Biology and Ecology of *Triatoma recurva*

**Introduction**

In the United States, there are eleven identified members of the genus *Triatoma*. Most of the members of this group carry the *Trypanosoma cruzi* (Klotz, 2014), a protozoan parasite known to cause Chagas Disease (otherwise known as American trypanosomiasis). *Triatoma recurva*, a species of the genus *Triatoma*, is commonly found in the Southern part of the United States, specifically Arizona. Their entire life span is only about two years. Primary hosts of this species of kissing bug are squirrels, wood rats, and reptiles. Accordingly, *Triatoma recurva*'s primary habitats consist of rodent nests and reptile dens, although they will also feed on humans and live in human residencies (Klotz, 2014). These bugs follow nocturnal flight rhythms and are known for feeding on sleeping hosts, especially in the areas around the face- hence the name “kissing bugs” (Lehane, 1992). It’s important for the public to be wary of *Triatoma recurva* because, as mentioned, they can vector many disease-causing agents including *Trypanosoma cruzi*, which is responsible for Chagas disease (Licón-Trillo A 2006).
Life Cycle, Feeding, and Mating Habits

Incubation periods of kissing bugs is about 19 days, meaning it takes about 19 days for the eggs to hatch, and about 70% of eggs hatch. (IbarraI, 2012). Mean feeding time is about 10 minutes for instars. Instars must feed about 3.5 times to molt to the next instar. There are five instars total, before the bug is considered an adult. The defecation delay of this species is important because a short defecation delay (under 10 minutes) can cause spread of disease. *T. recurva* does show a defecation delay of under 10 minutes, making it a viable vector for bacterial or parasitic infection such as *T. cruzi*, the disease agent for Chagas disease.

Triatoma recurva, and other kissing bugs, derive their nutrition from hematophagy. These bugs must take flights to acquire blood meals (Rabinovich, 2011). Kissing bugs have nocturnal flight rhythms based on their nutritional status, and seasonal temperature outside. Although kissing bugs are attracted to light, they take nocturnal flights when searching for a blood meal. They initiate less flights when the temperature range is colder, or during winter months, and tend to increase amounts of flights taken when the temperature range is warmer, or during the summer (Lehane, 1992). It is basic biology of the kissing bug to take flights at night because these bugs have a painful bite, and in order to prevent the host from noticing they must feed on sleeping hosts.

Mating of *Triatoma recurva* has not been well studied. Other species of kissing bugs display a copulation period of about two to ten minutes. The male is observed to always initiate copulation. Females have been observed rejecting males often, usually if the first blood meal as an adult was less than 16 days prior (Ramirez-Rovelo, 1993).

**Disease Associated with Triatoma recurva**
The *Triatoma recurva* vector is one that carries many parasites for infection. As we know this vector is very common to the Arizona area which is very close to our residents in New Mexico. (Klotz 2014) Chagas disease is transmitted through the feces of kissing bugs when they are feeding on blood. Much of this infection is also transmitted by immigrants that are unknowingly infected. (Klotz 2014) A lot of these cases go under the radar because they simply do not cause the reaction in which people believe they need to be hospitalized or otherwise. The implications of our vector are so strong and discrete, making it able to take many lives quickly and have a high infection rate. The most common disease associated with kissing bugs is Chagas disease. It’s easy to unknowingly put yourself in the path of the vector *Triatoma Recurva* and other kissing bugs, because they feed on sleeping hosts. (Klotz 2014).

The problem with their fast feeding and transmission methods is when the parasite is put into the body, how fast and discreet it can infect. In this article the problem is that once a human has contracted for example the Chagas disease then they unknowingly will suffer severe consequences of heart problems as well as severe heart disease from the contraction into the system. (Klotz 2014) The review of the study this article did was in Arizona said that only 28% of the kissing bugs actually went to humans and had a blood meal. The scientific research behind how they are able to spread the parasite so vastly is still under investigation because it seems in the review of the study this article was examining was not finding that the kissing bugs were feeding on large numbers of humans and running after them. (Klotz 2014)

**Geographical Range**

As mentioned, eleven species of the genus *Triatoma* are found in the United States. However, the range in which these insects reside lies mostly in the southern regions due to its relative warmth compared to that of the north. However, due to climate change, these insects are
slowly expanding further north (Klotz, 2014). These insects can readily adapt to their surroundings as well, which might explain their ability to travel further north. Due to the hotter temperatures in countries that are south of the United States (i.e. those in South America), \textit{T. recurva} colonize more in those countries than in the United States. This colonization can also be explained by the fact that kissing bugs are native to this region. Chagas disease, the disease \textit{T. recurva} vectors, is commonly found in endemic areas of South America. In the United States, \textit{T. recurva} are most commonly found in states such as Texas, Arizona, and New Mexico (Klotz, 2014). The map (Klotz, 2014) to the right displays the common \textit{Triatoma} species found throughout the country. Based on the map, it is clear that some \textit{Triatoma} species are found in the northeast, but the majority of the species are found in the south. However, other sources (J.H. Klotz, 2010) state that the range of \textit{T. recurva} resides solely in Arizona and not other surrounding states. Despite this difference, the reported range of \textit{Triatoma} species still remains the same: southern areas of the United States ranging from south California to North and South Carolina (Klotz, 2010).

References Cited


