

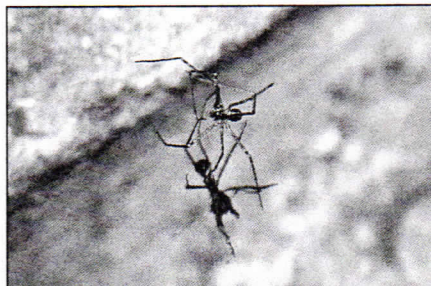




greatest bug-adventure of the trip, but one other place worth mentioning was my parents' friends' house. It's the highest house on the mountain and it's amazing how different the bug-life is in contrast to my parents' house down on the lake. The view is nearly as spectacular, with "Scorpion Island" visible to the SE. After dusk, *Strategus* came flying in over the ping-pong table on the back deck. We collected about a half dozen of them, and found some *Zylorictes* too. To the delight of all, fireflies suddenly began lighting up around the yard. Everybody loves fireflies and it was a fitting way to end our last evening at Lake Chapala.

### Closing

I can't wait to visit again next year and I'd definitely like to make it down there later in the rainy season. I would also like to set up proper collecting lights in the area. A few side trips to nearby areas are planned. I'd like to visit the famous Monarch destinations one of these years. I hope to become a source of information for insects in the area. My parents will live out their days there and it is very likely I will retire there as well.



Spider catching a leafcutter ant soldier.



"Skeleton Stick"

By Orin McMonigle and Aaron T. Dossey  
*Anisomorpha buprestoides* is one of the most common and widespread stick-insects in the US (1). It is a handsome phasmid; a widely variable specie sometimes quite brightly colored. This contrasts to most phasmid species that are often decidedly drab to match sticks or

leaves. Most *A. buprestoides* are very dark brown with two brown to light tan stripes running the length of the body, including the head (fig.1). I remember a picture in a book (2) showing several pairs on a palm leaf and thinking "Wow! ...Too bad they don't look like that!" While the common brown form varies somewhat in color intensity across its range from Texas to Florida, I thought this picture was simply a rare example among the species or the result of overexposure or overzealous photo editing. Aaron had also been puzzled by the photo of a jet-black and bright white pair often associated with the species (1). However, over the past year Aaron had occasion to witness the true variability in this species. He was able to visit locations in Ocala National Forest (Florida) where the black and white form of these sticks occurs.

The "Skeleton Stick" is simply a descriptive name for a geographic color form of *A. buprestoides* that occurs famously in Ocala National Forest. The body is jet black on top with a column of bone-white, segmented markings extending down the middle (fig.2). The color pattern very much resembles a skeleton costume. The legs are jet black, the underside chalky white and the antenna segments are black with white margins. It is very common in its locale. It is not a new discovery; Hetrick reported first observing them in 1947 at Juniper Springs, Marion County,

Florida (3).

### Defense

*Anisomorpha* are often warningly colored, possibly because they have large glands that produce a noxious defensive secretion (4). The secretion contains a unique volatile chemical called anisomorphal (of course), which causes sneezing and watery eyes within a foot or so (fig.4).

Recently it has been discovered that the secretion can also contain an isomer of anisomorphal called dolichodial, which has been reported from plants.

*Peruphasma schultei*, a recently described Peruvian phasmid (5) has also been shown to produce an isomer of this compound called peruphasmal (6). If it gets in the eyes there is an incredibly uncomfortable burning sensation. Dogs have been reported with permanent eye damage. However they may neither understand the need nor have the ability to rinse with water and the burning may cause them to damage their own eyes trying to wipe it away (7, 8).

### Size

At adulthood, females of this species are from 60-80mm while the males seldom grow to more than 35mm. The "Skeleton Stick" is in the medium to large size range for the species.

### Mating

Some of the well known characteristic mating behavior of *A. buprestoides* seems to be similar for both the common brown and black and white "Skeleton stick" forms. The smaller male latches onto the female and usually doesn't let go till death. The male can latch onto a female up to two molts before she reaches adulthood and only temporarily releases when she needs to molt. He skillfully climbs around on her while she is molting and doesn't disrupt her.

### Ova

Females lay up to 300 eggs (fig.5) over a five-month period. The shell is mottled gray but turns brown with age. 1/2" nymphs hatch after three to four months at room temperature. As long as ova are not allowed to dry out for long periods the hatch rate is high, 80-90%.

### Caging and Care

The US *Anisomorpha* species, *A. buprestoides* and the similar *A. ferruginea*, are among the easiest stick insects to maintain in captive culture. Overcrowding is almost impossible. A glass aquarium with a screen lid is best to maintain some humidity and makes up close viewing (from the side) easy without getting sprayed. The screen lid is important for ventilation. A few inches of substrate is useful to maintain some humidity but is not required. Medium to high humidity is preferred but low humidity is acceptable as long as it is constant.

### Food

*Anisomorpha* species accept fresh leaves of oak, rose, blackberry, strawberry, pyracantha, privet, leatherleaf or pragnese *Viburnum*, Chinese privet *Ligustrum sinense* (both green "northern"

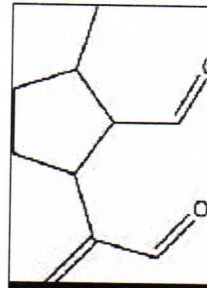


Fig. 4. Non-stereospecific structure of the active component of the defensive spray of *Anisomorpha buprestoides* and *Peruphasma schultei*. Isomers of this compound have been named: anisomorphal (3), dolichodial, and peruphasmal (4). A. Dossey.





and green and white "variegated" varieties) and many commonly used phasmid foodplants.

### Conclusion

*Anisomorpha buprestoides* is probably the most beautiful and variable phasmid species in the United States. The Skeleton Stick is one of the most striking examples of the color variation that exists in the species. It is even more striking up close than in photographs. *Anisomorpha* are among the easiest phasmids to keep and the combination with unbelievable coloration should make this an extremely popular creature. *A. buprestoides* is one of the oldest pet stick-insects. The normal color form has been commonly available in the European hobby since 1970 (9) and likely was cultured in the USA prior. It's surprising that for such a long-kept specie, the most striking color variants are rare in culture. There is much to be learned about the biology underlying the wide variability in color.

The story doesn't end with this beauty; there's another geographic color variety in Florida where the stripes are red with white on the head and inside margins (fig.3). An article with details on a different color form, natural habitats, laboratory rearing and mating assessments is planned.

### References:

1. Thomas, M. C. (2001) **The Twostriped Walkingstick, *Anisomorpha buprestoides* (Stoll), (Phasmatodea: Pseudophasmatidae)**, Fla. Dept. Agri. & Consumer Svcs. Division of Plant Industry - Entomology Circular 408.
2. Preston-Mafham (2000) **The Natural World of Bugs and Insects**. p.500. PRC Publishing Ltd. London
3. Hetrick, L. A. (1949) **A. Field notes on a color variant of the two-striped walkingstick, *Anisomorpha buprestoides*, (Stoll)**. Florida Entomologist. (June) Vol. 32, No. 2 pp.74-77.
4. Meinwald, J., M.S. Chadha, J.J. Hurst, and T. Eisner. (1962) **Defense Mechanisms of Arthropods - IX: Anisomorph, The Secretion of a Phasmid Insect**, Tetrahedron Letters, 29-33.
5. Conle, O. V., and Hennemann, F. H. (2005) **Studies on neotropical Phasmatodea I: A remarkable new species of *Peruphasma* Conle & Hennemann, 2002 from northern Peru (Phasmatodea : Pseudophasmatidae : Pseudophasmatinae)**, Zootaxa, 59-68.
6. Dossey, A.T., Walse, S.S., Rocca, J.R., Edison, A.S. 2006. **Single-insect NMR: A new tool to probe chemical biodiversity**. Journal of the American Chemical Society. 1(8):511-514.
7. Dziedzic J. (1992) **Insect defensive spray-induced keratitis in a dog**. Journal of the American Veterinary Medicine Association 200: 1969.
8. Montross, Chris (2002) ***Anisomorpha buprestoides* (Stoll 1813)** Vol. 2 Issue 1 p.12. Invertebrates-Magazine. Elytra and Antenna.
9. Brock, P. D. (2003) **Rearing and Studying Stick and Leaf Insects**. The Amateur Entomologists' Society, Orpington. Revised Edition. The Amateur Entomologist Vol. 22.



Fig. 5. *A. buprestoides* ova. O.M.

### Back Cover Legend

("Skeleton stick" p. 19)

Fig. 1. Adult female *Anisomorpha buprestoides* common coloration, Alachua County, Florida. Steve Guin

Fig. 2. Adult pair *Anisomorpha buprestoides* "Skeleton" coloration, Marion County, Florida. S. Guin

Fig. 3. Adult female *Anisomorpha* "red" coloration, NW of Okeechobee Lake, Highland County, Florida. Matthew Jerousek

(Allpet Roaches' Roach, p. 10)

4. Adult female *Eurycotis decipiens*.

(Mexico II, p. 15)

5. Colorful metallic weevil, P. Clausen.

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