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Utah's Dixie

by Todd L. Stout

Utah's Dixie" represents one of the most picturesque, biodiverse regions of Utah and one of the most scenic areas in the world. Located in Washington County in the southwest corner of Utah, this physiogeographic region , also known as "Utah's Color Country," displays abrupt topographical changes ranging from volcanic remnants and mountains to Navajo sandstone hills and buttes. The native flora also displays dramatic changes ranging from aspen-ponderosa pine forests in the Pine Valley Mountains to joshua tree-creosote flora of the Beaver Dam Slope in the northeastern Mojave Desert. In the words of Schmerker, "Utah's Dixie is where the Basin and Range province, the Colorado Plateau and the Mojave Desert converge into a surreal pile of rocks, flora and fauna..."

St George, Washington County, Utah - The Heart of Utah's Dixie
Photo Courtesy of www.olwm.com www.utahstgeorge.com

The history of the region is perhaps as equally enchanting as its topography. After the Mormon pioneers settled the Salt Lake Valley in 1847, their leader, Brigham Young, in December of 1849, sent Parley P. Pratt and fifty other men to explore this unique geographical region. Parley P. Pratt's glowing report of the fertility and water availability soon prompted colonization. However, taming the Virgin and Santa Clara Rivers during drought times and subsequent torrential floods at other times became more than a challenge. The heavy rains and early season floods during 2005 which washed out many homes and bridges along the Santa Clara River is proof enough that this is as true today as it was in the past!

The region is known as "Utah's Dixie" because of the establishment of the Cotton Mission in the city of Washington in 1857. Because of the Civil War, Brigham Young, knowing that the cotton necessary to make clothing would become scarce from warring states, hand picked and sent 38 experienced Southern families to till, sow, and harvest cotton.

Mainly because of its breathtaking vistas and mild winters, Utah's Dixie is one of the fastest growing regions in Utah where snowbirds, golf gurus, retirees, or anyone else looking for improved scenery are attracted to the region. The downside to this accelerated growth in Utah's Dixie is the ongoing destruction of native and distinctive lepidoptera-rich habitat.

In addition to local areas such as the Virgin River Gorge, Snow Canyon State Park, Tuacahn Outdoor Theater,

Hurricane Cliffs, and Red Cliffs Desert Reserve, tourists and locals are also attracted to nearby Zion National Park, Cedar Breaks National Monument, and Bryce Canyon National Park. Even the Grand Canyon in northern Arizona is within a few hours' drive of St. George.

Due to its geology, southern latitudes and lower elevations, Utah's Dixie contains several unique environments found nowhere else in Utah. Consequently, many butterflies and skippers are found exclusively here in the southwest corner of the state. These environments can be divided into five topographical subsections known as the Utah Mojave, Virgin River Basin, Dixie Corridor, Montane, and Plateau regions.

The Utah Mojave (Figure 2, p. 18) represents the northeastern limits of the Mojave Desert and is situated in the extreme southwest corner of Washington County. At a statewide elevational low of 2,200 feet, it includes the Mojave Desert floor, the Beaver Dam Wash, the Beaver Dam Slope, and even portions of the Beaver Dam Mountains where *Yucca brevifolia* (joshua tree) makes an attempt to climb the mountains. However, as witnessed by those who have driven old US 91, joshua trees haven't quite made it over the summit of Utah Hill. COL Clyde Gillette defines the Utah Mojave as that portion of Utah's Dixie that contains native stands of joshua trees.

Another plant that seems to be Utah Mojave specific is *Thamnosma montana* (turpentine broom), the larval hostplant of *Papilio coloro* (mojave swallowtail). Other butterflies that are found in the Utah Mojave are *Thessalia leanira alma* (utah beaded checkerspot), *Apodemia mormo mormo* (mormon metalmark), *Callophrys comstocki* (desert green hairstreak), *Heliopetes ericetorum* (northern white skipper), and, in some years, *Libytheana carinenta larvata* (american snout).

The Virgin River Basin represents the riparian section of the St. George basin and includes the Santa Clara and Virgin Rivers (Figure 3, p. 18). The plant community found here includes *Larrea tridenta* (creosote bush), *Atriplex lentiformis* (big saltbush), *Phragmites australis* (common reed), *Baccharis glutinosa* (seep willow), *Salix exigua* (sandbar willow), *Populus spp.* (cottonwood), and, unfortunately, the nonnative *Tamerisk ramosissima* (salt cedar). Some of the butterflies found here are *Danaus gilippus thersippus* (queen), *Precis coenia* (buckeye), *Ochlodes yuma yuma* (yuma skipper), and *Limenitis archippus obsoleta* (arizona viceroy).

The Dixie Corridor represents the rest of the St. George basin including low elevation lava hills and ridges, red Navajo sandstone knolls, buttes, and hills (Figure 4, p. 18), as well as the *Yucca*, *Larrea*, and *Rumex*-covered sand dunes found in the vicinity of Warner Valley. Some of the butterflies and skippers found in this subsection include *Chlosyne lacinia* (bordered patch), *Anthocharis cethura pima* (desert orangetip), *Euchloe* (*hyantis*) *lotta* (desert marble), *Euphydryas anicia hermosa* (anicia checkerspot), *Chlosyne neumoegeni neumoegeni* (desert checkerspot), *Papilio indra calcicola* (cliff swallowtail), *Apodemia palmeri* (palmers metalmark), *Pyrgus scriptura* (small checkered skipper), and *Megathymus yuccae coloradensis* (yucca giant skipper). Figure 1 (p.17) illustrates a collage of some of the unique butterflies found in Utah's Dixie.

The Plateau region of Utah's Dixie located in the south, southeastern portion of Washington County includes the Navajo sandstone, Chinle, and other rock formations that make up the knolls, buttes, and mesas of Warner Ridge (Figure 5, p. 18), Sand Mountain, Mollies Nipple, Vermillion Cliffs, Hurricane Cliffs and Zion National Park.

One of the best places to witness the scenic dissimilarities found in Utah's Dixie is from I-15 itself. As you drive northeast from St. George to Cedar City and approach the Hurricane area, you will see the Dixie Corridor transition from the Navajo sandstone hills and lava ridges to the montane backdrop of the Pine Valley Mountains. Looking to the south, your vista is completely different as you witness many of the Plateau buttes and knolls against a scenic backdrop of Zion National Park.

Some of the butterflies that are found in the Plateau region of Utah's Dixie include *Precis coenia* (buckeye), *Apodemia mormo mormo* (mormon metalmark), *Brephidium exilis* (pygmy blue), *Megathymus yuccae coloradensis* (yucca giant skipper), and, at higher elevations, *Polygonia satyrus* (satyr comma).

The Montane region of Utah's Dixie is represented mainly by the Pine Valley Mountains (The highest point reaches 10,365 feet.) located in the north-central portion of Washington County. One of the more picturesque canyons in Utah's Dixie that demonstrates a subtle transition from Dixie Corridor to montane is Leeds Canyon (Figure 6, p. 18). The mouth of Leeds Canyon (3900') contains Navajo sandstone ridges with a desert community of common trees and shrubs such as *Larrea tridenta* (creosote bush), *Juniperus osteosperma* (utah juniper), *Quercus turbinella* (permanent oak), *Populus fremontii* (cottonwood), and *Prunus fasciculata* (desert almond). Some of the butterflies that are found in the lower portions of Leeds Canyon include *Callophrys siva siva* (juniper hairstreak), *Nymphalis antiopa* (mourning cloak), *Anthocharis cethura pima* (desert orangetip), *Anthocharis sara thoosa* (southwestern orangetip), *Adelpha eulalia* (arizona sister), *Brephidium exilis* (pygmy blue), *Euphydryas anicia hermosa* (anicia checkerspot), *Cyllopsis pertepida dorothea* (canyonlands satyr), and *Erynnis meridianus* (meridian duskywing).

As you proceed east up Leeds Canyon toward Oak Grove Campground and the Pine Valley Mountains, the desert community transitions from creosote-shadscale scrub to pinyon-juniper forest. Similarly, *Quercus turbinella* is gradually replaced by *Quercus*

gambellii; *Penstemon palmeri* is replaced by *Penstemon eatonii*; and *Lomatium parryi* (parry lomatium) is replaced by a small population of *Lomatium scabrum tripinnatum* (cliff lomatium). One of the species of butterflies that is found more commonly in the higher elevations of Leeds Canyon at Oak Grove Campground is *Papilio bairdi* (bairds swallowtail).

Another locale in the Pine Valley Mountains is Pine Valley Campground (Figure 7, p. 18). Although Pine Valley Campground is roughly four aerial miles from Oak Grove Campground, it would require a 63-mile drive to access one from the other as the terrain separating the two campgrounds is a wilderness of high cliffs and peaks. The Pine Valley Campground is accessible from St. George by traveling north on UT. Hwy 18 to the community of Central, then turning east on the road to the Pine Valley Campground.

At an elevation of 7,000 feet, the aspen/ponderosa pine community of Pine Valley Campground is picturesque and offers a unique mix of butterflies including *Adelpha eulalia* (arizona sister), *Limenitis weidemeyeri weidemeyeri* (weidemeyer's admiral), *Papilio bairdi* (bairds swallowtail), *Papilio rutulus* (western tiger swallowtail), *Papilio multicaudatus multicaudatus* (two-tailed swallowtail), *Zerene cesonia* (southern dogface), *Ochlodes sylvanoides omnigena* (woodland skipper), *Speyeria nokomis apacheana* (nokomis fritillary), and *Speyeria hesperis chitone* (northwestern fritillary).

Utah's Dixie truly is one of the most scenic areas on earth. Incredible!

Figure 1. Some of the butterflies that fly in Utah's Dixie include the following: *Zerene cesonia* (southern dogface), *Euphydryas anicia hermosa* (anicia checkerspot), *Limenitis archippus obsoleta* (arizona viceroy), *Anthocharis cethura pima* (desert orangetip), *Danaus gilippus thersippus* (queen), *Chlosyne neumoegeni neumoegeni* (desert checkerspot), *Hesperopsis libya libya* (mojave sootywing), *Pyrgus scriptura* (small checkered skipper), *Precis coenia* (buckeye), and *Papilio indra calcicola* (cliff swallowtail).
Collage Designed by Todd L. Stout

Figure 2. Utah Mojave joshua trees and creosote bush.

Figure 3. The unruly Virgin River in Washington City. This photo was taken prior to the Spring floods of 2005.

Figure 4. Picturesque view of grasslands in the foreground, followed by Yellow Knolls Ridge, lava hills, and, lastly the snow-covered Pine Valley Mountains in the background.

Figure 5. Warner Ridge is one of the many plateaus in the south, southeast corner of Utah's Dixie.

Figure 6. Leeds Canyon in the foreground followed by a series of ridges and mesas with West Temple (Zion National Park) in the distant background.

Figure 7. Pine Valley Campground. Many interesting butterflies turn up here such as *Papilio bairdi*, *Speyeria nokomis apacheana*, as well as *Zerene cesonia.*

Selected Butterflies of Utah's Dixie

By Todd L. Stout (Modified from the ULS Web Page)

Anthocharis cethura pima (Desert Orangetip)

Figure 1. *Anthocharis cethura pima* (desert orangetip) male dorsal (left), male ventral (right)

Figure 2. Color transformation of a young fifth instar larva to a fully-grown fifth instar larva which generally occurs in only 3-4 days.

General

The type locality of *Anthocharis cethura pima*, Scudder 1888, is Pantano, Pima County, Arizona. This butterfly is commonly called the desert orangetip (Figure 1) by some and pima orangetip by others. It flies early in the spring and has been regarded by many as a "jewel of the desert" providing a reminder that the long days of winter are soon-to-be over. Males hilltop on desert hills, buttes, or even fly over flatlands (i.e., Warner Valley), in order to seek females. Females, on the other hand, fly more inconspicuously as they seek out native mustards, most of which double as larval hostplants and nectar sources.

There are those who would assign Utah populations of *cethura* to ssp. *mojavensis* (Emmel, Emmel, and Mattoon 1998). However, based upon the recommendation of researchers who have studied *mojavensis* from its type locality, *mojavensis* should be considered a cline between *pima* and nominate *cethura*.

Utah Distribution and Habitat

Anthocharis cethura pima flies exclusively in Washington County in the southwest corner of the state. Its distribution within the county is fairly extensive as this butterfly can be found in desert flatlands and on low hills and slopes. Populations can be found at Welcome Springs in the Beaver Dam Mountains, Red Cliffs Desert Reserve, Warner Valley, Yellow Knolls, Leeds Canyon, and West Black Ridge. Within Washington County, the highest elevation documented for *pima* is 5200' (COL Clyde F. Gillette pers. communication). To date, it is interesting to note that no records exist for this butterfly in Kane and San Juan Counties even though habitat, conditions, and availability of some of its larval hostplants suggest that the butterfly might thrive there.

Bionomics

Anthocharis cethura pima is a univoltine insect. Larval hostplants include *Descurainia pinnata, Caulanthus lasiophyllum utahensis*, and *Streptanthella longirostris*. Because the edible flowers and siliques of these native mustard larval hostplants stay succulent and useable for a very short time, larval development can be very rapid, as quickly as 21 days from ova to pupa under lab conditions. Most of these plants can be found in ravines, mountainsides, or hidden under creosote or other desert shrubbery. The yellow ova turn orange after 24 hours and hatch in about four days. The ova are deposited on the lower leaves of the larval hostplant. Newly-hatched larvae work their way up the plant toward the flowers and siliques. These first instar larvae are very small (even for a pierid), light colored with a dark head and may be cannibalistic if they encounter any other ova. Second and third instar larvae are greenish with a white lateral stripe. Fourth instar larvae gain an additional purple lateral stripe above the white stripe. After a short period of time, the newly-molted fifth instar larva initiates an amazing color transformation that takes about 72 hours (Figure 2). From an essentially green larva with purple and white lateral stripes, the larva ends up having alternating gray and yellow-orange horizontal bands coupled with an alternating white and black lateral stripe. This breathtaking mature larva maintains this conspicuous color for roughly 24 hours before the coloring fades and it wanders away from its hostplant seeking a place to pupate. (For an online slide show demonstrating this transition see http://www.utahlepsociety.org/ulsgraphics/pimalarvaani.gif)

In nature, it is necessary for late winter precipitation to arrive in proper timing and magnitude in order

to induce germination of the mustards this butterfly uses. If the preceding conditions do not occur, few if any emerge from their pupae resulting in a very poor flight or possibly none at all. Populations of the desert orangetip can withstand years of drought. Their pupae have been known to survive up to 8 years under lab conditions. For example, during 2005, an 8-year-old chrysalis, harvested as an ovum in 1997, finally emerged as a healthy male adult.

Thessalia leanira alma (Utah Beaded Checkerspot)

Figure 3. *Thessalia leanira alma*, utah beaded checkerspot
top row: male dorsal, female dorsal, bottom row: female ventral

Figure 4. Fifth instar larva of *Thessalia leanira alma*
Photo courtesy of Wayne H. Whaley

General

Thessalia leanira alma, Strecker 1878, the utah beaded checkerspot, is perhaps our most beautifully patterned checkerspot (Figure 3). Its type locality is in northwestern Mohave County, Arizona. However, the species is more widespread throughout California, Nevada and Utah. It flies at low to mid elevations in mountainous regions of both southern and western Utah. It has also been known to fly in sagebrush flats where colonies of its larval hostplant are established. Males, for the most part, hilltop in search of females. Females fly on mountainsides and bottoms in search of its larval hostplant. *T. leanira alma* is univoltine with its flight period being from early May to June; July at higher elevations in the Wasatch Mountains.

Utah Distribution and Habitat

Within the state, populations exist in many regions including the Utah Mojave in the vicinity of Castle Cliff in the Beaver Dam Mts., along the I-15 corridor near Fillmore, the East Tintic Mts., Oquirrh Mts., and Lake Mts., as well as the Wasatch Mts. in Juab and Utah County.

The region of the state that seems to contain the largest colonies of *T. leanira alma* is the Basin and Range Province, especially Utah's West Desert in the House Range, Little Drum Mts., and Dugway Range. Colonies within the West Desert seem to be more concentrated on north facing slopes where its larval hostplant is not as exposed to direct sunlight during the hot summer months.

Bionomics

Post-diapausal larvae (Figure 4) have been found on indian paintbrush (*Castilleja chromosa*). Larvae will feed on leaves, but prefer to feed on flowers. Females oviposit on the underside of the leaves in clutches of approximately 15-25 ova. Pre-diapausal larvae feed gregariously until they diapause at third or fourth instar. When overcrowded with siblings, post-diapausal larvae will sometimes disperse and seek out nearby plants, or re-diapause.

It's interesting to contrast the different strategies of post-diapausal larvae of *Thessalia leanira alma* and *Euphydryas anicia wheeleri*. In many areas of the Basin and Range Province, *alma* and *wheeleri* are sympatric, with both using indian paintbrush as a larval hostplant. However, they do not normally fly synchronically.

The reason for this is that when exposed to identical spring conditions, larvae of *wheeleri* will break diapause rather quickly and resume feeding on the new leaflets of ground-breaking *Castilleja*. Larvae of *alma* initiate the breaking of diapause by resting a few days before setting themselves up to molt. After *alma* larvae have shed their winter skin, the larvae then start to feed. As a result of this delay, *alma* larvae do not usually start feeding until *wheeleri* larvae are usually fifth instars, or have already pupated. This results in a main flight of *T. leanira alma* that is usually 10-14 days after *E. anicia wheeleri*.

Papilio coloro (Mojave Swallowtail)

Figure 5. Papilio coloro (mojave swallowtail); top row: male, female form *"coloro"* bottom row: male, female, form "*clarki*"

Figure 6. *Papilio* coloro fifth instar larva on *Thamnosma montana*. Photo courtesy of Jerry Lagrone

General

The type locality of *Papilio coloro*, Wright 1905, (mojave swallowtail) is Whitewater Hill, west end of Coachella Valley, Colorado Desert, Riverside County, California. Many taxonomists consider *Papilio coloro* (Figure 5) a subspecies of *Papilio polyxenes* (eastern black swallowtail). Because of Felix Sperling's mtDNA research showing *coloro's* affinity to *polyxenes*, *P. coloro* may yet be proven to be conspecific with *polyxenes*. However, because of its differing habitat, adult morphology, and mature larval morphology, it is treated as a full species here (At least for the time being).

For years, locals used to refer to this butterfly as *Papilio rudkini*, Comstock, 1935, type locality in the Ivanpah Mountains, San Bernardino County, California. However, since Wright's description predates Comstock's by thirty years, *rudkini* now serves as a junior synonym to *coloro*.

Utah Distribution and Habitat

In Utah, *Papilio coloro* is a denizen of the northeastern Mojave Desert, flying only in the southwest corner of Washington County. The best place to find *coloro* is in the Beaver Dam Mountains. Males are strong hilltoppers where they seek females to mate. In addition to hilltopping, both sexes of *P. coloro* have also been seen flying across the vast habitat of the joshua tree-creosote community in association with its larval hostplant. Strong winter precipitation, as well as heavy spring and summer rains can produce strong spring flights of this butterfly.

Bionomics

The larval hostplant in the Beaver Dam Mountains is *Thamnosma montana* (turpentine broom). This is somewhat of an unusual hostplant as it is a member of the Rutaceae (citrus family). The fruits of this unique plant have a strong smell of grapefruit. Females prefer to oviposit on new leaflets that can be abundant in the spring, but only spotty during the summer and fall months. Besides *Thamnosma montana*, larvae (Figure 6) have been successfully reared in the lab on *Foeniculum vulgare* (fennel) and *Anethum graveolens* (dill) both members of the Apiaceae (parsley family). Attempts with *Lomatiun dissectum* and *Cymopterus terebinrhinus* have not been successful.

In Southwest Utah, there are up to three broods of this butterfly depending on timing and magnitude of precipitation. As is the case with many swallowtails, *P. coloro* overwinters as a pupa. However, COL Clyde F. Gillette found that late fall feeding larvae, that have run out of hostplant, can also overwinter as larvae.

Ranger Steve

continued from p 24

His research through Ody Brook Enterprises has been a source of his tremendous knowledge about the natural world. Dorothy said she attended a walk he led at a Cedar Campus Labor Day Natural History Weekend in the Upper Peninsula where information flowed easily from his head about a broad spectrum of nature. She stated that it is a wonder he can even stand erect due to the amount of knowledge packed in his head.

She expressed it was her great pleasure to present the award to such a deserving environmental education colleague.

Vernon E. Evans and the Hutchings Museum of Lehi, Utah

By Dr. Richard Edwin Howard, Director Natural History Museum Amarillo College

Vernon E. Evans is presently involved in the development, preparation and display logistics of an insect exhibit for the John Hutchings Museum of Natural History in Lehi, Utah. This unique museum has its origins in its inquisitive founder, John Hutchings, whose lifelong interests included geology, art, Western history, and anthropology. It presents to the public, among other things, a mineral display which is one of the most complete private collections in the United States as well as fossil specimens ranging from Precambrian to recent, many of which have been loaned to such institutions as the Smithsonian and New York's American Museum of Natural History. The museum also includes a small but remarkable collection of museum status models of historic sailing vessels.

Figure 1. Butterflies of the World Display, Hutchings Museum, Lehi, Utah
Created by Vernon E. Evans, Utah Lepidopterists' Society member

The Hutchings Museum display will include several display cases created by Vernon which present the following: Butterflies of Utah, Moths of Utah, Insects of Utah, Butterflies of the World, Moths of the World, Life Cycle and Butterfly Parts, Mimicry, Protective Resemblance, and Camouflage. In addition, the display will include an interactive computer program illustrating different aspects of the life histories and survival strategies of various Lepidoptera. The display cases themselves have an interesting history. They originally housed much of the pinned collection of Kenneth B. Tidwell. They have been modified and painted in the distressed French Country style which gives them an appealing antique appearance.

In the development and building of the Hutchings Museum display, Vernon enlisted the assistance of numerous scientists and students of natural history. The contributors represent nine countries, sixteen ULS members from seven US states. Of the ULS members, five are under the age of thirteen and in the Utah Bug Club. (See "Special Thanks..." p. 23 for a list of contributors.)

The "Lepidoptera Life Cycle" display (Figure 2) shows various ova sizes and then directs you to the larval stage. There are several different dried larvae that were donated by Bill Houtz. The next step shows the differences between butterfly and moth pupae as well as various moth cocoons. There is even a side-cut of a cocoon with the pupa inside. The display then goes on to show an adult butterfly.

The "Differences Between Butterflies and Moths" (Figure 3, p. 23) display shows several examples of butterflies

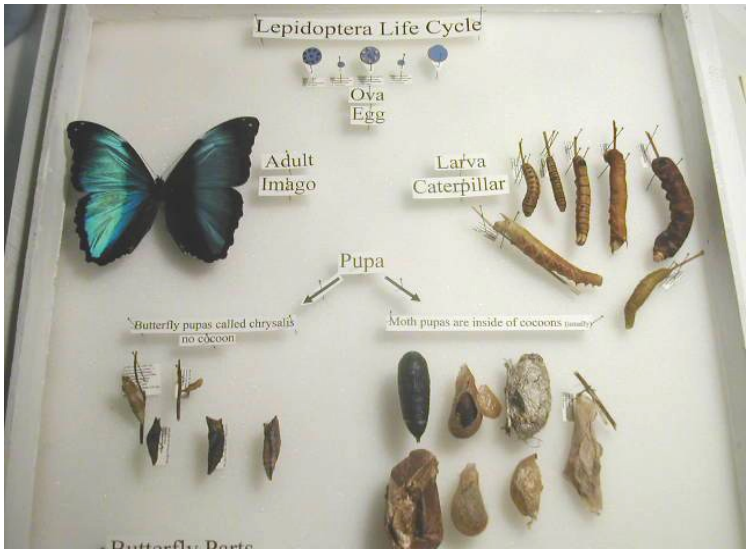

Figure 2. Lepidoptera Life Cycle Display, Hutchings Museum, Lehi, Utah
Created by Vernon E. Evans, Utah Lepidopterists' Society member

and moths side-by-side. These examples illustrate and explain the differences in their antennae, coloration, wing resting position, and the crepuscular and nocturnal habits of the moths versus the diurnal habits of the butterflies.

The "Camouflage and Mimicry" display case shows examples of mimicry and how various lepidoptera, as well as other insects, utilize camouflage in their various environments.

The "Butterflies of the World" (Figure 1, p. 22), "Moths of the World" and "Insects of the World" (Figure 3) display cases illustrate the large variety of colors and shapes found in lepidoptera and other insects from around the globe.

There are three cases dedicated to Utah specific insects. The "Butterflies of Utah" and "Moths of Utah" displays are arranged by family groups while the "Insects of Utah" display is less structured but still allows visitors to see the wide variety of insects that can be found within the state.

Many visitors have viewed the insect and lepidoptera displays at the Hutchings Museum. A touch screen monitor provides additional information about the displays as well as other Utah lepidoptera. It also utilizes information taken from the Utah Lepidopterists's Society website and provides links to the website. Handouts are also available on how to contact the Utah Lepidopterists' Society for further information.

This 18 foot wide by 12 foot tall display will continue to be a great educational tool for the community.

Vernon's personal involvement with entomology and especially the lepidoptera began at the age of ten through association with Dr. Richard Edwin Howard, Director and Senior Curator of the Amarillo College Natural History Museum. He has traveled and collected extensively throughout the United States and

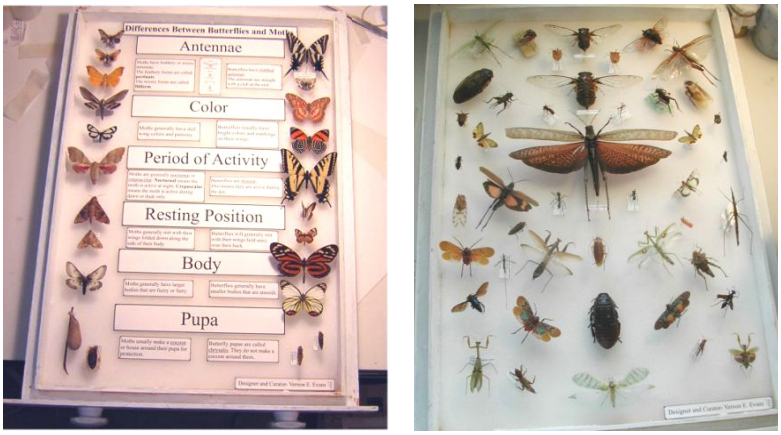

Figure 3. The "Differences Between Butterflies and Moths" Display (left) and the "Insects of the World" Display (right), Hutchings Museum, Lehi, Utah Created by Vernon E. Evens, Utah Lepidopterists' Society Member

Special Thanks To The Following Contributors To The Hutchings Museum Entomology Display

The Monty L. Bean Life Science Museum at Brigham Young University for providing specimens.
Ramel Cabale an entomology dealer from the Philippines for providing specimens.
Muhammad Djufri an entomology dealer from Indonesia for providing beetles, butterflies and other insects.
Kati, Auvi, Zoÿ, Kelby and Conner Evans members of the Utah Bug Club for providing specimens, research and display material.
Vernon E. Evans a member of the Utah Lepidopterists' Society for the creation of the displays and for providing specimens.
Preston Hayes a member of the Utah Bug Club for providing specimens.
Bill Houtz a member of the Utah Lepidopterists' Society who resides in Pennsylvania for providing specimens, pupae, larvae, and eggs for the life cycle display.
Dr. Richard E. Howard Director Natural History Museum Amarillo College and a member Utah Lepidopterists' Society for help with the audio presentation and providing specimens.
Joel M. Johnson a member of the Utah Lepidopterists' Society for providing specimens.
Stephane Le Tirant curator for Butterfly House & Insect Zoo in Montréal Canada for providing specimens.
Florence Makanya an entomology dealer from Tanzania, East Africa for providing large beetles.
Robert C. Mower a member of the Utah Lepidopterists' Society for providing specimens.
Alan R. Myrup a member of the Utah Lepidopterists' Society for providing specimens.
Dmitry Podgornov a lepidopterist from Russia for providing moth specimens.
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Floyd Preston a member of the Utah Lepidopterists' Society from Kansas for providing many butterflies.
Todd L. Stout a member of the Utah Lepidopterists' Society for help with the video presentation and providing specimens.
Heurtin Richard an entomologist from France for providing specimens.
John L. Richards, MD a member of the Utah Lepidopterists' Society for providing specimens.
Raimund Spruzina an entomologist from Vienna, Austria for providing specimens.
Dan Sundberg "Bugman" a coleopterist from Texas for providing beetles.
Kenneth B. Tidwell a member of the Utah Lepidopterists' Society for donating the cases built for his personal collection and for providing many Utah specimens.
Russell Witkop a member of the Utah Lepidopterists' Society from Colorado for providing specimens, pupa, larvae, and eggs for the life cycle display.

South America. His scientifically significant personal collection now numbers some 10,000 plus specimens.

Some of Vernon's recent entomological background in addition to his work with the Hutchings Museum includes: joining the Utah Lepidopterists' Society in 2002, specializing in butterfly and moth mounting techniques (fastest in the state), and studying the life histories of moths, first collecting their caterpillars in 2002. He has also contributed to the science of entomology by preparing lepidoptera for the Monte L. Bean Life Science Museum at Brigham Young University, serving as an Assistant Curator of Lepidoptera for the May Tropical Museum in Colorado Springs, Colorado, serving as an Assistant Curator of Lepidoptera for the Amarillo College Natural History Museum in Amarillo, Texas, and providing extensive volunteer mounting service for the Kenneth B. Tidwell Lepidoptera Collection at BYU.

"Ranger Steve" Mueller was presented with the 2005 William B. Stapp Award for Environmental and Outdoor Education

"Ranger Steve" Mueller was presented with the 2005 William B. Stapp Award by the Michigan Alliance for Environmental and Outdoor Education (MAEOE) on 22 October 2005. The award recognizes and honors "Ranger Steve" for outstanding contributions to the field of environmental education.

The Award was presented by Dorothy McLeer, MAEOE awards chair. She stated the award is the highest environmental education award presented and is reserved as a lifetime achievement award for significant contributions to the field of environmental education. Ranger Steve has more accomplishments and recognitions than can be shared at one sitting. In 1969 he started his career as a State Park ranger in Traverse City, Michigan. In 1973 he began a formal teaching career and worked in a variety of locations across the U.S. He also worked as a naturalist at the Morningside Nature Center in Gainesville, Florida and as a ranger naturalist and director of the environmental education school at Bryce Canyon National Park in Utah. He became director to the Howard Christensen Nature Center in 1986 serving students and educators in the greater Grand Rapids, Michigan area. The Kent Intermediate School District closed the center in June 2005 as a result of the school district's funding crisis, but Steve landed on his feet and accepted a position as director of the Wittenbach/Wege Agri-science Environmental Center and Natural Area for the Lowell Area Schools where he continues the charge of environmental education. Beside significant education contributions, Steve's resume includes a long bibliography of scientific research and popular article publications.

See **Ranger Steve** p 21

The Utah Lepidopterists' Society will host the 2006 Pacific Slope Meeting

The Utah Lepidopterists' Society will host the 2006 Pacific Slope meeting of the Lepidopterists' Society from July 21-23, 2006 at the Great Basin Environmental Education Center (GBEEC) near the top of Ephraim Canyon, Sanpete County, Utah. This beautiful area (el. 8600 feet) forested by aspen, fir, and spruce, and a variety of neighboring habitats, contains a wide diversity of butterflies and moths. For more information, contact Todd L. Stout, 1456 North General Drive, Salt Lake City, UT 84116; by phone at 801-322-2049; or by email todd_stout29@hotmail.com.

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Active members receive our bulletin *Utah Lepidopterist* usually published twice each year.