae actually have 4 compound eyes! Gyrinids live and swim on the surface of ponds and streams. One set of eyes is for seeing above the water, and one is for seeing below the water. The red line in this photo shows where the water line is when the beetle swims Oddly enough, these beetles only appear to have 4 eyesâ€”each of their eyes splits in half during development. If you had 2 extra eyes, where would you put them? Another neat variation on the basic plan is found in dragonflies. Their eyes just about cover their whole head! Our last example of cool insect eyes is found in a group of flies called Diopsidae. They have their eyes out on stalks! Some additional insect vision resources:

Chapter 6 : ASK KERMIT: Do Flies Have Eyes? a book about bugs by D. K. Sullivan | LibraryThing

Ask Kermit: Do Flies Have Eyes By Joe Ewers - FictionDB. Cover art, synopsis, sequels, reviews, awards, publishing history, genres, and time period.

Chapter 7 : Eyes give Å° vision : Chameleon - AskNature

*Do Flies Have Eyes: A Book About Bugs (Ask Kermit) [D. K. Sullivan, Joe Ewers, John Carrozza] on www.nxgvision.com *FREE* shipping on qualifying offers. Introduces the various kinds of insects and how they live, and discusses spiders, the other creatures sometimes called bugs.*

Chapter 8 : Ask Kermit/Flies/Eyes (Ask Kermit) | Open Library

Get this from a library! Do flies have eyes?: a book about bugs. [D K Sullivan; Joe Ewers; John Carrozza] -- With Kermit, the frog, as their guide, children will enjoy finding answers to many questions about familiar bugs.

Chapter 9 : Ask Kermit | Awards | LibraryThing

ASK KERMIT: All About the Human Body by D. K. Sullivan ASK KERMIT: Do Flies Have Eyes? a book about bugs by D. K. Sullivan ASK KERMIT: Does Cheese Grow on Trees? a book about food by Michael Teitelbaum.