

# "Bug of the Month"

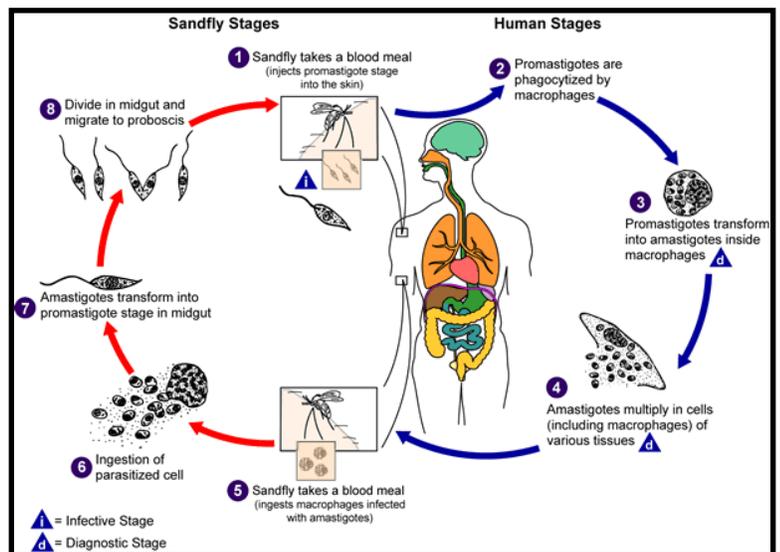
The focus of this month's article is on a disease vector common in the Middle East, the sand fly. Sand flies are in the subfamily Phlebotominae and those species that are medically important are in the genus *Lutzomyia* and *Phlebotomus*.

**WHAT DO THEY LOOK LIKE?** Sand flies are distinguished from other flies by their densely hairy wings that give the adults a moth-like appearance. They are different from other members of the Psychodidae family by the way they hold their wings in a vertical V when at rest instead of holding them flat against the body.

**WHAT DO THEY DO?** There are about 700 species of phlebotomine sand flies of which about 70 are important in the transmission of diseases to humans. Female sand flies require a blood meal in order to produce eggs. Females are quiet "stealth biters" and may go unnoticed by military personnel as the adults fly and bite from dusk to dawn. They may also bite during the daytime if disturbed in their hidden resting sites. Both males and females seek and consume sugar from the plants in the area during their nocturnal flights. Adults rest during the daytime in dark, humid, protected areas, such as rodent burrows, rock crevices and caves. In urban areas, sand fly adults often rest in dark, cool, humid corners of inhabited human and animal structures. Eggs are developed after a blood meal and are deposited in dark, humid, protected areas. They develop into minute caterpillar-like larvae that feed on mold spores and organic debris. Development from egg to adult is 30 to 45 days, depending on feeding conditions and environmental temperatures. The dusk to dawn movement of adults is characterized by flight just above the ground surface to avoid wind. Adult sand flies generally do not travel great distances, and most flights are believed to be less than 100 meters. The females fly in a low hopping flight just above the ground in search of rodents.



One of the more common diseases transmitted by sand flies is leishmaniasis. Leishmaniasis is a protozoan parasite of colonial desert rodents, especially jirds and gerbils. The disease is generally endemic throughout the Middle East in rural areas where the rodents and sand flies are present. The burrow systems of these animals provide protection against extremes of temperature and humidity, and contain considerable amounts of organic debris.



## MANAGEMENT

- Sand flies are susceptible to most pesticides and residual insecticide spraying of ground/structures (inside and outside walls) of encampment areas, coupled with barrier spraying of 200m of territory surrounding encampment sites is effective.
- Personal Protective Measures (proper wearing of permethrin-treated uniforms and skin repellents) will provide nearly complete protection.
- Selection of encampment sites without vegetation or rock outcroppings that enhance rodent harborage is important. Cleanup and removal of garbage and debris that encourages rodent harborage may be necessary for longer stays.

**MORE QUESTIONS?** Please do not hesitate to give your "Bug Docs" a call at com.: (360) 315-4450, DSN: 322-4450 or you can e-mail us at [ndveccmei@pnw.med.navy.mil](mailto:ndveccmei@pnw.med.navy.mil).