

ASSOCIATION FOR TROPICAL LEPIDOPTERA

NOTES

P.O.Box 141210
Gainesville, FL 32614, USA
Editor: Andrei Sourakov
Assoc. Editor: Thomas C. Emmel

June 2009

Exhibit of Zuni Butterfly Art at McGuire Center Extended through 2009

While the vast majority of the space in the McGuire Center for Lepidoptera and Biodiversity (part of the Florida Museum of Natural History, University of Florida in Gainesville) is devoted to research and exhibits involving actual butterflies and moths, one area showcases how the butterfly/moth image is incorporated into the mythology and spirituality of human cultures. This "Hall of Culture and Science" is located directly across from the "windows" that allow visitors the opportunity to watch museum personnel preparing specimens in actual laboratories.

When the McGuire Center opened in late 2004, the gallery featured a first-of-its-kind exhibit: 13 awe-inspiring examples of modern tapestry art depicting the butterfly-human association as portrayed originally in artwork of pre-Hispanic indigenous Mexico. The textiles were prepared by two internationally recognized Zapotec master weavers, Isaac Vásquez García and Alberto Vásquez Jiménez, cousins living in Teotitlán del Valle in Mexico's southern state of Oaxaca. All tapestries were loomed from virgin wool and colored with natural dyes using ancient dye recipes revived by Isaac Vásquez G. The Zapotec butterfly textiles were loaned to the museum from my personal collection; the exhibit ran for approximately two years.

Then in January 2008, the Hall of Culture and Science premiered another unique offering: "Butterflies and Moths in Contemporary Zuni Art." This current display features an assortment of 85 pieces from my personal collection. While originally scheduled to close at the end of the year, the exhibit has proven so popular with visitors and news media, that museum officials have now extended the run-time through December 2009.

The Zuni are Native Americans who live on the Zuni Reservation, which is located in the ruggedly picturesque high desert of northwestern



A contemporary butterfly tapestry by Isaac Vásquez García. The design originally appeared on a ceramic dish of the Mixtec Culture in pre-Hispanic Oaxaca, Mexico. Note the human characteristics of the butterfly.



Sr. I. Vasquez and a family member put final touches on a large tapestry depicting a Maya warrior cloaked in a jaguar skin. As with all Vasquez tapestries, the dyes are from natural organic sources; dye recipes date back to pre-Hispanic times.

A joint ATL and Southern Lepidopterist Society Meeting will take place at the McGuire Center on September 26-27, 2009. In addition to presentations, there will be a photocontest, field trips, and a banquet. Drs. Jacqueline Miller (jmiller@flmnh.ufl.edu) and Deborah Matthews Lott (mothnut@hotmail.com) are program chairs for the meeting. Please contact them to submit a title and an abstract of your presentation or poster. You may also request an information packet on places to stay, field trips, etc., by an email to them.

The photocontest will be held in three categories: butterflies, moths, and immature stages. A \$10 entry fee for each category is required for entries to be considered. All entries will be displayed at the meeting, and winning photos will be printed in one of the ATL publications. Prices will be awarded at the meeting (or mailed to the winners who are unable to attend). Please, send your photocontest entries (jpg files of large enough resolution to be printed) to asourakov@flmnh.ufl.edu. Check made to Association for Tropical Lepidoptera should be sent to ATL Treasurer, P.O. Box 141210, Gainesville, FL 32614-1210. You can also submit your payment via PayPal at www.troplep.org.

New Mexico near the Arizona border. The reservation consists of over 600 square miles; nearest cities are Grants and Gallup. Most of the nearly 12,000 Zuni live in Zuni Pueblo (village) or its suburb, Black Rock. Zuni Pueblo is the largest and most traditional of the 19 New Mexican pueblos. The Zuni people remain strongly independent, boasting a sovereign nation with a constitutional government, courts, police force, school system, and economic base. First contact between Zunis and Europeans occurred in 1540, long before the Pilgrims arrived on the Atlantic seaboard, when the Spanish Conquistador Francisco Vasquez Coronado and his army invaded a Zuni ancestral village in search of the fabled “Seven Cities of Gold.” Subsequently, outside contacts remained sporadic, largely because of the geographic isolation of the pueblo. Even today, the Zuni tend to resist outside influences, including the establishment of motels/hotels and gaming casinos.

The Zuni Pueblo is an extended artist colony: up to 90 percent of Zuni households are involved in cottage art production. Zuni artists fashion precious metals, stones, and natural organic materials into jewelry, fetishes (small, personal charms or talismans used to provide protection, healing, or success in hunting), kachinas (doll-like representatives of deified ancestral spirits), pottery, weavings, beadwork, and an assortment of other arts. However, Zunis are perhaps most noted for their mastery of silverwork and stone fetishes. [Most silverwork is crafted into exquisite jewelry, often inlaid with semiprecious stones such as turquoise. Fetishes, on the other hand, originally were small stones shaped with simple instruments and then ceremonially blessed to enhance their power. Today, however, power tools enable carvers to create fetishes from a variety of materials, e.g., bone, wood, shell, and into a vast array of forms and styles. So popular, many fetishes bypass ceremonial blessing so that they can be marketed to tourists and collectors.]

Because Zunis believe that all living things manifest a spiritual nature, animal and plant motifs are common within the various art forms. And ranking high within the pantheon of animal subjects are butterflies and moths. In Zuni mythology, Lepidoptera represent fertility because they are important plant pollinators and because they usually appear at the same time as the desert’s life-giving rains. In legend, the Creator made butterflies to make people happy, using flowers, fall leaves, yellow pollen, white corn meal, green pine needles, and sunlight. The Zuni honor the butterfly with the Butterfly Maiden dance. This important spirit is usually depicted with corn and water, both prominent emblems of life in most cultures in the American Southwest. In addition to fertility, butterflies and moths also represent beauty, rebirth and transformation, sometimes associated with the ability to know or change the mind. These beliefs stem from the insects’ amazing metamorphosis from caterpillar to cocoon (or chrysalis) to adult butterfly or moth.

Most items in the current Hall of Culture and Science exhibit are relatively small. Six, however, are medium-sized paintings. These paintings—original, meticulous and highly symbolic—are the work of Edward Lewis, a young man of Zuni-Acoma heritage who is an award-winning artist as well as a spiritual leader amongst the Zuni. Mr. Lewis is noted for combining realism with Zuni mythology. Describing his first interest in butterflies, Mr. Lewis says: “In mid school one day, as I was outside



A contemporary Zuni ceramic vase. While beetles and wasps adorn the lip, one of the central designs is of a deer encompassed by a large butterfly. The combination of the deer and butterfly indicate the need for balance between strength and fragility in our lives.



A contemporary Zuni pin. Materials are silver, turquoise, coral, and shell. Although both the Navajo and Zuni both craft decorative silver jewelry, that of the Zuni tends to be more delicate.

during lunch, I saw two butterflies chasing each other around a flower. This gave me the idea of creating a painting of butterfly maidens with authentic butterfly wings. (I personally like the Tiger Swallowtail and Monarch.) Ever since, I have specialized in painting butterfly maidens. You know, metamorphosis in the butterfly’s life cycle is central to our beliefs in how we came about into this world. So, butterflies are extremely important to us Zuni. I use acrylic paints and finish with a gloss—a glittery type of flakes that I sprinkle over the painting. I like the way it brings my paintings to life.”

Gary Noel Ross
GNR-butterfly-evangelist@juno.com

Appressed basking posture – a prevalent method of behavioral thermoregulation adopted by butterflies of cold desert of Ladakh (India)

Abstract: The basking behavior has been recorded in Ladakh (India) in four species of butterflies: *Vanessa cardui*, *V. cashmiriensis* (Nymphalidae), *Pieris brassicae* (Pieridae), and *Parnassius epaphus* (Papilionidae). All the adopted appressed basking posture at high elevations, in response to environmental conditions.

Introduction

The major constrain for metabolic activity and movement in ectothermic animals is the spatiotemporal variation in the thermal environment, which consequently affect their reproduction (Kingsolver, 1987). The selection therefore leads to the evolution of efficient and specialized mechanisms to regulate the body temperature within optimal limits and this process is called thermoregulation (Kemp & Krockenberger, 2002). Most butterflies require a high and restricted range (28°C-40°C) of body temperature for efficient flight (Kingslover, 1985). The thermoregulation mechanism in butterflies is quite different from moths. The preflight warming by internal heat generation is common in moths but not found in butterflies. Being heliotherms, they drive their heat exclusively from sun (Clench, 1966). Most butterfly species achieve this via strategic microhabitat selection coupled with use of specific (basking) body orientations and postures with respect to incidental solar radiation and wind (Kingsolver, 1995). Butterflies mostly act as model animals for study of thermoregulatory behavior (Clench, 1966; Wasserthal, 1975; Kingsolver, 1985; Rutowski et al. 1994; Srygley, 1994). Wing posturing plays a central role in regulation of temperature in butterflies. Dorsal and ventral wing surfaces play an important role in the process of heat transfer, either by conductance of absorbed heat to thorax or by reflectance of solar radiation on to the body tissues (Kingsolver, 1987) or by shielding the body tissue from solar radiation (Rawlins, 1980). Another basking posture involves the angling of wings downward so that the distal margins are appressed to the substrate and is most often adapted by butterflies in cool and intermittently overcast conditions (Wasserthal, 1975; Kemp & Krockenberger, 2002). Thus four species specific mechanisms occur in butterflies i.e. dorsal basking (where the wings are totally spread), lateral basking (wing folded over the body) reflective basking (wings held upwards at an angle) and appressed basking (wings angled downwards and appressed to substrate) (Kemp & Krockenberger, 2002).

Observations

Here we report thermoregulation behaviour in four species of butterflies viz., *Pieris brassicae* (Linnaeus) (The Large Cabbage White), *Vanessa cardui* (Linnaeus) (The Painted Lady), *Vanessa cashmiriensis* Kollar (The Indian Tortoise Shell) and *Parnassius epaphus hillensis* Bang-Haas (The Common Red Apollo) from cold desert areas of Ladakh (Jammu and Kashmir, India). The appressed basking posture is adopted by all the butterfly species. Basking behavior in *Vanessa cardui* was observed on 18.07.2008 near Guptak Wetland, 15 kms away from Leh situated at an altitude of 3209 m. Two specimens were observed basking on the dry ground (Fig. 1) at 10.30 am. The sun was there but the weather was little bit cloudy with 18.5°C temperature and 20% humidity. In the severe wind, the

adults were preferring the ground for basking rather than sitting on adjacent stones or vegetation. The hindwings were totally appressed to the ground, whereas the forewing margins were very close to the ground surface, thereby forming a tent-like structure to trap air inside for warming the body. The adults were sitting in the same posture for 10-15 minutes; only upon disturbance they fly a little away and again settle on the ground. In *Pieris brassicae* the basking behavior was observed at Ganglas (3,868 m), 9 kms from Leh on 28.07.2009 at 10.00 am near an agricultural field. Here also the appressed posture was adopted by the adult and the abdomen also protruded from the wings to get exposed to direct sunlight (Fig. 2). Five specimens were observed basking in the nearby vicinity and the surface used was either the ground or the small stones. The weather was sunny with 21° C temperature and 23% humidity. The lone specimen of *Vanessa cashmiriensis* was observed basking on the ground surface (Fig. 3) near a brackish water lake at

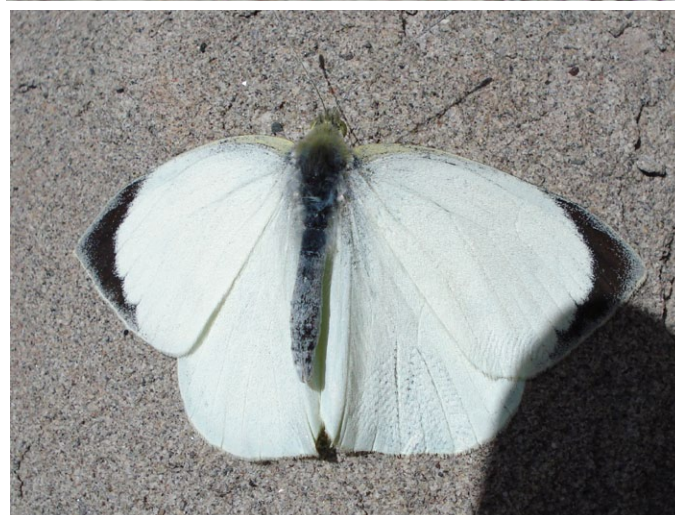


Fig. 1-2. Appressed basking in butterflies of Ladakh, India: *Vanessa cardui* (Guptak Wetland); *Pieris brassicae* (Ganglas);.



Fig. 3-4. Appressed basking in butterflies of Ladakh, India: *Vanessa cashmiriensis* (brackish water lake (Tsommoriri)); *Parnassius epaphus hillensis* (Khardungla).

Tsomoriri (4,582 m) at 12.30 pm (temperature 25°C, humidity 20%). The appressed basking posture was adopted by the adult and upon disturbance it flew to settle near by and again adopted the same posture for basking. Thermoregulation behavior in *Parnassius epaphus huegelli* was observed near Khardungla (Fig. 4), the high pass situated 37 km by road from Leh. The habitat of this species is cold Palaearctic alpine desert, above timber line. The south Pullu check-point is 24 km from Leh and in the stretch of seven kilometers, i.e. four kilometers after South Pullu and two kilometers before Khardung La, (3,900 m to 5,100 m), more than 20 specimens were observed sunbasking between 12.00 and 15.30 pm (temperature 19.5°C, humidity 21%). The weather was sunny and; all individuals adopted appressed basking posture. They were sitting either in between small bushes or on the concrete road to avoid severe winds.

First author also observed *V. cardui*, *V. cashmiriensis* and *P. brassicae* at lower altitudes (350 - 1500m). The basking postures adopted by these species was either dorsal, lateral or reflective, in contrast to the appressed basking posture at high altitudes. From this it is inferred that under harsh climatic conditions, i.e. low temperature, less humidity and strong wind velocity, the butterfly species prefer appressed basking.

Acknowledgements: The authors are thankful to Dr. Ramakrishna, Director, Zoological Survey of India, for

providing facilities and financial assistance to undertake the present studies.

References Cited

- Clench, H. K. 1966. Behavioural thermoregulation in butterflies. *Ecology* 47:1021-1034.
- Kemp, D. J. & Krockenberger, A. K. 2002. A novel method of behavioural thermoregulation in butterflies. *J. Evolutional. Biol.* 15 (6): 922-929.
- Kingsolver, J. G. 1985. Thermal ecology of *Pieris* butterflies (Lepidoptera:Pieridae); a new mechanism of behavioural thermoregulation. *Oecol.* 66: 540-545.
- Kingsolver, J. G. 1987. Evolution and coadaptation of thermoregulatory behavior and wing pigmentation pattern in pierid butterflies. *Evolution* 41: 472-490.
- Kingsolver, J. G. 1995. Viability selection on seasonally polyphonic traits : wing melanin pattern in western white butterflies. *Evolution* 49 : 932-941.
- Rawlins, J. E. 1980. Thermoregulation by the black swallowtail butterfly, *Papilio polyxenes*. *Ecology* 61:345-357.
- Rutowski, R. L., Demlong, M. J. & Leffingwell, T. 1994. Behavioural thermoregulation at male encounter sites by male butterflies (*Asterocampa leilia*, Nymphalidae). *Anim. Behav.* 48: 833-841.
- Srygley, R. B. 1994. Shivering and its cost during reproductive behavior in Neotropical owl butterflies, *Caligo* and *Opsiphanes* (Nymphalidae : Brassolinae). *Anim. Behav.* 47: 23-32.
- Wasserthal, L. T. 1975. The role of butterfly wing in regulation of body temperature. *J. Insect Physiol.* 21: 1921-1930.

Avtar Kaur Sidhu, H. S. Mehta and K. Chandra*
High Altitude Zoology Field Station, Zoological Survey of India, Saproon,
Solan-HP, India (173 211)* *Central Regional Station,
Zoological Survey of India, Jabalpur, M.P., India (482 002),
avtarkaur2000@gmail.com

Larval Hostplants of Butterflies in Nevada

by George Austin and Patrick Leary

The work was published by ATL in August 2008. It contains 134 pages, 40 black-and-white drawing, 14 color plates.

Paper copies are available for \$30 (plus shipping: \$4 domestic, \$12 - international). Order from: Peter J. Eliazar, Treasurer, ATL, P. O. Box 141210, Gainesville, FL 32614-1210, USA

It is also available for free downloading at <http://www.troplep.org/hl.htm>

