Volume 1 1 January 1999 Number 4

The Taxonomic Report

OF THE INTERNATIONAL LEPIDOPTERA SURVEY

SUBSPECIFIC STATUS OF SOUTHEASTERN U.S. *MEGATHYMUS COFAQUI* AND *M. YUCCAE*: RENAMING OF THE FLORIDA SUBSPECIES OF *M. COFAQUI*.

RONALD R. GATRELLE[1]
126 Wells Road, Goose Creek, South Carolina 29445

ABSTRACT. *Megathymus cofaqui* and *M. yuccae* are both represented in the southeastern U.S. by two subspecies. The type locality of both *M. y. yuccae* and *M. c. cofaqui* is the area of Burke/Screven counties Georgia. Each of their subspecies are primarily Floridian, with *M. y. buchholzi* extending along the immediate coast of Georgia into southern South Carolina. Topotypes of *M. cofaqui* from Burke County, Georgia, and Aiken County, South Carolina are phenotypically indistinguishable from both the holotype of *M. cofaqui* and topotypes of *M. c. harrisi.* Thus, *M. c. harrisi* is synonymous with *M. c. cofaqui.* This leaves the Florida subspecies of *M. cofaqui* without a valid name. *Megathymus cofaqui slotteni* is proposed as a new name for the Florida subspecies. The holotype of *M. c. slotteni* is deposited in the Florida State Collection of Arthropods, Gainesville, Florida.

Additional key words: type localities.

OVERVIEW AND DELINEATION OF TAXONOMIC PROBLEMS

At least 33 species of butterflies were originally described from east coastal Georgia or south coastal South Carolina. A broad taxonomic problem exists because most of these 33 taxa are not represented by any type or topotypical specimens in any of the world's institutional or private collections. A few of these are known in their nominate form from only a unique type specimen. *Megathymus cofaqui* (Strecker) is an example of the latter. Further, many of these 33 species/subspecies have been wrongly assumed to occur in their nymotypical form in their Floridian components. Unfortunately, this common erroneous assumption was applied to *M. cofaqui*.

Having personally collected nearly all of these 33 species in Burke or Screven counties over the last ten years, this researcher can attest to the fact that the only reason topotypes of these taxa are not represented in collections, and are thus unavailable to researchers, is simply because few lepidopterists have gone there to collect them. Most of them are not uncommon in that area. Over the decades, northern lepidopterists literally drove right past scientifically important specimens along highways 17 and 301 in Georgia on their way to collect the subtropical species of south Florida.

Lucian Harris, Jr. (1972) presents a concise historical overview of *Megathymus cofaqui* and *Megathymus yuccae* (Boisduval and LeConte). Both species were first discovered in and described from the area of Burke and Screven counties, Georgia. *M. yuccae* was described from a John Abbot painting. *M. cofaqui* was described from a female collected by Morrison. Harris was not enthused with H. A. Freeman's designation of Aiken County, South Carolina as the type locality for *Megathymus yuccae;* or

[1] Research Associate Florida State Collection of Arthropods, Gainesville, Florida.

Freeman's affirmation of Grossbeck's 1917 assignment of Boca Grande, Lee County, Florida as the type locality of *M. cofaqui*. Harris' consternation is especially understandable in relation to *M. cofaqui*, for the ♀ holotype (fig. 5) is existent in the Field Museum in Chicago, and Strecker had clearly designated Georgia as the type locality in the original description.

COFAQUI

At the time of Harris' writing, it was not yet known that *Megathymus harrisi* H. A. Freeman was in fact only a *cofaqui* progeny and not a valid species. Up to the 1950's, the only known Georgian *cofaqui* was the type. About 85 years passed between the capture of the *cofaqui* type specimen and the next capture of a Georgian specimen (in the Atlanta area). During this time some supposed *cofaqui* were being collected in various locations in central/southern Florida. The assumption was that what was being collected in Florida was the same thing as what had originally been discovered in eastern Georgia. It was further assumed by some (Freeman) that since no other *cofaqui* had been found in Georgia in 85 years that perhaps the type really did not come from there. These two errors – viewing *harrisi* as a full species and the accepting of southwestern Florida as the type locality of *cofaqui* – have created an unallowable taxonomic situation.

Miller and Brown (1981) recognized the type locality error and reestablished Burke County, Georgia as the type locality of *M. cofaqui*, but left *cofaqui* and *harrisi* as distinct species in the Lepid. Soc. checklist. Ferris (1989) retained *harrisi* and *cofaqui* as separate species in the checklist revision. Hodges (1983) also retained these two as separate species in his checklist. This is unfortunate since Howe (1974), Pyle (1981), Opler and Krizek (1984), Scott (1986), and Gerberg and Arnett (1989), all correctly recognized that the northern and southern *cofaqui* phenotypes were but north/south clinal subspecies and not species.

Figs. 1-6. *Megathymus cofaqui* subspecies. Fig. **1, Paratype** ♂ *M. cofaqui slotteni,* ex pupa 13 Aug. 1990 Interlocken, Putnam County, Florida (leg. Dr. Jeff Slotten). Fig. **2, Holotype** ♀ *M. cofaqui slotteni,* 20 Sept. 1988 visc. of Willliston, Levy County, Florida (leg. Dr. Jeff Slotten). Fig. **3,** Topotype ♀ *M. cofaqui harrisi,* ex pupa 24 July 1977 Atlanta, Georgia. Fig. **4,** Topotype ♂ *M. cofaqui,* ex pupa 20 Aug. 1998 Burke County, Georgia. Fig. **5, Holotype** ♀ *Megathymus cofaqui,* Georgia (dorsal & ventral). Fig. **6,** ♀ *M. cofaqui,* ex pupa 16 Aug. 1990 New Ellenton, Aiken County, South Carolina.

It has taken me 25 years to locate a few *Megathymus cofaqui* colonies in Columbia, Burke, and Screven counties, Georgia, and Aiken, Orangeburg, Sumter, and Lancaster counties, South Carolina. With several of these records based only on empty larval tents. All adult specimens from these localities are the same subspecies. Topotypes of *M. cofaqui* from Burke County are nearly identical to topotypical *harrisi.* Thus, there is only one subspecies of *M. cofaqui* that occurs in Georgia and South Carolina.

The holotype of *M. cofaqui* (fig. 5) has far too dark of a ground color to be from southern or central Florida. All of its markings are within the typical range of Burke County *cofaqui*, especially the marking of the dorsal forewings. The presence of yellow scales along its dorsal hindwing margin is a character more prevalent in females of the Florida subspecies (Freeman 1969). However, some Georgia females also exhibit this character. The Fulton County, Georgia *harrisi* female figured by Harris (plate 10 fig. 19) and the holotype of *cofaqui* could almost pass as the same specimen. It is documented in Harris (pg. 28) that Morrison was collecting in Burke/Screven counties at the proper time of year to have found his *cofaqui* there. Morrison stated that he found it there. We know, from specimens collected by myself, that *cofaqui* is still found there. There is absolutely no historical or phenotypic evidence to suggest that the type of *cofaqui* came from any other population than that in the area of Burke/Screven counties in Georgia.

Topotypes of *cofaqui* from Burke County, Georgia (fig. 4) and adjacent Aiken County, South Carolina (fig. 6), and topotypical specimens of *harrisi* from the Atlanta, Georgia area (fig. 3) reveal that *cofaqui* and *harrisi* are synonymous. This dictates that the taxon named after Harris *(M. c. harrisi)* must be dropped into the synonymy of *cofaqui.* It also necessitates that the name *cofaqui* applies only to the northern (Georgian) subspecies and can not be used for the long recognized southern (Floridian) subspecies. This in turn leaves the Florida *cofaqui* subspecies (figs. 1 & 2) without a name. Accordingly, I herein describe the southern race as a new subspecies, ***Megathymus cofaqui slotteni*** **Gatrelle.**

YUCCAE

The problem concerning *Megathymus yuccae* is slight but should at least be mentioned. H. A. Freeman designated a neotype for *M. yuccae* from Aiken County, South Carolina simply because no Burke or Screven County, Georgia specimens were known at that time. There is no conflict in Freeman's designation of a **biological** neotype from adjoining Aiken County, South Carolina. The ecology of Burke County, Georgia has more in common with *adjoining* Aiken County, South Carolina than with most of *adjoining* Screven County, Georgia. This is because most of both Burke and Aiken counties are upper coastal sandhill habitats, while most of Screven County is lower coastal plain maritime forest.

I do not think that national, state, county, or any other subjective political boundary lines, have any bearing on systematic taxonomy. *If the environmental factors are the same,* a specimen caught one inch or one mile on one side or the other of such a line should not matter in **biologically defining** a type locality, or what constitutes a biological topotype. For example, I have a specimen of *Asterocampa celtis* (Boisduval and LeConte) which I caught as it landed on the Burke County, Georgia bank of the Savannah River after it appeared to have just flown 40 yards across the river from South Carolina! Is this a South Carolina or a Georgia specimen?

Humans divide up areas and affix names to places in order to establish their ownership and legal jurisdiction. (Where is Ceylon or the USSR today?) All type localities are geopolitical and geoecological. The latter is all that should matter scientifically, because the former is totally artificial. In practice, taxonomists use geopolitical names to easily reference a type locality. But scientifically, the type-*locality* can only be the geoecological area (which may be very small or quite large depending on the parameters set by the author — a colony, population, or phenotype) occupied by the single colony, population, or phenotype from which the representative type specimen(s) was/were taken. This is analogous to the use of

common and scientific names. Common names have absolutely no scientific standing (any person or organization can make up their own list or book of butterfly common names and it is just as valid as anyone else's.) Geopolitical type localities are like common names. They only serve as an easy and brief way to reference (in an inherently inaccurate manner) areas occupied by taxa which have a much more involved and scientific geoecological type locality. I accept the **region** of Burke County, Georgia as the type locality of the nominate **population** of *Eudamus yuccae* Boisduval and LeConte and, conditionally, accept Freeman's designated neotype from that region and population (Aiken County, South Carolina) as a valid topotype.

The condition of my acceptance stems from the artificial environment from which the neotype came. I have a problem with the fact that Freeman's neotype came from an urbanized, artificially established, decorative stand, of *Yucca aloifolia* L. If Harris' determination is accurate, these plants were far from their natural range. *Y. aloifolia* is indigenous to South Carolina only in a few coastal counties (Radford et. al. 1968). Thus, we can not be sure that the *Megathymus yuccae* specimens found there were not from larvae or eggs imported into the area (from Florida?) with the plants.

I did not feel it necessary to figure specimens of typical *M. yuccae yuccae* or *M. y. buchholzi*. They do not differ a great deal and not always consistently. However, I feel that most specimens can be distinguished from each other without looking at locality labels. Further, *M. yuccae* becomes more distinct as one goes north and west from the Georgia coast. Unfortunately, the type locality is barely outside of what may be the blend zone of these subspecies. The Burke, Screven, and Aiken material I have from wild stands of *Y. filamentosa* L., have smaller, lighter, more yellowish median spots on the dorsal FW. Specimens from south coastal South Carolina have larger, richer, more orange spots. My coastal South Carolina specimens generally match individuals I have collected or examined in various personal and institutional series of Floridian *M. y. buchholzi* and are thus either referable to *buchholzi,* or represent an intermediate population at the northern end of the range of *buchholzi.*

A ♀ specimen of *M. y. buchholzi* I collected on Edisto Island, Charleston County, South Carolina is figured by Scott on plate 57, Figure 417 d. This specimen clearly shows the orange spotting that is characteristic of *buchholzi*. This specimen can be contrasted against the typical yellow spotted *M. y. yuccae* figured by Harris on plate 10, figures 14 & 15.

Megathymus cofaqui slotteni Gatrelle, new subspecies

Diagnosis. *slotteni,* having passed for decades as typical *cofaqui,* is well depicted under that name throughout the popular and scientific literature. Figures of *slotteni* may be found under the name *cofaqui* in Holland (plate LIV, fig. 34 & 35), Klots (plate 40, figs. 3 & 4), Harris (plate 10, figs. 20 & 21), Howe (plate 82, figs. 7 & 8), and Scott (plate 57, fig. 420). Harris' figures perfectly depict and contrast these two subspecies as described below. The dorsal brown ground color is lighter in specimens further south *(slotteni),* and darker in specimens further to the north *(cofaqui).* The key distinguishing characters are the shape and relative size of the three spots in the postmedian spot band on the dorsal forewings of both males and females, and the size of the postmedian spot band on the dorsal hindwings of females. In *slotteni* the spot in cell Cu_2 is nearly always at least half the width of the spot in cell Cu_1 or larger. In *cofaqui* this spot is usually only one third the width (at the vein) and rarely over half (both sexes). In *cofaqui* the spots in M_3 and Cu_1 usually tend to be elongated and fused with the spot in the distal end of the forewing cell (both sexes). In *slotteni* this is not often the case, and when it is, the spot in Cu_2 is also expanded (esp. in females). The extent of the light yellow spotting on the ventral hindwings of females is so variable throughout the range that it should not be considered as a diagnostic character. Only at the extremes of the cline is this spotting consistently stronger in the south and nearly absent in the north. The tendency of females to have yellow dorsal hindwing margins is typical in *slotteni* and atypical, but occasional, in *cofaqui.* The dorsal hindwing spots on *cofaqui* females are usually smaller while on *slotteni* they are larger (heavily spotted *cofaqui* females look like lightly spotted *slotteni* females). In general, one could say that females of *cofaqui* have a greater size difference between their dorsal forewing and hindwing spots, while *slotteni* females have less of a size difference between their dorsal forewing and hindwing spots. These subspecies are clinal, and individual specimens within each subspecies are variable. They are not greatly distinct.

Description. *Male* (Fig. 1): Head, thorax, abdomen, and appendages with gray and brown scaling slightly lighter than in nominate subspecies. *Forewings:* dorsally, ground color dark to medium brown with golden brown scaling at base lighter than in nominate subspecies, postmedian spots light yellow, with spot in Cu_2 not strikingly smaller then those in Cu_1 and M_3, spots in Cu_1 and M_3 not often fused with spot in discal cell; ventrally, as in dorsal except no light basal scaling. *Hindwings:* dorsally, dark to medium brown with golden brown scaling a base lighter than in nominate subspecies; ventrally, as in nominate subspecies, except that black postmedian spots often more pronounced. *Female* (Fig. 2): Head, thorax, abdomen, and appendages with gray and brown scaling slightly lighter than in nominate subspecies. *Forewings:* dorsally, ground color dark to medium light brown, lighter than in nominate subspecies (especially in southwestern Florida), golden brown scaling at base lighter than in nominate subspecies (especially in southwestern Florida), postmedian spots light orange yellow, with spot in Cu_2 not strikingly smaller then those in Cu_1 and M_3, spots in Cu_1 and M_3 not usually fused with spot in discal cell; ventrally, as in dorsal except no light basal scaling. *Hindwings:* dorsally, dark to medium brown with golden brown scaling at base lighter than in nominate subspecies (especially in southwestern Florida), row of orange yellow postmedian spots often large, outer margins usually with extensive yellow; ventrally, with light yellow/whitish basal spots usually present and sometimes prominent, yellow/whitish spots and black spots of postmedian spot band often prominent.

Types. Holotype ♀ (Fig. 2): Vicinity of Williston, Levy County, Florida, 20 September 1988, leg Dr. Jeff Slotten. Paratypes: 3 ♂♂, 2 ♀♀: all FLORIDA: 1 ♂ near Interlocken, Putnam County, 13 Aug. 1990; 1 ♂ Hernando County, 7 Sept. 1989; 1 ♂ near Williston, Levy County, 6 Sept. 1989; 1 ♀ Clay County, 1 March 1991; 1 ♀ near Williston, Levy County, 5 Sept 1989. All were collected by Dr. Jeff Slotten. The holotype is deposited in the FSCA, Gainesville Florida. The paratypes are in the authors collection in Goose Creek, South Carolina.

Etymology. *Slotteni* is named after Dr. Jeff Slotten, a prominent amateur Florida lepidopterist.

Remarks. Because these two subspecies have been recognized for over 40 years, I see no need in designating a long type series. In fact, 5 paratypes might be considered excessive by some. I chose a female as the holotype of *slotteni* for two reasons. First, the type of *cofaqui* is female, and second, females of the two subspecies differ subspecifically more than their males. There is probably a broad blend zone between these subspecies roughly parallel to the Georgia/Florida state line. I feel the type locality of *slotteni* is sufficiently to the south of this blend zone. It is assumed here that no *M. c. cofaqui* occur in Florida. If it does, it would be expected only in the northwestern part of the state. *M. c. slotteni* does not occur north of Florida. I have examined all the *cofaqui* in the FSCA collection in Gainesville, and three private Floridian collections. I have not seen any of the *cofaqui* from the apparently large population that exists in the mountains of North Carolina. The one (and to my knowledge only) collector who has had a series of these, for years, has published nothing. With the known tendency of *Megathymus* to evolve into almost micro geographical subspecies, these North Carolina *cofaqui* (as well as the Tennessee population) need to be collected, in a large enough sample, so they can be examined by a competent taxonomist – and their status, whatever it may be, published.

ACKNOWLEDGMENTS

Thanks to my son Ben Gatrelle for photographs and computer input, Dr. Lee Miller and the Allyn Museum for photo of type specimen, Jeff Slotten for specimens, and to the FSCA, Gainesville, for library support.

LITERATURE CITED

FERRIS, C.D. ed. 1989. Supplement to: A Catalogue/Checklist of the Butterflies of America North of Mexico. Memoir No. 3, Lepid. Soc. 103 pp.

FREEMAN, H.A. 1969. Systematic Review of the Megathymidae. Supplement 1, J. Lepid. Soc. 58 pp.

GERBERG, E.J. & H.R. ARNETT, JR. 1989. Florida Butterflies. Natural Science Publications, Inc., Baltimore, MD. 90 pp.

HARRIS, L., Jr. 1972. Butterflies of Georgia. Univ. of Okla. Press, Norman OK. 326 pp.

HODGES, R.W., et al. 1983. Check List of the Lepidoptera of America North of Mexico. MONA series. E.W. Classey Ltd. & Wedge Ento. Research Foundation, Oxfordshire, England. 284 pp.

HOLLAND, W.J. 1930. The Butterfly Book. Doubleday & Company, Inc., Garden City, NY. 424 pp.

HOWE, W.H. 1974. The Butterflies of North America. Doubleday & Comapany, Inc. NewYork. 633 pp.

KLOTS, A.B. 1951. A Field Guide to the Butterflies. Houghton Mifflin, Boston MA. 349 pp.

MILLER, L.D. & F.M. BROWN. 1981. A Catalogue/Checklist of the Butterflies of America North of Mexico. Memoir No. 2, Lepid. Soc. Sarasota, FL. 280 pp.

OPLER, P.A. & G.O. KRIZEK. 1984. Butterflies East of the Great Plains, An Illustrated Natural History. Johns Hopkins Univ. Press, Baltimore. 294 pp.

PYLE, R.M. 1981. The Audubon Soc. Field Guide to North American Butterflies. Alfred A. Knopf, Inc., New York. 294 pp.

RADFORD, A.E., H.E. AHLES & C.R. BELL. 1968. Manual of the Vascular Flora of the Carolinas. Univ. of North Carolina Press, Chapel Hill. 1183 pp.

SCOTT, J.A. 1986. The Butterflies of North America, A Natural History and Field Guide. Stanford Univ. Press, Stanford, California. 583 pp.

The Taxonomic Report is a publication of ***The International Lepidoptera Survey (TILS).***
126 Wells Road, Goose Creek, SC 29445-3413

TILS Purpose. TILS is devoted to the worldwide collection of Lepidoptera for the purpose of scientific discovery, determination, and documentation, without which there can be no preservation of Lepidoptera.
TILS Motto. As a world community, we can not protect that which we do not know.

Everyday around the world, in jungles and urban areas alike, insect species and subspecies are becoming extinct. Every year scores of these taxa have not even been scientifically discovered and documented. Thus, their extinction is unnoticed because their existence is unknown. They are unknown simply because they have not been collected and systematically identified. Without systematic taxonomy there is nothing. Without the collection and exchange of specimens (i.e. information) there will be no systematic taxonomy. Without amateur collectors the majority of the undiscovered species/subspecies will die out before they are discovered.

Please support the environment, support collecting. Be it moon rocks or butterflies, collecting is the first step of access to all other scientific information – and protection.

_____

The Taxonomic Report is projected for publication at the rate of at least 10 issues a year. Subscription is **$65 US** annually. The subscription year begins in August. All issues are mailed 1st class. At the end of each year, subscribers receive that year's volume on CD for permanent archiving and reproduction for personal use (i.e. a museum or university may make as many copies as needed in whatever format desired). Non-subscribers may receive individual issues on 3½ disc at any time at $9 per issue post paid. **Checks** should be made payable to **TILS,** and **mailed to:** Scott D. Massey, Editor, 126 Wells Road, Goose Creek SC USA 29445.

Articles for publication are sought. They may deal with any area of taxonomic research on Lepidoptera. Before sending a manuscript, simply write **TILS** at the above address to set up discussion on how to best handle your research for publication.

TILS is working to establish the **Museum Of The Hemispheres** (MOTH). The MOTH collection will be a collection of collections. Each individual sponsor, upon their death or retirement, will have their collection housed in a personalized cubical. Thus, their personal collection (specimens, storage setup, library, desk, etc.) will forever be preserved intact and be available to researchers in this form. For information **write to:** Ronald R. Gatrelle, MOTH Curator, 126 Wells Road, Goose Creek SC USA 29445.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: The Taxonomic Report

Jahr/Year: 1999

Band/Volume: 1-4

Autor(en)/Author(s): Gatrelle Ronald R.

Artikel/Article: SUBSPECIFIC STATUS OF SOUTHEASTERN U.S. MEGATHYMUS COFAQUI AND M. YUCCAE: RENAMING OF THE FLORIDA SUBSPECIES OF M. COFAQUI. 1-6