

Administrative Summary for Insects/Rodents/Birds/Pests

1. Bees/Wasps/Yellow Jackets

- a. Swarming bees are an emergency due to the danger of repeated stings or sensitivity of certain students. Bring everyone inside until the danger is passed. Although pesticide regulations require posted for 72 hours before spraying an insecticide, there is an exception for emergencies. If you believe you have an emergency, contact the county Ag commissioner for permission to spray immediately. If the county Ag commissioner is not available, document the emergency condition and spray (assuming spraying is the best response to the situation).
- b. Regular bee infestations are not considered emergencies.
- c. If there are students on site that are known to be allergic to bees and have provided the school with Epi-pens, ensure that several employees know where they are kept and how to use them.

2. Snakes

- a. Snakes are often found on school sites. Regardless of the species, treat any snakebite as an emergency situation. Call 911. Get as much information regarding the snake as possible: size, coloring, speed, behavior to provide to the ER doctor. Don't suck out poison, apply tourniquets, use ice, or make incisions. Just keep the victim quiet with the bite site lower than the heart.
- b. Do not allow students to approach a snake. You may have staff observe from a distance while animal control is called in. If need be, evacuate the area/building until the snake has been removed. If the snake is an immediate hazard and you cannot wait for animal control, remove the snake according to accepted procedures (see the backing documentation in this section).

3. Spiders

- a. Spiders, even black widows, are not an emergency situation. They can be handled according to IPM procedures. Emergency spraying is not an appropriate response.

4. Rats/Mice/Squirrels/Gophers

- a. Rodents spread disease. If there is a large infestation, consider evacuating the room until an exterminator has cleared the room for use.
- b. For small infestations (the occasional dropping observed), maintenance should handle this according to IPM.
- c. If there is a rodent bite, send the victim to the ER. Rodents do not normally carry rabies but may carry other diseases.

5. Bats

- a. Bats are protected animals and may not be killed.
- b. Bat guano can be hazardous to inhale in large amounts. If there is an infestation, use bat exclusion principles to exclude the bats from the nesting area. Cleanup will require training and protective equipment. Contact the JPA for guidance.
- c. Bats can carry rabies. Bats active during the day, found in odd places (in a room or on the grass), or cannot fly is likely to be rabid. Any bat bite should command immediate medical attention.

6. Birds

- a. Many nesting birds, such as swallows, are protected and their nests may not be disturbed once they are in place. Before removing nests, check with the JPA or the county Ag office.
- b. It is usually OK to use passive techniques (exclusion) to deal with bird problems.
- c. If a dead bird is found, put on gloves and put the bird in a plastic bag. Before disposing of it in the trash, call the county Ag office to report it. They may want the carcass.

Insects/Rodents/Birds/Pests Summary for M&O

1. General Animal Concepts

- a. Always maintain your personal safety.
 - i. Animals carry disease. It is on their fur, in their droppings, and their food can be contaminated or decomposing. Any infestation is a health risk, especially for younger children.
 - ii. Treat all bites as a serious incident. Mammals can carry rabies. If you are bitten, try to capture or kill the mammal for a rabies autopsy.
 - iii. Don't handle snakes unless you have had training in doing so. Use a garden hose to spray them from a distance. They will move away from the water. See the backing information for more information on removing snakes.
- b. When dealing with pests, consider an exit route before you do anything.
 - i. Often bees will attack quickly and you will need to retreat quickly.
 - ii. Never address pest issues while on a ladder.
 - iii. Be aware that if pests such as bees are stirred up, everyone in the area is put at risk. Be sure the area is secured and all students are out of harm's way before dealing with this type of threat.
- c. When dealing with pests, consider wearing protective equipment such as long sleeves, heavy boots, hats, thick gloves, and whatever may be appropriate for the situation.

2. Protected Species

- a. Most species of migratory birds are protected under federal law. There is a list here: <http://www.fws.gov/migratorybirds/intrnltr/mbta/mbtandx.html>
 - i. Protection is afforded to the birds, the nests, and the eggs.
 - ii. Prevention is the best way to deal with protected species problems (make it unattractive for nest-building). See the IPM website for ideas.
 - iii. After the protected birds (like swallows) leave, their nests are often used by other birds or insects. Remove the nests after the protected birds leave.
 - iv. Bird droppings can cause a respiratory disease if they are dried and inhaled. Clean up droppings routinely.
- b. Bats are protected. Prevention is the best way to handle them, but once they have taken up residence, exclusion (allowing them exit but denying them entrance) is the only way to get rid of them.
 - i. Bat guano harbors disease, allergens, fungus, and is full of insects such as black widows. Respirators, tyvek suits, gloves, and boots are required for cleanup. Larger cleanup jobs may best be outsourced. Contact the JPA for guidance on this issue.
 - ii. Bats are extremely beneficial in insect control. Building a bathhouse away from the school is a good way to harness their positive attributes while eliminating the negative ones.
 - iii. Bats are not seen during the day. If you do see one, or if they can't fly, or other odd behavior, assume they are rabid. All bats bite, but rabid ones more so. If you are bitten, trap the bat without crushing its head for an autopsy. Keep it cold, but don't freeze it.

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Cliff Swallows

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Published 6/05

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Swallows, particularly cliff swallows, *Hirundo pyrrhonota*, often live in close proximity to people. While enjoyable to watch, cliff swallows nesting in colonies on buildings and other structures can become a nuisance. Their [droppings](#) can foul machinery, create aesthetic problems, and cause potential health hazards by contaminating foodstuffs. Their [mud nests](#) eventually fall to the ground and can cause similar problems. In addition, swallow nests frequently contain mites and insects such as swallow bugs (*Oeciacus vicarius*); swallow bugs are related to bed bugs and will bite humans, although humans are not their usual host.

Seven members of the swallow family breed in California: the tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), purple martin (*Progne subis*), bank swallow (*Riparia riparia*), rough-winged swallow (*Stelgidopteryx serripennis*), barn swallow (*Hirundo rustica*), and cliff swallow. The first three nest in cavities such as woodpecker holes or birdhouses. Bank and rough-winged swallows nest in natural crevices or burrows dug in earthen banks. Barn and cliff swallows build mud nests [attached to buildings](#) and other structures, a habit that sometimes puts them into conflict with people. This is particularly true of the cliff swallow—the swallow of San Juan Capistrano—which nests in [large colonies](#) of up to several hundred pairs. In contrast, barn swallows tend to nest as single pairs and, consequently, do not cause many problems.

BIOLOGY

Swallows feed on insects and spend a large part of each day in the air catching flies, beetles, and mosquitoes. Their long, pointed wings give them great speed and maneuverability. Normally, swallows are not seen on the ground except when collecting mud for their nests. Most do not have musical voices but only twitter or squeak.

The cliff swallow is 5 to 6 inches in length and is the only square-tailed swallow in California. In contrast, the barn swallow is distinguished by its long, deeply forked tail. The cliff swallow is also recognized by its pale, orange-brown rump, white forehead, dark rust-colored throat, and steel blue crown and back.

Distribution and Habitat

Cliff swallows are found throughout California, except in high mountains and the dry southeastern desert. Four basic conditions are found at all cliff swallow colonies: (1) an open habitat for foraging; (2) a vertical surface beneath an overhang for attaching the nest; (3) a supply of mud that has the proper consistency for nest building; and (4) a body of fresh water for drinking.

The original nesting sites of cliff swallows were cliffs and walls of canyons. Structures, such as buildings, bridges, and overpasses, and agricultural activities have increased the number and distribution of suitable nesting sites, and cliff swallow populations have increased accordingly. In general, wherever irrigation water and buildings or other structures are found, suitable breeding conditions may exist.

Cliff swallows spend the winter months in South America. In late winter and early spring, they begin a northward migration through Central America and Mexico. Arrival dates can vary greatly because of weather conditions. The first migrants usually appear in southern California by late February or early March. Two or three weeks later cliff swallows begin arriving in northern California. Cliff swallows migrate during the day and catch flying insects en route. Swallows will not penetrate regions unless flying insects are available for food, which usually occurs after a few days of relatively warm weather

Site Selection

Cliff swallows arrive at nest colonies in successive waves. A definite homing tendency exists among adults that previously nested at a colony. These birds are the first to return, followed by adults who bred at other colonies in previous years and by young birds who have not yet bred. The younger birds include individuals not born at the selected colony.

In addition to their homing tendency, breeding swallows are attracted to old nests. Under suitable conditions, a nest is quite durable and can be used in successive years. Old nests are usually claimed on the first day of arrival, although probably not by the original makers. Dilapidated nests are quickly occupied and repaired.

Nest Construction

Cliff swallow nests are [gourd-shaped](#) enclosed structures built of [mud pellets](#), consisting primarily of sand with smaller amounts of silt and clay. (In contrast, barn swallow nests are cup shaped and the pellets contain coarse organic matter such as grass stems, horsehairs, and feathers.) The cliff swallow nest chamber is globular and extends forward into an entrance tunnel that opens downward. The tunnel may be absent from some nests. Nest dimensions vary from 5-1/2 to 10-1/2 inches in length and 5-1/2 to 8 inches in basal width, and the opening averages 1-3/4 inches in diameter. The nest is cemented with mud under the eave of a building, bridge, or other vertical surface. Usually the first nests are located at the highest point possible with subsequent nests attached below it, forming a dense cluster.

Both sexes construct the nest, proceeding slowly to allow the mud to dry and harden. Depending on mud supply and weather, nest construction takes 1 to 2 weeks. Mud is collected at ponds, puddles, ditches, and other sites up to one-half mile away, with many birds using the same mud source. A typical nest contains 1,000 to 1,400 mud pellets, each representing one trip to and from the nest. Cliff swallows sometimes build two or three nests per season; not all nests are used, however.

Egg Laying

Egg laying usually begins before the nest is completely finished. Each day one egg is laid until the clutch of three to four eggs is completed. In central California, egg laying generally occurs between late April and the end of May. In southern California nesting can begin during late March and in the extreme northeastern part of the state as late as June. Within a colony the date of egg laying varies because of the staggered arrival dates of the birds.

Nest Failures

Renesting will occur if nests or eggs are destroyed. For example, nests may fall because they were built too rapidly or they may crumble because of prolonged humid weather. House sparrows (*Passer domesticus*) sometimes take over empty swallow nests and have been known to drive off swallows from new nests. A cliff swallow nest taken over by house sparrows is identified by the abundant nest lining (grasses, weeds, and feathers) protruding from the entrance.

Hatching and Feeding

Both sexes incubate the eggs, which hatch in 15 or 16 days. The adults are kept busy feeding the nestlings by foraging over an area sometimes 2 to 4 miles from the nest. Occasionally, long periods of continuous rainfall make it difficult for the adults to find food and they may abandon the nestlings. A sign of a successful nest is white excrement rimming the nest entrance, indicating the presence inside of young swallows.

Fledging and Post-nesting Period

In mid-May to mid-June, 20 to 25 days after hatching, the young birds fledge (take their first flight). They look similar to adults but are dull colored and have less sharply defined color patterns. The young will return to the nest for 2 to 3 days to be fed before leaving it permanently. They remain near the colony for about a week.

In California most cliff swallows raise one brood each year, although some may raise two. The time required from the start of nest building to departure after raising one brood is 47 to 64 days. Swallows are usually present at the colony for up to 100 days.

After leaving the nesting colony, cliff swallows will remain in the general area for several weeks. By mid-August there is a general southward movement, and by the end of September few swallows remain, except in southern California where a few linger into October.

MANAGEMENT

Actions to solve problems with swallows should be started as soon as they are identified. Cliff swallows are colonial and the number of nesting birds can increase significantly from year to year. They are best managed by nest removal and exclusion techniques. There are no chemical toxicants

Legal Status and Permit Requirements

All swallows are included under the Migratory Bird Treaty Act of 1918 as migratory insectivorous birds and as such are protected by state and federal regulations. It is illegal for any person to take, possess, transport, sell, or purchase them or their parts, such as feathers, nests, or eggs, without a permit. As a result, certain activities affecting swallows are subject to legal restrictions.

The California Department of Fish and Game, the enforcement agency, considers February 15 to September 1 to be the swallow nesting season. Completed nests during this breeding season cannot be touched without a permit from the U.S. Fish and Wildlife Service. Outside of these dates, the nests can be removed without a permit. During nesting, a permit authorizing nest removal will be issued only if it can be justified by strong, compelling reasons. For example, such justification might include a health or safety hazard posed by a nesting colony situated over a doorway/entrance, near a loading area of a warehouse or a food processing facility, or at an airport if aircraft and maintenance safety are impaired.

If eggs or young are in the nest when a permit is requested, the application will probably be denied. It is best to request the permit during the nonbreeding season and well before spring nest construction begins. Past history and problems will be taken into consideration. The permit is issued for one season only. The permit will authorize the permittee or the permittee's employee(s) to use specified methods to remove the nests. The number of nests removed must be reported within 10 days after the permit expires.

For all permit requirements, contact the main office of USDA-APHIS Wildlife Services in your state. In California the address is 3419A Arden Way, Sacramento, CA 95825; phone (916) 979-2675. You will be referred to a district biologist who will assess the problem and make control recommendations. If lethal control is recommended, then a permit application must be completed and sent to the U.S. Fish and Wildlife Service regional office along with a fee.

Nest Removal

In areas where a permit is required, the nest removal method will be specified by the permit. In California, old nests or nests under construction may be washed down with water or knocked down with a pole. Swallows are strongly attracted to old nests or to the remnants of deteriorated nests, so all traces of mud should be removed. During nest building, nest removal will require many days because cliff swallows persistently rebuild nests for most of the breeding season. They usually return the following year and the whole process must be repeated.

Exclusion

Exclusion refers to any control method that denies physical access to the nest site area. Exclusion represents a relatively permanent, long-term solution to the problem. In California, a permit is not required for this method if it is done before the birds arrive, during nest building when there are no eggs or young in the nest, or after the birds have left for the winter. If swallows have eggs or young in the nest, exclusion may not be used without a permit.

Netting can provide a physical barrier between the birds and the nest site. The mesh size should be 1/2 to 3/4 inch; however, 1 inch has been used successfully. If a plastic net is used, it should be attached so that it can be pulled taut. This prevents flapping in the wind, which looks unsightly and results in tangles or breakage at mounting points. The net should not have any loose pockets or wrinkles that could trap and entangle birds.

Attach [netting](#) to buildings before the birds arrive and leave it up permanently or remove it after the nesting season. Netting can be attached using tape, staples, or hooks on the eaves and the side of the building. An advantage of hooks is that the net can be taken down during the nonbreeding period or for maintenance of light fixtures, painting, etc. If staples are used, they should be rust-resistant to avoid unsightly rust stains on the building. For netting, a supporting framework of wooden dowels, wood laths, or metal rods along the edges will ease attachment to the hooks and create more even tension on the net. Netting may also be wrapped once or twice around wood laths and nailed directly to the building. It [should extend](#) from the outer edge of eaves down to the side of the building where protection from the elements given by the eaves is lost. Be sure there are no openings in the net where swallows might enter.

Some individuals have reported that hanging a [curtain of netting](#) from the eave will prevent nesting. The curtain should be 3 to 4 inches from the wall and extend down from the eave 18 inches or more.

Blocking the entrance will prevent cliff swallows from nesting inside buildings. Hang netting or strip doors of vinyl plastic or similar material across the entrance like a [curtain](#), allowing passage of vehicles, materials, or people. Weighting the bottom of the netting will help keep it reasonably taut and

Usually, swallows will not fly into a net but will stop and hover in front of it. If only that section of a building where swallows have nested is netted, the swallows will often choose alternative sites on the same structure. Therefore, any part of a building suitable for nesting must be netted. After the netting or wire mesh is installed, monitor the area for entry points and make necessary adjustments.

Other Methods

Nesting is sometimes discouraged through the use of [metal projectors](#). These are sharp, needlelike wire or plastic devices generally [installed along building](#) ledges and windowsills to discourage birds from roosting. This method is not always successful in preventing swallows from nesting. In one instance cliff swallows learned to land on the metal spines and eventually built nests attached to them. Attach the sharp projectors to cover the area where swallows prefer to build nests, especially horizontally along walls protected by eaves. Additional projectors running vertically should be attached along interior corners. Once installed, projectors are left in place permanently.

[Fiberglass panels](#) that are 6 inches wide have been used to prevent nesting in some situations. The panels are installed between the eave and wall forming a smooth, concave surface that makes nest attachment difficult.

Modification of the surface where swallow nests would be attached sometimes effectively discourages nesting. Swallows prefer rough, uneven surfaces that provide a good foothold and suitable surface for nest attachment. Removing the rough surface of the wall and overhang can make the site less attractive to swallows. Attaching glass, sheet metal, or other very smooth-surfaced materials to the potential nest site can inhibit swallow nesting. A fresh coat of paint producing a slick surface may discourage nesting. Removing old nests and painting the area may discourage nesting the following year.

Other methods have shown little success or are unproven against cliff swallows. These include employing hawk, [owl](#), or snake models or using taped alarm calls, noisemakers, revolving lights, and chemical roost repellents.

SOURCES OF CONTROL MATERIAL

A partial list of sources of supply for netting and metal or plastic projectors is given below. Netting is also available at many hardware and farm supply stores.

NETTING	METAL OR PLASTIC PROJECTORS
Bird Barrier America 20925 Chico St. Carson, CA 90746 (800) 503-5444, (310) 527-8000; fax (310) 527-8005 www.birdbarrier.com	Bird-X, Inc. 300 North Elizabeth St. Chicago, IL 60607 (800) 662-5021; (312) 226-2473; fax (312) 226-2480 www.bird-x.com
Sutton Agricultural Enterprises, Inc. 746 Vertin Ave. Salinas, CA 93901 (866) 280-6229; (831) 422-9693; fax (831) 422-4201	Cat Claw, Inc. Box 5250 Johnstown, PA 15904 (800) 832-2473; fax (800) 732-0380 www.catclaw.com
Wildlife Control Technology, Inc. 2501 North Sunnyside Ave. Fresno, CA 93727 (800) 235-0262; (559) 490-2262; fax (559) 490-2260 www.wildlife-control.com	ECOPIC 600 S. Adams Rd., Suite 100 Birmingham, MI 48009 (248) 712-1175; fax (248) 647-7811 www.ecopic.com
	The Huge Company P.O. Box 24198 St. Louis, MO 63130 (800) 873-4843; fax (314) 725-2555
	Nixalite of America, Inc. 1025 16th Avenue East Moline, IL 61244-0727 (800) 624-1189; fax (800) 624-1198

HEALTH AND ENVIRONMENTAL IMPACTS OF MANAGEMENT ALTERNATIVES—from California Department of Pesticide Regulation

[WARNING ON THE USE OF CHEMICALS](#)

PUBLICATION INFORMATION



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[PDF to Print *](#)

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/PMG/PESTNOTES/pn7482.html revised: June 12, 2009. [Contact webmaster](#).

Williams - Background

The Williams Settlement Legislation stems from *Eliezer Williams, et al. v. State of California, et al.*, . A class action lawsuit filed in 2000 and as a result many structured requirements were developed for School Districts to comply with the terms of the settlement.

William Settlement Requirements in part:

1. **Condition of facilities that pose emergency or urgent threat to the health or safety of pupils;**
2. Accuracy of data reported on the school accountability report card (SARC) regarding:
 - a. **Safety, cleanliness, and adequacy of school facilities including good repair.**

What is the Problem?

Large populations of roosting birds may present a disease risk.

The most serious health risks arise from disease organisms that grow in the nutrient-rich accumulations of bird droppings, feathers and debris under a roost —particularly if roosts have been active for years.

In addition, insects that live on birds or their droppings may become a problem when the infested birds leave roosts or nests.

These insects can invade buildings and bite or irritate people.

Case Studies

After a small group of students raked and swept a 20-year accumulation of dirt, leaves, and debris in a middle school's courtyard on Earth Day—1970, nearly 400 people (mostly students) developed histoplasmosis.

The school's forced-air ventilation system, which had fresh air intakes in the courtyard, was implicated as being primarily responsible for spreading contaminated air throughout the school. Results of the outbreak investigation showed that a few students developed histoplasmosis despite being absent from school on the day when the courtyard was cleaned.

During a histoplasmosis outbreak in 2001, 523 people (439 of them were students) met a laboratory-confirmed case definition of histoplasmosis following the rototilling of a 10-foot by 45-foot area of soil within a high school's courtyard.

Spore-contaminated air entered a wing of the school most likely through open windows that faced the courtyard and heating, ventilating, and air-conditioning systems that had fresh air intakes in the courtyard.

Findings from the Case Studies

The 2001 Case along with the 1970 Earth Day outbreak, indicates that some persons were infected despite being absent from school on the day of the rototilling or sweeping activity and the following day.

Exposures to spore-contaminated dust continues for a day or more after the activity was stopped.

Source: NIOSH – Histoplasmosis — Protecting Workers at Risk <http://www.cdc.gov/niosh/docs/2005-109/2005-109b.html#>

Site Selection by the Birds

Cliff swallows arrive at nest colonies in successive waves. A definite homing tendency exists among adults that previously nested at a colony. These birds are the first to return, followed by adults who bred at other colonies in previous years and by young birds who have not yet bred. The younger birds include individuals not born at the selected colony.

In addition to their homing tendency, breeding swallows are attracted to old nests. Under suitable conditions, a nest is quite durable and can be used in successive years.

Old nests are usually claimed on the first day of arrival, although probably not by the original makers. Dilapidated nests are quickly occupied and repaired.

Nest Construction

Cliff swallow nests are gourd-shaped enclosed structures built of mud pellets, consisting primarily of sand with smaller amounts of silt and clay.

Depending on mud supply and weather, nest construction takes 1 to 2 weeks. Mud is collected at ponds, puddles, ditches, and other sites up to ½ mile away, with many birds using the same mud source. A typical nest contains 1,000 to 1,400 mud pellets, each representing one trip to and from the nest.

Health Risk to Humans

Histoplasmosis	Paratyphoid
Salmonella	Viral Meningitis
Encephalitis	Lysteriosis
Blastomycosis	Toxoplasmosis
Swallow Bugs	

Histoplasmosis

A fungal infection very common to flocks of wild birds and bats. It is spread through humans by inhalation of its spores, which are found in bird droppings. The primary result of histoplasmosis is an acute respiratory illness.

Those infected with histoplasmosis will experience a wide range of symptoms including fever, chills, muscle aches, cough, rashes, and joint pain or stiffness. With such common symptoms, histoplasmosis is a hard diagnosis to make. If left untreated, it can lead to severe ocular (loss of vision) and respiratory (chronic bronchitis/pneumonia like symptoms) ailments.

Although fatality is not common, treatment of histoplasmosis will not cure it. Treatment will merely reduce its effects and curb its bodily damage, and must be administered for the remainder of the patient's life.

Primary means of prevention - avoid bird or bat droppings in those areas.

Persons that are At Risk - NIOSH definition of At Risk for Histoplasmosis:

Anyone working at a job or present near activities where material contaminated with *H. capsulatum* becomes airborne can develop histoplasmosis if enough spores are inhaled. After an exposure, how ill a person becomes varies greatly and most likely depends on the number of spores inhaled and a person's age and susceptibility to the disease. The number of inhaled spores needed to cause disease is unknown. Infants, young children, and older persons, in particular those with chronic lung disease, are at increased risk for developing symptomatic histoplasmosis.

Histoplasmosis - Immune Compromised Individuals

Because their immune system is compromised, the following groups are at greatest risk for developing Disseminated Histoplasmosis (the most serious form) from exposure to contaminated bird droppings.

- a. Infants and very young children
- b. AIDS or HIV
- c. Persons receiving treatment with corticosteroids (e.g. prednisone for asthmatics)
- d. Persons with other condition or disease (organ transplant, dialysis, etc.)

Salmonella

The risk of Salmonella in the food supply (eggs and poultry) is generally known; salmonella can also be contracted from direct contact with bird's fluids. Salmonella can be passed directly from birds to humans through the exchange of almost any bodily fluid (including oils present on the skin and feathers of birds).

Salmonella very rarely leads to anything more than 4 to 7 days of fever, abdominal cramps, and diarrhea (oftentimes bloody), and is curable without treatment. However there have been cases of fatalities linked to the bacteria.

Prevention requires keeping clear of physical contact and proper washing when contact occurs.

Encephalitis/St. Louis Encephalitis

Both varieties of Encephalitis are common to flocks of wild birds; however, St Louis Encephalitis is more commonly transmitted to humans. The virus is kept alive through a bird-mosquito cycle.

The primary vector of human transmission is through mosquito bites, and its subsequent prevention is to avoid these same bites (especially in areas of higher bird density).

Although the County Health Department through the Vector Control Program attempts to track and exterminate mosquito populations, it is a monumental task and is not always successful - particularly in and around areas of stagnant water.

Blastomycosis

A fungal infection that infests bird dropping and is acquired by human through inhalation. Its primary effect is inflamed lesions to the lungs and skin, and subsequently disseminates into the bones, liver, spleen, and central nervous system. Blastomycosis is often found in conjunction with bronchogenic carcinoma, histoplasmosis, severe pulmonary disease, or tuberculosis.

Although there is no cure, treatment has been found to prevent relapse. There is only one means of prevention, avoid all areas of accumulated droppings.

Swallow Bugs

The swallow bug is a parasite of cliff swallows. Problems with human bites occur in homes and buildings where swallows have attached and maintained nests during the previous summer. Swallow bug bites of humans tend to occur in late winter and spring, when the swallow bugs emerge from winter dormancy in anticipation of the return of their swallow hosts. The insects are largely dormant during the period between the time nests are abandoned in summer and just prior to the return of swallows the following spring. Management of swallow bugs requires prevention of nesting by swallows on occupied buildings; this will prevent future problems with the insects. However, problems with biting swallow bugs may temporarily increase the following spring as the starved insects migrate in search of new hosts.

If nests are removed in summer after they are abandoned by the swallows, then an insecticide treatment to the nest site **may** be used to kill some of the dormant swallow bugs that remain in hiding around the nest.

Paratyphoid

Paratyphoid has been linked to bacteria commonly found in birds. It is transmittable most commonly in areas where birds and human share stagnant water supply. A birdbath is an adequate supply of water to pass the contaminant.

Paratyphoid leads to infection of the lymphoid tissue and severe fever. Complications of delayed treatment include intestinal hemorrhage and perforation.

Paratyphoid frequently occurs in outbreaks or epidemics, and is communicable between humans. New strands have shown little response to antibiotic treatment and require extensive hospital care.

There is no vaccination available for Paratyphoid. Prevention occurs by avoiding area of both stagnant water and heavy bird population.

Viral Meningitis

Meningitis is a viral infection of the Central Nervous System (the meninges - a thin tissue covering the brain and spinal cord) and is characterized by severe headache, stiffness of the neck or back, fever, and nausea. Meningitis cases number from 500 to 700 cases a year.

Mosquito-borne Meningitis is passed to humans by mosquitoes that are carriers of the virus (mosquitoes which infest areas near large flocks of birds).

Mosquito-borne Meningitis is not communicable between humans.

The only means of prevention is avoidance.

Listeriosis

A bacterial infection spread to humans from birds. Its most common means of contagion is through foods grown in contaminated soil or water. Its symptoms are fever, muscle aches, and nausea or diarrhea.

With prompt treatment (usually antibiotics) risk of death can be greatly reduced. But even with prompt treatment, nearly one-quarter of Listeriosis cases will result in death.

Avoidance of bird populations and proper personal hygiene is paramount.

Toxoplasmosis

A parasitic infection common to birds throughout North America. It can be spread through their droppings.

Humans through contact with bird droppings can directly acquire the disease.

There is no cure for the Toxoplasmosis parasite.

Complications to Toxoplasmosis, if left untreated are permanent disability (blindness or learning deficiency in children) and spread of the disease throughout the body and ultimately, to death.

The only means of prevention is to observe proper personal hygiene after contact with contaminated water, soil, or bird droppings.

Other Diseases Carried by and Transmitted from Birds:

All materials were cited from magazine publications and/or Internet sites provided by:

1. Bacterial Vibrosis
2. Pasteurellosis
3. Fungal Candidiasis
4. Sarcoporiidiosis
5. Viral Newcastle Disease
6. Protozoan Trichomoniasis
7. American Trypanosomiasis

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Purdue University
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NIOSH Recommendations

1. **Excluding a flock of birds from a building** - when a flock of birds is discovered roosting in a building, immediate action should be taken to exclude the intruders by sealing all entry points.
2. **Posting health risk warnings** - If a flock of birds is allowed to live in a building, their manure will accumulate and create a health risk for anyone who enters the roosting area and disturbs the material.
3. **Communicating health risks to workers**-The employer must comply with OSHA regulations and the IIPP requires ACUSD eliminate risk of exposure whenever possible.
4. **Controlling aerosolized dust when removing bat or bird manure from a building** - The best way to prevent exposure to *spores is to avoid situations where material that might be contaminated can become aerosolized and subsequently inhaled*. A brief inhalation exposure to highly contaminated dust may be all that is needed to cause infection and subsequent development of disease.
5. **Disposing of waste** - Any material that might be contaminated *that is removed from a work site should be disposed of or decontaminated properly and safely and not merely moved to another area where it could still be a health hazard*.
6. **Controlling aerosolized dust** -Dusts containing *bacteria and pathogenic spores can be aerosolized. Once airborne, spores can be carried easily by wind currents over long distances. Such contaminated airborne dusts can cause infections not only in persons at a work site, but also in others nearby. Water sprays and other suppression techniques may not be enough to control dust*.
7. **Wearing personal protective equipment**