Life History of House Fly *Musca domestica* Linnaeus (Diptera: Muscidae), its Involvement in Diseases Spread and Prevention of Vector

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Abstract

The house fly, scientifically known as *Musca domestica* Linnaeus, is a well-known cosmopolitan insect that interact with our lives. The house fly *M. domestica* accounts for 91% of all flies that live within human habitation which is the reason that they are known as house fly. Of both farm and home, it is the most common species found on hog and poultry farms, and horse stables and ranches. Not only are house flies a nuisance, but excessive fly populations are an irritant to inhabitants and farm workers when these are nearby to human habitations to create public health problems. Indoors, they rest on floors, walls and ceilings during day, and outdoors, they can rest on plants, ground, fence wires and garbage cans. Night resting places are usually near to sources of food and 5 to 15 feet off the ground, and they prefer corners and edges or thin objects to rest on. House fly eggs are laid in almost any warm, moist material that may supply suitable food for the larvae such as a wide variety of food, including human food, animal food, carcasses, garbage and excrement. The female may lay a total of five to six batches of 75 to 100 eggs that hatch in 12 to 24 hours. Houseflies pass through the egg, larval and pupal stages in approximately 10 days, after which adult flies emerge and the average life span for a house fly is less than one month. House flies are major carriers of disease and they are known to transfer over 100 pathogens resulting in ailments, including typhoid fever, tuberculosis, cholera, dysentery, poliomyelitis, yaws, anthrax, tularemia and leprosy. House flies are covered with small hairs that serve as taste organs and collect the pathogens on their legs and mouths when feeding on feces, trash and other decaying material. Flies regurgitate and excrete wherever they come to rest and thereby mechanically transmit diseases. Measures to control flies transmitted disease are reducing or eliminating breeding sites for flies, reducing sources that attract flies from other areas, preventing contact between flies and disease-causing agents, and protecting of foods well as eating utensils and people from making contact with flies. House flies can be a real nuisance when they are flying around, so it is important to get rid of them. House fly control involves several steps, and the first step is identification, which requires different control methods. It is very important to identify places where flies have been depositing their eggs and breeding site must be cleaned up or removed otherwise flies will continue to be a problem. Next step is to eliminate adult flies and depending on the situation, it may be necessary to use fly bait, traps or an attractant application. Fly traps have long been favorite devices and there are many forms of fly traps, from disposable fly traps to electronic fly light traps with replaceable light bulbs and glue boards. Other steps in house fly control are exclusion and sanitation, and after these measures, householders can use insecticides that come in residual forms, aerosols, fogging materials and baiting forms.

Keywords: *Musca domestica*, house fly, vector, Pathogen, disease.

1. Introduction

The common house fly *Musca domestica* Linnaeus (Diptera: Muscidae occurs on all inhabited continents, in all climates from tropical to temperate, and in a variety of environments ranging from rural to urban. It is commonly associated with animal feces, but has adapted well to feeding on garbage, so it is abundant almost any place where people live. The flies are inactive at night, with ceilings, beams and overhead wires within buildings, trees, shrubs, various kinds of outdoor wires and grasses reported as overnight resting sites. In poultry ranches, the nighttime, outdoor aggregations of flies are found mainly in the branches, and shrubs, whereas almost all of the indoor populations generally aggregated in the ceiling area of houses. According to a study conducted, breeding sites suitability in descending order are horse manure, human excrement, cow manure, fermenting vegetable and kitchen waste. However, another study found that structures containing swine, horse, sheep, cattle and poultry varied in fly abundance, with swine facilities containing the most and poultry the least. Fruits and vegetables cull piles; partially incinerated garbage and incompletely composted manure also are highly favored sites for breeding. Nutrient-rich substrates such as animal manure provide an excellent developmental substrate. Very little manure is needed for larval development, and sand or soil containing small amounts of degraded manure allows for successful belowground development. When the maggot is full-grown, it can crawl up to 50 feet to a dry, cool place near breeding material and transform to the pupal stage (Zhu et al., 2012; Sarwar 2015 a, 2015 b).

2. Life Cycle and Description

The house fly has a complete metamorphosis with distinct egg, larval or maggot, pupal and adult stages. The house fly overwinters in either the larval or pupal stage under manure piles or in other protected locations. Warm summer conditions are generally optimum for the development of the house fly, and it can complete its life cycle in as little as seven to ten days. However, under suboptimal conditions the life cycle may require up to two months. As many as 10 to 12 generations may occur annually in temperate regions, while more than 20 generations may occur in subtropical and tropical regions. Adult of the house fly is 6 to 7 mm long, with the female usually larger than the male. The female and can be distinguished from the male by the relatively wide space between the eyes (in males, the eyes almost touch). The head of the adult fly has reddish-eyes and sponging mouthparts. The thorax bears four narrow black stripes and there is a sharp upward bend in the fourth longitudinal wing vein. The abdomen is gray or yellowish with dark midline and irregular dark markings on the sides while the underside of the male is yellowish. Adults usually live for 15 to 25 days, but may live up to two months. Without food, they survive only about two to three days and longevity is enhanced by availability of suitable food, especially sugar. Access to animal manure does not lengthen adult's life and they live longer at cooler temperatures. They require food before they will copulate and copulation is completed in as few as two minutes or as long as 15 minutes. Oviposition commences four to 20 days after copulation and female flies need access to suitable food (protein) to allow them to produce eggs, and manure alone is not adequate. The potential reproductive capacity of flies is tremendous, but fortunately can never be realized. Scientists have calculated that a pair of flies beginning reproduction in April may be progenitors (under optimal conditions and if all are to live) of 191,010,000,000,000,000,000 flies by August (Lynsk, 1993; Larraín et al., 2008).
The white egg of house fly is about 1.2 mm in length, laid singly but are piled in small groups. Each female fly can lay up to 500 eggs in several batches of 75 to 150 eggs over a three to four day period. The number of eggs produced is a function of female size, which itself is principally

a result of larval nutrition. Maximum egg production occurs at intermediate temperatures of 25 to 30°C. Often, several flies will deposit their eggs in close proximity, leading to large masses of larvae and pupae and eggs must remain moist otherwise they will not hatch. Early instars larvae are 3 to 9 mm long, typical creamy whitish in color, cylindrical but tapering toward the head and the head contains one pair of dark hooks. The posterior spiracles are slightly raised and the spiracular openings are sinuous slits which are completely surrounded by an oval black border. The legless maggot emerges from the egg in warm weather within eight to 20 hours. Maggots immediately begin feeding and developing in the material in which the egg is laid. The larva goes through three instars and a full-grown maggot about 7 to 12 mm long, has a greasy, cream-colored appearance. High-moisture manure favors the survival of the house fly larva. The optimal temperature for larval development is 35 to 38°C, though larval survival is greatest at 17 to 32°C. Larvae complete their development in four to 13 days at optimal temperatures, but require 14 to 30 days at temperatures of 12 to 17°C. The pupal stage is about 8 mm long and passed in a pupal case formed from the last larval skin which varies in color from yellow, red, brown to black as the pupa ages. The shape of the pupa is quite different from the larva, being bluntly rounded at both ends. Pupae complete their development in two to six days at 32 to 37°C, but require 17 to 27 days at about 14°C. The emerging fly escapes from the pupal case through the use of an alternately swelling and shrinking sac called the ptilinum, on the front of its head which it uses like a pneumatic hammer to break through the case (Lynsk, 1991; Cickova et al., 2012).

3. Damage and Medical Importance

Flies commonly develop in large numbers in poultry manure under caged hens, and this is a serious problem requiring control. The most important damage related with this insect is the annoyance and the indirect damage produced by the potential transmission of pathogens (viruses, bacteria, fungi, protozoa, and nematodes) associated with fly. Pathogenic organisms are picked up by flies from garbage, sewage and other sources of filth, and then transferred on their mouthparts, through their vomitus, feces and contaminated external body parts to human and animal food. Of particular concern is the movement of flies from animal or human feces to food that will be eaten uncooked by humans. Also, when consumed by flies, some pathogens can be harbored in the mouthparts or alimentary canal for several days, and then be transmitted when flies defecate or regurgitate. In situations where plumbing is lacking, such as open latrines, serious health problems can develop, especially if there are outdoor food markets, hospitals, or slaughter houses nearby. Among the pathogens commonly transmitted by house flies are *Salmonella, Escherichia, Enterococcus, Chlamydia*, and many other species that cause illness. These flies are most commonly linked to outbreaks of diarrhea and shigellosis, but also are implicated in transmission of food poisoning, typhoid fever, dysentery, tuberculosis, anthrax, ophthalmia, and parasitic worms (Forster et al., 2009).

4. Economic Threshold

The threshold density for determining of when to control flies depends on the area where the control measures will be taken. In general, at homes the threshold is very low and control actions are taken with few flies. The complaint threshold density of the house fly at waste management sites may be 150 individuals per flypaper per 30 minutes. House flies are monitored with baited

traps, sticky ribbons, or spot cards on livestock facilities. Spot cards are 3-inch by 5-inch white index cards attached to fly resting surface. A minimum of five cards should be placed in each animal facility and left in place for seven days. A count of 100 or more fecal or vomit spots per card per week indicates a high level of fly activity and a need for control. Tolerance of flies depends greatly on circumstances, and in sensitive environments such as food preparation and packing facilities, restaurants and hospitals, even small numbers of flies cannot be tolerated. In the context of livestock or poultry production, however, some flies are inevitable. Serious problems occur when cities or suburban development occur near poultry production facilities, as residents usually will not tolerate the large numbers of flies emanating from such facilities (Barnard and Geden, 1993).

5. Types of Diseases Transmitted by Housefly

House flies mainly spread infectious diseases and these are caused by viruses, bacteria, protozoa and even nematodes (worms like the roundworm or threadworm). There are over 100 pathogens (disease-causing organisms) that are associated with house flies. Unlike other insects, such as mosquitoes or ticks, these pathogens do not specifically require an insect vector. The house fly plays no specific role in the life cycle of these pathogens, but the fly is simply a carrier in some instances. Diarrheal illnesses are some of the more common diseases spread by house flies. This includes bacteria such as *Shigella*, *Enterococcus* and related bacteria which commonly cause diarrheal illnesses and are found in the stool of peopled with these illnesses (Szalanski et al, 2004). Some of the diseases spread by house flies include:-
Mechanical transmission of organisms on its hairs, mouthparts, vomitus and feces:

i. **Parasitic diseases:** cysts of protozoa e.g., *Entamoeba histolytica*, *Giardia lamblia*, and eggs of helminths, e.g., *Ascaris lumbricoides*, *Trichuris trichiura*, *Hymenolepis nana* and *Enterobius vermicularis*.
ii. **Bacterial diseases:** typhoid, cholera, dysentery, pyogenic cocci, etc. House flies have been demonstrated to be vectors of *Campylobacter* and *E. coli* O157:H7 using PCR. House flies can be monitored for bacterial pathogens using filter paper spot cards and PCR
iii. **Viruses:** enteroviruses, poliomyelitis, viral hepatitis (A & E) etc.

It is evident that flies can spread many infectious diseases indiscriminately, but fortunately, these diseases are not frequently spread by flies. Other routes are usually more common and effective for their transmission and the house fly is able to spread disease through several routes. It does not bite like the horse fly or tsetse fly in order to inject the pathogen into a person. Instead disease-causing agents are spread on its body, in its mouth parts or through its vomitus and feces. House flies feed indiscriminately on a wide range of organic matter, from feces to food (fruits, vegetables and meat). It is through this contact with the item to that it is feeding upon and even by direct contact with people that disease-causing agents are acquired and passed on. The infective dose for each pathogen varies greatly and sometimes just a few microbes are required to cause serious disease. The contaminated matter containing these microbes and even just the microbes itself, that are acquired from one source may adhere to the fly or be passed out in its vomitus and feces. The contaminated matter and microbes are then passed onto food once the fly lands and/or feeds on it. The situation is further exacerbated if the food is not refrigerated

allowing the inoculation dose of microbes to multiply before the food is eaten (Seymour and Campbell, 1993; Sheri et al., 2007).

6. Prevention of Housefly Diseases

Extensive measures to control fly populations does not seem like a concern for the average urban dweller in a developed nation. However, it is important to do so even though strong insecticides for mass spraying, dumping toxic materials in potential breeding sites and widespread distribution of fly traps are not usually necessary. Simple measures in the home front can prevent flies from causing serious diseases through implementing of three strategies (Hedges, 2004; Sarwar, 2015 c).

6.1. Breeding Sites

Although sewage is not a problem for urban dwellers in developed nations, but animal feces (dung) can still be an issue, especially with livestock. Pet excrement that is not properly disposed of can serve as breeding sites and attract flies. It may not always be possible to clean out all remnants of pet feces, especially in a carpeted home but regular washing of the carpets and use of domestic insecticides over the area can help significantly. The same applies for organic matter that is not discarded by the proper channels. Garbage disposal units have played a significant role in preventing of fruit, vegetable and food leftovers from posing a threat in regular rubbish bins. When not available, organic matter should be sealed tightly in rubbish bags before disposing. Compost heaps in the garden, especially where manure is used, can also serve as another attraction source and breeding site for flies.

6.2. Contact between Flies and Pathogens

A housefly only needs a few seconds to make contact with a source of pathogens in order to transport it elsewhere. Feces are one of the substances that are laden with a wide range of microbes, especially if it is passed from a person who is ill. Modern toilets have eliminated this risk to a large degree in developed nations. However, soiled baby diapers are still a risk if not discarded properly. Older people, who are debilitated, like the infirm, may also be a source and caregivers need to ensure that any excreta are cleaned as soon as possible. Adult diapers may be useful in this regard but it has to be disposed of accordingly. Open wounds and sores and infected eyes can also serve as another source. Animal slaughter may pose another problem, particularly in areas where hunting is a common practice. Quick slaughtering and discarding of the remnants appropriately, like burying entrails, can reduce this risk.

6.3. Contact with People, Food and Eating Utensils

House flies cannot be completely eradicated and even the best efforts in the home can reduce fly populations but it can quickly return. In order to prevent diseases, the fly's contact with people, food and eating utensils should therefore be prevented or interrupted. Self-closing doors and nets/ screens over doors and windows are very effective in preventing of flies from entering the home. Even electric fans blowing air over a doorway can impede flies from entering the home. When these measures are unable to stop flies entirely, then aerosol sprays and fly traps may be

alternatives. The insecticide sprays can kill some flies and repel others, and traps can attract flies more so than food in the home and eventually kill them.

7. Managements to Get Rid of House Flies

There can be four basic principles of pest management important in controlling house flies: sanitation, exclusion, non-chemical measures and chemical methods as are listed in order of lasting effectiveness.

7.1. Sanitation

Sanitation is the first measure of defense, even though there are various traps and sprays that are used to kill flies, so, it is necessary to eliminate the source in order to eliminate them. Whenever possible, food and materials on which the flies can lay their eggs must be removed or destroyed, which can isolate the egg-laying adult. Killing of adult flies may reduce infestation, but elimination of breeding areas is necessary for good house fly control management. Garbage cans and dumpsters should have tight-fitting lids and be cleaned regularly. Flies cannot breed in large numbers if their food sources are limited, so, do not allow such materials as manure, garbage, grass clippings, weed piles or other decaying organic matter to accumulate. Keep trash cans clean and tightly covered. Be careful not to wash garbage cans where the rinse water might drain into the soil as flies can breed in soil full of organic matter. Dry out maggoty garbage or dispose of it in fly proof containers or landfills. Since the house fly can complete its life cycle in as little as seven days, thus, removal of wet manure at least twice a week is necessary to break the breeding cycle. Wet straw should not be allowed to pile up in or near buildings as straw is one of the best fly breeding materials, so, it is not recommended as bedding. Spilled feed should not be allowed to accumulate, but should be cleaned up two times a week. Ordinarily, fly control from 1 to 2 km around a municipality prevents house fly infestations (Kaufman et al., 2001).

All garbage receptacles should be located as far from building entrances as possible. For control at waste disposal sites, refuse should be deposited onto the same area as inorganic wastes to deteriorate the capacity of breeding resources, or the disposed refuse should be covered with soil or other inorganic wastes (15 cm thickness) on every weekend or every other weekend. Around homes and businesses, screening or covering of windows, doors or air doors, and trash containers proves useful in denying access of flies to breeding sites. Packaging household trash in plastic bags and burying trash under at least 15 cm of soil and in sanitary landfills also helps to eliminate breeding. Trash cans and dumpsters should have tight-fitting lids; failing this, slow release fumigant insecticide dispensers are sometimes installed on the inside of the lids to reduce fly survival. In agricultural areas, manure can be scattered over fields so that it can get quickly dries and becomes unsuitable for egg and larval survival. Composting of manure can be effective if the compost is properly maintained, including regular turning. Manure can also be liquefied and stored in lagoons anaerobically, though at some point the solids need to be separated (Kaufman and Rutz, 2002).

Fly traps may be useful in some fly control programs when enough traps are used, if they are placed correctly, and if they are used both indoors and outdoors. House flies are attracted to white surfaces and to bait that give off odors. Indoors, ultraviolet light traps can collect the flies inside an inverted cone or kill them with an electrocuting grid. One trap should be placed for every 30 feet of wall inside buildings, but not placed over or within five feet of food preparation

areas. Recommended placement areas outdoors include near building entrances, in alleyways, beneath trees, and around animal sleeping areas and manure piles. Openings to buildings should be tightly screened with standard window screen, thereby denying entrance to flies. Traps can be baited with molasses, sugar, fruit or meat, and often are used in combination with a device that captures the attracted flies. The sex pheromone (Z)-9-tricosene also functions as an aggregation pheromone, and is called muscalure. Muscalure is formulated with sugar as commercially available fly bait for local population suppression, as well as an enhancement for population monitoring. Ultraviolet light traps can be used to assess population levels, but also serve as a non-chemical control technique that can be used indoors in both agricultural and non-agricultural areas. They normally function by electrocuting flies that enter the trap, though those used in restaurants typically have a sticky panel. Flies do not orient to traps from a great distance, so several are normally needed for them to be effective. Placement should include within 4 to 8 m of entryways and within 1.5 m of the floor to take advantage of fly flight behavior. They should be operated continuously, although they are most effective when the room lights are off (Kaufman et al., 2005).

7.2. Exclusion

Flies can be kept outside of homes by the use of window and door screens, and make sure screens are tight-fitting without holes. Keep doors closed with no openings at the top or bottom. There should be no openings around water or gas pipes or electrical conduits that feed into the building and caulk or plug any openings. Ventilation holes can be a way for flies to enter a building; however ventilation is important to maintain adequate air circulation within the building, but screening must be used to exclude flies (Sarwar and Salman, 2015).

7.3. Non-chemical Measures

The use of such devices as ultraviolet light traps, sticky fly traps, fly swatters, baited fly traps, etc., can eliminate many flies from inside a home. A fly swatter is an economical control method for the occasional fly (Sarwar, 2015 d).

7.4. Chemical Control

Indoors, the control of flies includes automatic misters, fly paper, electrocuting and baited traps that can be used in milk rooms and other areas of low fly numbers. When the house fly is a mayor pest in commercial food production facilities, the control of this insect is by the application of adulticides, or larvicides to directly or indirectly suppress adult densities and residual wall sprays can be applied where the flies congregate. Outdoors, the control of flies includes the use of boric acid in the bottom of dumpsters, treatment of vertical walls adjacent to dumpsters and other breeding sites with microencapsulated or wet able powder formulation, and the use of fly baits near adult feeding sources. Manure can also be treated with an insecticide, though this method is highly discouraged as it interferes with biological control of flies, often resulting in a rebound of the fly population. More commonly, insecticides (especially insect growth regulators) can be fed to livestock, and residual insecticide in the manure inhibits fly breeding. In animal facilities, insecticides are often applied to the favored resting places of adults, or bait stations established to poison adults with either solid or liquid formulations.

Continuous exposure of flies to insecticides has led to development of insecticide resistance to many insecticides. Resistance to permethrin develops more rapidly in fly populations from farms on a continuous permethrin regime than in farms in which permethrin and diclorvos have been alternated. Exterior applications of insecticides may offer some relief from infestations where the task of completely sealing the exterior is difficult or impossible. Applications should consist of a synthetic pyrethroid (i.e. deltamethrin, cyfluthrin, lambda-cyhalothrin, cypermethrin, sumithrin or tralomethrin) and should be applied by a licensed pest control operator when flies begin to appear. Unfortunately, because insecticides are broken down by sunlight, the residual effect of the material will be greatly decreased and may not kill flies much beyond several days or a week. If flies are numerous inside of home, persons can use a space spray (aerosol) labeled for flying insects. Most space sprays contain pyrethrins for quick knockdown. Aerosols give temporary relief, however if there are many flies inside, persons would be wise to find out why they are there and take steps to relieve the problem through sanitation and exclusion (Scott et al., 2000; Sarwar, 2015 e).

7.5. Biological Control

Due to the increasing incidence of insecticide resistant house fly populations, rising costs of insecticides and a growing public concern about actual or potential problems associated with insecticides, interest in alternative house fly control strategies has increased. Natural biological suppression of the house fly results primarily from the actions of certain chalcidoid wasps (Hymenoptera: Pteromalidae), of which many species have been associated with house fly around the world. Among the more important are *Muscidifurax* and *Sphalangia* species. Ichneumonids and other parasitoids, as well as some predatory insects especially histerids (Coleoptera: Histeridae) and staphylinids (Coleoptera: Staphylinidae), also contribute to fly mortality, but under optimal fly breeding conditions the house fly quickly builds to high numbers. The more important in poultry facilities are the wasps *M. raptor* and *S. cameroni*. Leaving a layer of old manure in the pits when manure is removed might enhance or stabilize the suppression of the house flies densities by parasitoids and predators. Augmentative biological control (Periodic release of parasitoids during winter and spring, and following manure removal) using insectary-reared parasitoids have been quite successful in some dairies, feedlots and poultry house situations. The species most often released for biological suppression are *M. raptor*, *M. raptorellus*, *S. endius*, and *S. nigroaenea*. These different species function better under different conditions, some performing better under cooler or warmer conditions, while others parasitizing flies near the surface or deeper in the pupation medium. The tests showed that when house fly populations occur near the surface on the drier periphery of the manure, the conditions favor parasitism by *M. raptor*, but *w*hen the flies pupate at greater depths the conditions favor *S. cameroni*. The releases conducted with *S. endius* showed that they could successfully parasitize pupae, both above and below the soil surface. The larva of the black dump fly, *Hydrotaea* (*Ophyra*) *aenescens*, is also regaining popularity as a biological control agent for controlling house flies on poultry farms without the use of pesticides. The adult black dump fly is similiar in appearance to the adult house fly (Hogsette et al., 1993; Hogsette, 1996; Watson et al., 2001).

8. Integrated Fly Control

Integrated control of the house fly is not yet a reality however, the refinement of selective application procedures, based on more detailed knowledge of fly behavior, should be pursued. Concurrently, more intensive investigations on the manipulation and propagation of biological control agents against the house fly are needed. Integrated fly control programs for houses are based on the succeeding strategy, selective applications of insecticides against the adult, start insecticide control measures early in the spring before flies appear and repeat as frequently as needed through the warm months, the manure is left undisturbed throughout the warm months when fly breeding may occur, and the manure should be removed once very early in the spring before any flies appear. But, it is determined that larviciding of the manure with nonselective insecticides is detrimental to mite predator *Macrocheles rnuscaeclornesticae* (Scopoli) (Acarina: Macrochelidae), of the immature stages of the house fly and should not be practiced. Selective application methods for adult fly control are preferable and efforts to refine these methods should be intensified. The more commonly used control measures for house flies are sanitation, use of traps, and insecticides, but in some instances integrated fly control has been implemented and the use of biological control in fly management is still at a relatively early stage (Rutz et al., 2001).

9. Fascinating Particulars about Houseflies

The relationships of houseflies with human beings are one of the factors that are posed and have resulted to their dispersal. The feeding process of houseflies is a relatively interesting one; with these insects restricted to the consumption of liquids, their feeding habits revolve around the fly's secretion of saliva onto selected food items, which are then sucked up through the proboscis. Houseflies are usually ready to breed within five days of reaching maturation, with the copulation process lasting anywhere between two and fifteen minutes and initiated once the fly has been properly fed. The life of a housefly will end naturally following ordinary processes of degradation, unless the advent of death is speed up by a lack of food or the presence of cold conditions, though humans can prove just as effective in ensuring their termination. Houseflies can be useful especially in waste management. The ability of their larvae to feed on decaying organic matter can be used to recycle nutrients that are in nature. Studies show that an approach can be used to control the high amount of waste in the environment. Although the approach has not been fully exploited, the chances of using the insects would be highly beneficial. Humans have also used harvested maggots as feed for animals as the maggots have nutrients that are good for the animals especially in the production of broiler chickens. Flies are also interesting because they are only active during the day and persons cannot see a fly during the night unless it is for some strange reasons. The flies are active only when the sun is up and get inactive when the sun goes down. Probably everyone has a relationship with houseflies and these are everywhere in our homes and in extension in our lives. The nature of the relationship between humans and the flies is not cordial and they will get a hint whenever there is something for them within our house. The housefly has fascinated interest in biology mainly because of the sex determination of the flies. The housefly is an interesting creature because it exhibits many different mechanisms for sex determination. House flies are able to move their wings 200 times per second and can fly at the speed of 5 miles per hour. House flies defecate every couple of minutes and this is one of the factors that facilitates transmission of diseases. Houseflies are solitary creatures, like the rest of the insect world, males and females do not stick together after mating and unlike nesting insects, females do not care for or protect eggs (Dubendorfer et al., 2002;Nazni et al., 2005; Hwangbo et al., 2009).

10. Conclusion

Peoples can find house flies pretty much far and wide where there are humans or animals. Flies like things such as garbage, manure and anything else that is left out in a warm environment. House flies do not feed on human body, but they get their nutrients from spitting saliva on their food, which liquefies it so they can suck it up with their sponge-like mouths. Once the adult house fly hatches from the pupal stage, it has an approximate life span of 15 to 30 days. Females are able to start producing eggs after two days of life and will continue to lay eggs for about a month. House flies can travel up to six miles in 24 hours, but they usually prefer to stay close by their breeding ground. The easiest way to keep flies out of our home is to keep things clean, do not leave food lying around, make sure to take out the garbage on a regular basis and wipe up messes right away.

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