BESNOITIOSIS IN A CALIFORNIA OPOSSUM (DIDELPHIS VIRGINIA)

By Kenneth D Jones, DVM
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ABSTRACT

Internal parasitic infections are common in the Virginia opossum (Didelphis Virginiana). Besnoitia darlingi is Apicomplexa parasitic coccidia protozoa found in North American opossums. This article provides an overview of clinical signs, pathologic findings, transmission, life cycle and treatment options. The following is a first recognized case of Besnoitia darlingi in a California opossum.

Virginia opossums (Didelphis virginiana) acquire parasites due to their foraging and scavenging behavior. The type of parasitic infection depends on various environmental factors, including weather, seasonal temperature and food availability. Besnoitia darlingi is known to affect only opossums and transmitted by felids. An opossum in Southern California was infected with Besnoitia darlingi a parasitic coccidian protozoa.

INTRODUCTION

Besnoitia Darlingi belongs to the group of protozoal cyst forming extra intestinal coccidia closely related to Toxoplasmosis. Besnoitia darlingi has been recognized for over 80 years in North America with a reported infection rate ranging from 10-60% depending on location. This infection has been reported in opossums from Kentucky, Missouri, Illinois, Texas, Louisiana, Indiana, Michigan and Kansas. This case describes first reported B. Darlingi infection found in Los Angeles, California. This study reviews clinical diagnosis, pathologic findings, life cycle, and potential modes of transmission and significance of disease found in a naturally infected V. Opossum.

CASE STUDY

An adult male Virginia opossum was brought into the Jones Animal Hospital for surgical evaluation. The opossum needed to have its tail amputated. (Fig. 1) On presentation the opossum appeared healthy, was aggressive, and alert. The opossum was anesthetized for a thorough examination. While preparing the opossum for surgery pinpoint white bumps were noticed around the eyelids and pinna. The author initially believed these lesions were reactions from insect bites. (Fig. 2A,B, page 7) During intubation additional white bumps were noticed on the tongue and oral mucosa. (Fig. 2D, page 7)

CBC and general chemistry were evaluated using the Abaxis blood and chemistry equipment. Following routine blood draw, blood was also submitted to IDEXX lab for evaluation. The blood smear of the peripheral blood showed the presence of occasional pyknotic cells. (Fig. 3, page 7) The tail was repaired and samples of the skin were submitted for biopsy. Following recovery, the opossum was released to an experienced caregiver pending results of biopsy. The opossum was confined to a large cage, was eating well, was active but had severe diarrhea. Despite diet modification and deworming the diarrhea could not be controlled. Fecal analysis showed infection of gastro intestinal ova of Turgida turgida and rabidiform larvae being an indication of lungworm infection.

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I have tried to leave you a message by phone but it is very confusing. I have taken of opossums at my house for years. However there is a serious infestations of roaches that is due to all the food I leave for opossums, feral cats, raccoons for the past 15 years. I had 2 teenagers opossums still living in the garage and since pest control came for the roaches...I do not see them anymore... I see the older ones who live in the bushes a lot.... Pest control assured me it was harmless to animals as I told them about the young opossums...After 2 hours he said...harmless...IS THAT TRUE??? The roaches have nor died and they are coming back Wednesday...so I need to know ASAP......

Or is it the heat as it is 115 F over here in Reseda.... Please call me asap or write back.... Thank you

Christel

The amount pest control uses to spray for roaches and other insects will not harm opossums, even the baby ones. It smells, so the opossums may clear out for a while.

I would clean up all the bodies you find so other animals don’t gorge on the roaches. Plus they are UGLY to look at, dead or alive.

You will need several applications of spray pest controls for roaches. Most pesticide spray doesn’t kill eggs, so there will be batches hatching for a while. Leaving out food may contribute to the problem, but our extreme heat is bringing out all the insects. It is good hatching weather for them.

Leslie

Hi Leslie,

I got your email from Nancy, as I have an opossum question for you. A friend of mine found a young opossum wandering around today and so I was wondering if that is normal behavior for a young opossum.

Here is the video she sent me of him. We think there may be a den under her shed, as she often sees these guys in her backyard at night pretty frequently.

Any info you can give me would be incredibly helpful. I know some stuff about them but I’m definitely not an expert and I get calls in these guys all the time.

Thanks so much,

Brianna

Opossums are nocturnal, so they are not generally up during the day. That said, as a mammal, they need about 20 minutes of sunshine a week to get their essential Vitamin D. They can usually accomplish that right at sunrise or just before dusk.

I suspect the opossum was rousted from where it had picked what it thought was a good place to sleep for the day and was carefully headed to another one of its pre-selected den sites.

In the video I viewed, it was showing proper caution while moving about exposed in the daylight. It clearly knew the videographer was there as it kept looking back frequently and at one point it started to gape its mouth open a second (a defense mechanism) in response to a creaking noise made by the photographer.

Its posture was correct, didn’t seem to have any trouble with ambulation. Its hair looked healthy. I didn’t see any wounds. It is on the small side for Mom to let them go to be on their own but not unheard of. Of course, this is the most dangerous phase of its life, when it’s first on its own and not big enough to look scary to a predator yet.

Maybe help it by leaving out some food and water, unless it’s illegal in your city or county. It should grow quickly and I’m sure you’ll see it again. It looks like there’s all kinds of nice places to hide in the yard for a baby opossum.

Hi Leslie, is it safe for an opossum to eat cat food if it has diatomaceous earth in it? The feral cats eat it...yet suggested we use it for their skin and parasite problems but i do not want to hurt the opossums. Thanks—Cindy

Yes, diatomaceous earth can be consumed by opossums and people with no ill effect.

We live in a residential area in Oklahoma City. We feed sunflower seeds to the squirrels and discovered we have at least 2 opossum as well. My cat is 18 and allergic to her shots but she likes to go outside for a few hours. She does not leave the back yard, too old to jump the fence! I have read that opossum can transmit Leptospirosis to the cat. Is there really a danger to my cat or can I keep feeding my new visitors.

Hi Linda,

Leptospiroris, aka “Rat Fever” can be transmitted to your cat from a number of animals including: cattle, horses, dogs, birds, rats and wildlife.

Typically an infected animal sheds the virus via its urine into water...
Q: I have a friend who has a non-releasable opossum. What is the best dog food to feed them?
A: Refer to the OSUS Captive Opossum Diet Sheet, page 2. A captive should be placed on a “maintenance” or as they call it nowadays, “healthy weight” dog food at about 9 months because they will get fat quickly as a young adult.

Opossums need protein. I would read the labels and look for dog food that is at least 25% protein and 9% or less fat. The last one I chose was Nutro® Wholesome Essentials healthy weight small breed adult dog food (25.00% protein, 7.00% fat, 11.50% fiber) made from chicken, brown rice and sweet potato. It has 2935 kcal/kg, 222 kcal/cup.

They will resist going to the different chow, but they will not starve themselves. Gradually get them switched over on a low-fat food.

You can also read the related articles about choosing dog foods in the Winter 2018 and Spring 2013 newsletters.

Leslie

Additional answer: A good rule of thumb is if you can buy it in the grocery store, Walmart or Target, don’t feed it to your animals. Dog foods of poor quality have dogs dying every day from toxins like phenobarbital, excess Vitamin D and melamines and that’s just some of the issues with commercial dog food. Feed Nutrisource, Nulo or Nutro. Nutrisource is sold at feed supply stores or private pet food stores, you can go online and find a supplier near you. Nulo is the same but it is carried at PetSmart. Nutro is at PetCo, PetSmart and many other places.

Melinda Smith, OSUS Board member

Q: I know how great opossum’s are for us around the house. I’ve heard they can regrow their spines. Is this true? I find it hard to believe.

Thank you

Katarina

A: No, opossums cannot regrow their spines, but Klingons can.

Leslie

Q: I rehabilitated baby opossums when I lived in Iowa. I was an animal control officer. For a year I would take home a variety of small animals and rehab them. My question today is: Is it required to have schooling to volunteer for rehabilitation? If it is required, how do I go about getting involved?

A: Each state has its own rules and regulations governing wildlife rehabilitation. Go online and type in your state, then Game and Fish, Fish and Wildlife or Department of Natural Resources (most state organizations name themselves with the preceding identifiers) and you should get a hit for your state. Find the department dealing with wildlife rehabilitation and give them a call if the information you seek is not outlined on the website itself. I would not ask a local rehabilitator because they might be grandfathered in under an old law or operating under the radar.

Leslie

Q: Hi, I work at a wildlife rehab center. We are currently trying to redo our diets to reflect individual patients using Kcal needs. However, finding information on this for wildlife is extremely difficult. If you have any information it would be greatly appreciated.

A: As you know, Kcals are calculated based on the animal's condition; basal, growing juvenile, sick or injured.

Go to the below website offered by WildAgain and select opossum for your animal and plug in the values to get Kcal needs of the opossum: https://wildliferehabber.com/rehab-data/kcal-calculator

Q: I have always liked possums, they are like armadillos — a link to our past. As you suggested on the site, there is tremendous expansion and building going on in our neighborhood that has upset the wildlife backyard populations. A possum is now crossing the street in mid-morning toward our house and going into the crawl space of the house next door. I am certain that one nesting spot has been routed, and the noise from the construction is quite bothersome. Should I try to make a nesting place for the possum protected from cats and dogs? It could be nestled between the house in an L corner with a brick wall on one side and the water barrel on the side

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www.opossumsocietyus.org
other. I would make it about 8’ long and 2 1/2 ‘ wide with a pet door on the front. What do you think?

Patsy

A: Patsy,

That’s a bit large and there’s no guarantee an opossum would use it. They like tight, secure spaces. What I have in the corner of my yard is an old dog carrier crate I picked up at a garage sale and removed the front door from it. (below, left) I bought an old rubber door mat and put it atop the carrier to keep water from coming in the airholes (below, center), still allowing air flow and to provide a front flap for the entrance (below, right). I put the carrier facing inward (turned outward for the photo) in the corner of the yard, atop two concrete blocks to keep it off the wet ground with just enough room to squeeze up and into it. I laid down some flat newspapers in the bottom, then stuffed it 3/4 full of crumpled, clean newspaper.

I do get the occasional visitor.

Leslie

Q: Hello, I witnessed something out my window in the middle of the night, and I wonder if you can interpret what I saw? There were 3 very large opossums - at first I thought they were playing, chasing each other around. But then I realized 2 of them were trying to get close to the largest one, and “she” was chasing them away, and they were chasing each other away from her. I assumed it was 2 males fighting over who would mate with a female. I watched for a good hour. All 3 were shrieking at each other like banshees. This morning I found a dead adolescent opossum right in the middle of my back porch. (About 4-5 inches long). It didn’t look eaten, but rather it’s jugular was ripped out. Do you think the males killed the baby in her pocket so they could mate with her? I’ve read about this sort of behavior in other animal species. But why would it be on my back porch, a good 50 feet from where the fighting was? Thanks for taking the time to answer! I really love having some wildlife in my backyard, but this was so disturbing to watch.

Cheryl

A: Well, Cheryl, this is indeed a mystery. I would wager you are right about two males attempting to mate with a female. Apparently there is no “love at first sight” in the opossum world as all matings are a more of a noisy brawl than a simple mating. Describing her as “really large” could mean that she had babies in her pouch. Opossums have a double womb, so they actually can reserve, or allow to develop, a second litter at a staggered time, concurrently as the first. Not to say that the second womb might have already been taken. A major scuffle as you describe could knock babies out of the pouch. The babies then could conceivably get in the way of the mating, or be left behind if the female escapes. The baby could then be prey to another species that came along afterwards. The opossums may have been too upset after the encounter to think straight. But an opossum kills to eat the whole animal and it would be highly unlikely to leave behind what was now food, a dead animal, which they do love to eat. Another predator could have come along, found the abandoned baby opossum and killed for the thrill of the kill and left the carcass. I sure wish you had a trail
camera that could have recorded and pieced this all together.

Leslie

Q: Hello. I have done tons of research and read all the articles about possums living in the yard. I know they're generally not dangerous and they don't cause hardly any damage or create messes for us. However, they are everywhere and I am absolutely terrified. Although I've read that they tend to not stay in one area for long, we have at least 2 rummaging through our bushes and yard at all times. They come out the moment it gets dark, which is before we even get home from work most days. I'm generally terrified of any small nocturnal animals and have a panic attack the second I see one outside. I'm terrified to walk to or from my car at night after having one scramble in the bushes a foot away from me when I was fumbling with my keys to get inside. We have a short wooden picket fence with large gaps in between, so they often fall into our yard from the trees and brush lining the outside of the fence. We don't keep food, water or any garbage exposed. We have sensor lights that are constantly on at night from them and it doesn't seem to bother them. We had a possum control company leave 2 (humane) traps out for 3 nights and only caught two total and released 10+ miles away, but there are plenty more clearly. We can't let our dog out after 530PM without her trying to break through the fence to catch them—and she will absolutely try to play with them regardless of if they hiss or fight back. I don't know what else to do. We also cut overhanging branches that they used to sleep and rummage through specifically, but how they just stay in the bushes near it and have somehow made or inhabited a pile of leaves and branches along/in our fence that I don't even know where they could have come from. We have a very small wooded tree strip (maybe 10 ft wide and 20 ft wide) on the vacant lot next to us that they seem to have inhabited while our house/yard was vacant for over a year until we moved in last month. I'm not sure if it's the same ones or new ones come find this spot all the time, but I don't know what to do. No amount of deterrent, lights, noise, or any remedy is working and I really just need to feel some peace at night. Any advice is appreciated, and I'm sorry for the novel. Wanted to eliminate the chance of being suggested to follow one of the solutions we already tried, and am hoping I'm not SOL!

Kara

A: Kara,

In my unprofessional opinion, you need help in getting your fears in control. I suggest you visit your nearest health food store or vitamin shop that carries homeopathics. Consider purchasing Ignatia Amara 30C and use per label instructions until your fears subside. Or you could use Bach Five Flower essence, put a couple drops on your tongue, or on a Kleenex and waive it under your nose until you are calm.

Leslie

INSTRUCTIONAL VIDEOS TO SETUP OPOSSUM CAGE ON OUR WEBSITE

The following links are hidden on our website and only available to view by typing in the links provided below.

NEW

This first video illustrates how to set up a cage in a “triangle formation.” Having the food/water in one section, bedding in another, litter box in a third maximizes success, monitoring and cleanup of young litters.

•  https://www.youtube.com/watch?v=kJylrsadgBk

This second video instructs on how to add an extra horizontal support bar (especially if you’re using bird cages) to hang your water bottles. Having the water bottles hanging at the correct angle minimizes leaking.

•  https://www.youtube.com/watch?v=92ca1n9J5Jg

This third video is how to determine placement of a water bottle for hanging.

•  https://www.youtube.com/watch?v=8xhOoVOYiaE&t=16s
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Histopathologic finding of the dermis confirmed the presence of Besnoitia darlingi protozoal cysts. (Fig. 4 A,B,C, page 7)

The appearance of these lesions are uniquely diagnostic of Besnoitia darlingi infection containing bradyzoites. Based on the diagnosis, and uncontrollable diarrhea the opossum was returned to the hospital and was euthanized upon request of the caregiver.

Gross pathology revealed nodules on both kidneys, on the gastrointestinal serosa and urinary bladder. Similar nodules were also found on the pericardium, myocardium and endocardium. Kidney and heart were submitted for biopsy (Fig. 5 A,B,C,D, page 8).

The stomach contained a large number of Physaloptera nematodes. (Fig. 6, page 8)

HISTOPATHOLOGY REPORT

Protozoal cysts were identified in the kidney and were distributed throughout the heart, including in the myocardium and in the heart valves. (Fig. 7 A,B,C, page 8) There is a lack of inflammatory response surrounding Besnoitia d. cysts with lack of leukocyte response.

The lung section shows Capillaria sp. in the airways along with other significant disease in the lung, indicating bronchointerstitial pneumonia. (Fig. 7D, page 8)

The spleen demonstrates white pulp hyperplasia, likely secondary to systemic antigenic stimulation, which can be related to pulmonary disease and/or parasitism. (Fig. 7E, page 8)

There are mild portal infiltrates in the liver, which may reflect some degree of ascending infection in the gastrointestinal tract. (Fig. 7F, page 8)

CLINICAL DIAGNOSIS

Definitive diagnosis of Besnoitia d. is based on the anatomic lesions and histopathology. A presumptive diagnosis of Besnoitia d. should not be confused with granulomatous furunculosis or dermatitis caused by Demodex or dermatophytes.

Finding tens to hundreds of non-pruritic, white 1-3 mm pinpoint papular lesions in the skin and mucous membranes, especially over the nares, conjunctiva, sclera, pinnae, limbs, and perineum are pathognomonic for this disease. The presence of multifocal protozoal cysts with minimal surrounding histiocytic and lymphoplasmacytic dermatitis is seen histologically with epidermal hyperplasia and hyperkeratosis results in the morphological diagnosis. Finding crescent or spindle shape bradyzoites in crushed skin and conjunctival scrapings, confirms the suspected diagnosis.

The appearance of pyknotic neutrophils in the circulation has been reported in chronic inflammatory reactions, toxicity and may be related to the severity of concurrent disease. The presence of pyknotic cells found in the blood smear of this opossum can indicate severity of Besnoitia darlingi infection.

This is the first reported case of Besnoitia darlingi in a California opossum. Besnoitia darlingi is the only species of Besnoitia known to infect marsupials. No possum in Australia has been reported infected. The definitive lifecycle for many Besnoitia spp. is still not known. The following is a discussion of what is known about the life cycle of Besnoitia darlingi affecting opossums.

BESNOITIA DARLINGI

Life Cycle: Besnoitia darlingi follows a heteroxeneous life cycle similar to Toxoplasmosis requiring both an intermediate and a definitive host. The domestic cat, (Felis catus) the Bobcat (Lynx rufus) and other felids serve as primary host while the opossum serves as the intermediate host. The transmission of Besnoitia darlingi between opossums and felids is well-documented.

Feline: When cyst-containing tissue is ingested by the cat bradyzoites are released and penetrate enterocytes of the intestinal tract forming the sexual stage. Schizonts and gamonts form the sexual stage undergoing one generation, forming gametes. Once fertilization occurs there is a prepatent period of 11-14 days when the oocysts are shed in the feces. Cats do not develop extra intestinal infection with Besnoitia as they do with Toxoplasmosis. Cat feces are not routinely examined for Besnoitia oocysts which closely resemble Toxoplasmosis oocysts. Prevalence of these Besnoitia darlingi cysts in cats is unknown. Cats do not become ill, and no treatment for infection is needed.

Opossum: When the opossum becomes infected with sporulated oocysts, the oocysts replicate by a form of asexual reproduction known as endodyogeny. Sporozoites are released during the prepatent period after about 10 days. Sporozoites encyst and invade intestinal cells, become tachyzoites. This patent period lasts about 6 days. The parasites penetrate and feed on various host cells in the intestine, undergo schizogony, develop into schizonts, and release merozoites. First-generation meronts develop in the endothelial cells of blood vessels, while later generations develop primarily in fibroblasts and connective
tissue of various organs producing nodules and papules containing bradyzoites.

More Besnoitia oocysts are shed in the summer. Studies showBesnoitia darlingi has a shorter incubation period with increase production during warm weather.

Opossums are more active foraging and scavenging in the spring and summer increasing exposure to oocysts. Opossums become exposed to sporulated feline oocysts in several ways. Opossums are not coprophagic and do not intentionally ingest cat feces. They may become infected through ingesting infected animals such as lizards, snakes or rodents, or by ingesting coprophageous insects such as beetles, crickets, and cockroaches, or through ingesting contaminated food or water.

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Some authors believe that Besnoitia sp can be transmitted though bites of hematophagous insect vectors as flies or ticks.

Finding Capillaria sp. in the intra-bronchial and bronchiolar lung tissue indicates this opossum ingested infected feces of a mammalian species known to transmit Capillaria sp. such as bobcats (Lynx rufus) or domestic cats (Felis catus). Further study is needed to ascertain correlation between Capillaria and Besnoitia infection in opossums.

**Discussion:** Besnoitiosis does not typically cause clinical disease in opossums despite widespread systemic dissemination of bradyzoites cysts. More severe clinical manifestation of disease may be secondary to compromised immune suppression, ongoing comorbidities, environmental stress, and concurrent parasitic infection. Few opossums were reported to have severe clinical disease and inflammation associated with Besnoitia darlingi. Reported signs include trembling, incoordination, circling, blindness, poor body condition and sudden death.

No routine test is available and there is no known specific
treatment for an infected opossum. Few treatments have been suggested based on treatment of toxoplasmosis and other coccidia species using sulfadiazine or Ponzuril. In limited studies of experimental induced Besnoita infection in rabbits, antimony and sulfanilamide complex was found to prevent cyst development. Oxytetracycline also may have some therapeutic value if given early in the course of the disease. External lesions may be treated with 2% tincture of iodine.

Summary: Clinical recognition and pathology, gross, and histology of Besnoitia darlingi have been discussed. It is known that opossums like to hang out with feral cats where they are attracted to easily available food. Probable life cycle and transmission between the cat and opossum has been shown. Besnoitia darlingi infection generally results in minimal disease in opossums but severity increases depending on co-morbidities and degree of parasite load. Every rescued opossum needs to be examined thoroughly, treated with parasiticides and antibiotics. Rescuers need to recognize B. Darlingi and not confuse this newly emerging disease with other skin diseases.

Comments: There is still much to be learned about the life cycle of Besnoitia in opossums and its clinical significance. The significance of finding Besnoitia darlingi in a local Southern California opossum is not clear. At this time no Besnoitia species are considered zoonotic. Opossums have adapted well to urban areas. With increasing interaction between humans, domestic animals, feral cat populations, and wildlife the potential exists for creating new zoonoses.

ACKNOWLEDGEMENTS

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BESNOITIA FOOTNOTE

The author of the article was contacted by OSUS and asked about a treatment protocol for besnoitia and we received the following response:

Possibly Albon, Ponzuril or TMS. All have been suggested but no studies have been done. Let me know if you come across other cases.

Thanks, Dr. Ken Jones

As the doctor requests, anyone that has heard of other cases in the U.S. besides the ones listed below, please let us know so we can pass on the information to Dr. Jones. Especially if someone has found an effective treatment used in early stages.

- Leslie OSUS@OpossumSocietyUS.org

Other references online:

Four Virginia opossums with Besnoitiosis


Opossum with besnoitia in Mississippi:

- [https://naldc.nal.usda.gov/download/49106/PDF](https://naldc.nal.usda.gov/download/49106/PDF)

Opossum with besnoitia in Michigan:


Opossum with besnoitia in Louisiana:


Besnoitia in other species:

FROM THE POUCH

Q: I have a family of opossums living in an old hot tub in my backyard that I am about to dispose of. I want to try and make a new home for them to move to before I remove the hot tub. Do you have a suggestion for plans or how I could relocate them to another house? I do believe that there are several really young ones in the family.

Oliver

A: Hi Oliver,

As close to dusk as possible, tear off or open sections of the hot tub you are going to dispose of. Now being partially exposed, come nightfall, the mother opossum will take her babies with her to forage during the night and to a different den site the next morning when she goes to bed down. She will have 4-5 other den sites identified in the area and will have been alternating between them all these months. Once she’s gone, keep the hot tub open and exposed until you dispose of it so that she doesn’t put it back into her rotation of den sites.

Leslie

Q: Subject: Found baby opossums

Message Body: Need assistance with what to do

Near charleston wv I believe they are brand new born maybe 4”.

William

A: William,

West Virginia doesn’t allow people to help with their wildlife (draconian policies).

Try the OSUS member who I am sending you contact information on.

Leslie

Q: Good evening from north Texas. I saw two opossums in close proximity to one another feeding on birdseed in my backyard tonight. This was the first time I saw more than one. Could this be a breeding pair? Or a nearly-grown opossum with the mother opossum? Any information you have would be most appreciated (Photo below)

A: Good evening from north Texas. I saw two opossums in close proximity to one another feeding on birdseed in my backyard tonight. This was the first time I saw more than one. Could this be a breeding pair? Or a nearly-grown opossum with the mother opossum? Any information you have would be most appreciated (Photo below)

Obviously they are both taking advantage of a food source. They are actually about the same size. The one on the right looks larger, but the largeness is around her midsection, so I would say she has babies in her pouch. Siblings know their own siblings forever and may eat together. Opossums from different litters may eat together, they will let each other know if they are getting too close by gaping their mouth at the other or make a “cackling” noise. Opossums mate (a violent, noisy encounter), then go their separate ways immediately afterwards, so that wouldn’t be it.

Leslie

Q: Good morning, while gardening this morning I found a baby opossum in my swimming pool. The little baby’s mother was on top of the fence walking away. I didn’t want the little opossum drowning in my pool, so I carefully took the pool net and scooped the opossum out of the pool. I placed the opossum on a dry towel and left, hoping the mother would come back. Waited an hour and no mommy opossum in sight.

First, should I feed the baby opossum anything, and if so, what do they eat?

Second is there someone in my area I can call?

I live in Rocklin, California.

Charlie

A: Return to our website and look under How to Locate a Wildlife Rehabilitator Near You. There are some small mammal Rehabilitators in the Sacramento area.

Ironically, the Opossum will be dehydrated from exerting itself in the pool. Offer it water only and a clean, warm area to dry out, but can’t escape.

During orphan season it’s sometimes hard to reach Rehabilitators because they are so busy. If they haven’t gotten back to you by tomorrow, take the baby out to your backyard to the exact same spot, the exact same time you saw the mother Opossum. She will be back, looking for that baby. Visually locate the mother, she may be concealed or freeze when she hears you. Walking slowly, speaking softly (so Mom can hear exactly where you are), place the baby as close to the Mom as possible without spooking her and make sure she can access the baby to pick it back up. Roust, or unwrap the baby a little so it will start making “choo-choo” sounds, upset at losing its cover and warmth, to get the Mom’s
full attention. Mom will then make "clicking" noises to let the baby know she's there and they will reunite.

Also check our website under FAQ on how to construct a life line on the side of your pool so an Opossum can pull itself out if one falls in.

Q: Subject: New born Opposum Message Body: Will the mother takes its new baby back if held by a human?

I had to save one from my cats. I put it on a carpet where she could hear it crying.

I returned About 10 minutes later and they were both gone.

Delcia

A: A mother will pick back up its baby. It's actually a myth that most species wouldn't take back their babies after human handling.

Leslie

Q: Hi I've had a possum living in my basement all winter long, he and his brother settled in when it started to get cold and I got the brother out but didn't realize he had a twin still living down there and by the time I realized it was already December so I let him stay. Set him up in the bathroom downstairs and have been researching proper care and diet and behaviors etc....I've been feeding him proper diet and taking very good care of him even bathed and flea treated him but now I would like to release him because it's nice out and he can establish his own den but I wonder if he's not too domesticated he is not really hand shy at all, he will let me pet and brush him....he's not afraid of the cats or dogs and I'm concerned he won't do well in the wild because of this and because he's never had to forage for his own food because he's used to me just giving him whatever he needs.

Is he too domesticated? I want him to have a full and happy life and a chance to reproduce, etc. Please help and thank you

Sincerely, Christina In PA

A: If you originally found the opossum in your backyard, put him in your backyard, maybe in the den box you've been providing. See if he explores in the night. It may take several weeks for him not to have returned to his den box in the morning to sleep during the day. Make sure you place the den box somewhere relatively secure, hidden and not exposed to overheating by the sun. They have a smell memory of over one year, so he'll be able to follow his mother's old scent trail to find food, shelter and water in the neighborhood. Don't be surprised to see that he returns to his old den box in your yard every two weeks or so to sleep. You'll also see him in between, foraging in your yard. Or, if you don't care to have a den box in your yard and he's been gone a couple of days, remove it, he's found other den sites.

Leslie

Q: A fellow rehabber has a baby opossum with EXTREME bloat. We tried several methods to help but nothing seems to be working. The baby looks like a freaking blow-fish and I'm VERY concerned. If someone can call we'd like to go over everything she's tried since it's a lot to type out. We need help soon or this baby won't make it.

A: Hello Carol,

Is the opossum not urinating?

Are you stimulating the opossum either before or after feeding for it to eliminate? Here's the section on stimulating to urinate from our Orphan Opossum Care Manual:

Stimulation to expel waste

A mother opossum licks the perineal (anal and genital area) of her young in order for the infants to urinate and defecate. It is important for you to simulate this behavior. Holding the opossum upon a surface, lift and hold the tail aloft between two fingers. Manually stimulate the young prior to feeding by gently rubbing the perineal area with a cotton ball, cotton swab, tissue or cloth moistened with warm water. Rub gently from front to back until the opossum urinates and defecates. Do not be alarmed if the opossum does not eliminate each time. For the opossum(s) who didn't eliminate prior to feeding, try getting them to eliminate after feeding. The others may have licked the area causing the young to eliminate in the bedding. Using a non-toxic marker, mark the opossum that has not eliminated and check next time. If still not eliminating and seems bloated or uncomfortable then contact an experienced rehabilitator as soon as possible. Also, read the Common Orphan Care Problems and Solutions section included. As soon as you see those little turds and pee-balls in the litter box provided in their cage, you know you can stop manually stimulating them. Provide a litter box when the opossums are old enough to leave their man-made pouch and walk around the cage. Also provide a hamster size water bottle hanging from the side of the cage. Bowls of water left in the cages can become an invitation for the babies to defecate in them. For those who are not responding to stimulation, I take them outside, or hold them over a cloth or other material that will absorb a urine stream. I turn them on their back, cradling with one hand, while with the other hand, I locate
FROM THE POUCH, continued from page 11

the sternum bone just above the stomach, just below that bone, I apply gentle pressure on the sides and start a gentle squeeze simultaneously from both sides and they should start urinating. I continue the squeeze downward towards the perineal area until no more urine is streaming out. Kinda like removing meat from inside a sausage skin (if you’ve ever done that). I couldn’t find a video online with the method I was taught (with kittens and it worked on opossums) but I did find a stimulation method for bloat online:
https://www.youtube.com/watch?v=c987NYtT79l

Sometimes this is all it takes for things to start moving again. Sometimes it’s an underlying problem that must be identified with x-rays.

Oral medication:
Famotidine (Pepcid AC®)
0.5 mg/kg PO q 12-24 hrs
Treatment for gastric distress, esophagitis. Reduces gastric acid production.

If you use homeopathy, I would try Nux Vomica.
Leslie

Q: Hello we rescued a baby opossum from my dog last Sunday evening. He seems fine. He loves scrambled eggs but what else should he be eating at this stage? He’s about 5-6 inches long from nose to bottom. Can you guess at his age by size? What else can I do for him? I don’t think he’s old enough to survive on his own plus we have coyotes in the area and stray cats.
Joni

A: I’m sending you the orphan care diet to help him out for the couple of weeks it will take him to get to release size.
Leslie

Return Q: He has diarrhea. What should I give him?
Joni

Return A:
Kapectate®
0.25-0.5 ml/kg PO q 4-6 hrs prn
G.I. protectant.
Concerns on the salicyclates. Prefer the use of Sucralfate (Carafate®).
Sucralfate (Carafate®) 10-20 mg/kg PO q 8-12 hrs. Can be crushed, mixed with warm water and given as slurry. G.I. protectant, gastric erosion control. Good for nausea and irritant ileus.

You’ll have to convert ounces to Kg, there are 28.35 grams in an ounce, so you are probably talking about ONE drop of Kapectate from an eyedropper into the opossum’s mouth.
Leslie

Return Q: How do I know when this baby is ready to be released and where do I release him that he won’t just get eaten by a coyote? There are lots of coyotes in my area and stray cats as well.
Joni

Return A: I’ll send you a release size chart. It’s best to release as close as possible to where it was found. Opossums have a smell memory of at least one year and it can follow the scent trails of its Mom and siblings to good locations to find food, water and several different den sites, as they will alter between den sites. There are no absolute guarantees in life. No 100% predator/hazard free spots an opossum can exist on this earth. We have to give them the best chance possible to make the choices that will get them to adulthood. Funny thing, across the mammal spectrum; humans, whales, deers, opossums….

the juvenile period is the most hazardous and most likely for the species to get into trouble.
Leslie

Return Comment: He is now 9” from nose to bum. He just seems a bit helpless to me. Maybe he’s faking that too.
Joni

Final Comment: I don’t know what you are keeping him in, but I’ve seen opossums develop what I call a “prison mentality” when they are in caged captivity for a long period of time, especially when not with a litter. They snap to and their instincts kick in once they know they are free.
Leslie

“Never, never be afraid to do what’s right, especially if the well-being of a person or animal is at stake. Society’s punishments are small compared to the wounds we inflict on our soul when we look the other way.”

Martin Luther King, Jr.
A man said to me, “Oh, you’re a wildlife rehabilitator? That’s cool. What do you make?”

“What do I make?”

I make terrified creatures less afraid. I help an animal with her pain and help her with her babies after she’s been struck by a careless driver, or killed because she sought refuge in your tool shed.

I nurse and care for her surviving babies in order to return them to the environment when they are old enough. Yes, their environment is your neighborhood.

I make children experience sympathy and respect for another living being.

I make the world a less scary place for the last moments of life for each animal that has died in my hands from rat poison left out indiscriminately or lapped anti-freeze leaking from a vehicle.

I make animals fight to live after they have given up.

I make every effort to heal an animal’s wounds that have been left for days in a trap or set on fire by someone who thought it was funny.

I can make you better understand the natural world we must all learn to exist in.

I make myself get out of bed at 3 a.m. for feedings during the night.

I make nothing from my state, county or city. I make every possible moment count towards helping wildlife.

I make a difference.

“What do you make?”

WHAT DO YOU MAKE?
IN MEMORIAM

Edith Hoage

When OSUS held monthly meetings in Orange County, CA, Edith would be seen at the meetings. She was just lamenting to me via email in October that she wished we still had the meetings. I emailed her back saying that it just became too much for me.

Edith had a decades long appreciation and affection for opossums. People who care so passionately about opossums are really special people.

Thank you Edith for all you did to help opossums.

Cynthia Lee “Cyndi” Douglas

October 8, 1962 – October 14, 2017

Cyndi was a long-term member of the Opossum Society of the United States. She volunteered to store and ship the OSUS inventory for nearly two years. I’ll never forget dropping the inventory off at her house, in her garage. I was explaining everything to her when her pot-bellied pig came trotting into the garage from the side yard door. He squealed in astonishment at the sight of strangers (my husband, Gary and I) and ran back through the door. Cyndi explained, “He’s shy.”

I later learned that Cyndi was responsible for getting the city of Burbank, CA to change their laws to allow pot-bellied pigs as domestic pets.

DISHWASHING SOAP AND BLEACH

It’s never, ever safe to mix dish soap with bleach. Check the dish soap label - if it contains any ammonia-derived compounds, it will say “Do not mix with bleach.” Bleach + ammonia creates very bad gases. We have edited that cleaning suggestion out of our DVD, it was based on old dish soap which didn’t contain ammonia-derived compounds.

https://www.thealternativedaily.com/stop-using-bleach-now/
Here is a fun way to help opossums. Combine your two favorite hobbies - shopping and opossums! Visit our online gift catalog. Follow the links to some great shopping sites such as Amazon.com and iGive.com. Buy books, videos, music, toys, gifts and lots more! Every purchase you make helps the opossums. OSUS receives a portion of every purchase. So Spend! Spend! Spend! After all, it is for a good cause! Tell your friends! Remember, you must access Amazon.com and iGive.com from the LINKS on the OSUS webpage in order for us to get credit for your purchase. Do not go directly to Amazon or iGive.

OSUS MEMBERSHIP/RENEWAL FORM

____ Please find enclosed my tax-deductible donation.

____ I want to become a member of O.S.U.S. ($30 / year U.S., $40.00 year int’l)

____ Please renew my membership of OSUS ($30/year) (Check one of the above)

Name: ____________________________________________

Address: __________________________________________

Telephone: __________________________________________

Email: _____________________________________________

Membership is $30.00 annually

Please mail check to:

OSUS
P.O. Box 16724
Irvine, CA 92623

Or register via PayPal online at our website:

www.OpossumSocietyUS.org

Note: The OSUS membership/email list is never given out to any other organization. It is used for official OSUS business only. Your membership renewal month due is the month you joined.

The Opossum Society of the United States
Wishes to Thank Our Contributors

Chuck Douglas, In Memory of
OSUS volunteer Cyndi Douglas
Christey Schreiber
Emily Karassik
Linda Wickstrom
Anne-Marie Schnetzler
Jerri Rivera
Gary Bale
Peter Jackson
Gary Geisler

Morgan Taylor, On Valentine’s Day,
In Honor of Mark Gohlmann
and his love for Me & Marsupials
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Natalie Burton
Penny Melquist
Sweet Binks Rescue
Barbara Trevino
Dawn Krusch
Cris Alvis
Susan Kay
Barbara Trevino
Corey Powers

Nichelle Curtis - Someone carelessly ran over an Opossum I was stopped to save. I hope this donation, albeit small, helps make a difference in some way.

Diana Wallace
Cris Alvis
Hoage Revocable Living Trust

Without our contributors and those members whose work generates donations to OSUS, we would not be able to care for as many orphans, save as many injured or reach so many people with our information on opossums. Good job, and thank you all! Your generosity really make a difference.
Join OSUS and receive ...

- Quarterly Issues of 'Possum Prints.
- Updated diet/development/medical sheets.
- Orphan/Injured care information.
- Veterinarian/emergency care list.
- A warm, fuzzy feeling!

Meetings and Events

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<td>IWRC Basic Wildlife Rehabilitation*</td>
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* All IWRC courses are described and available to purchase on their website (theIWRC.org)

http://www.opossumsocietyus.org

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August 2017-2019

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