

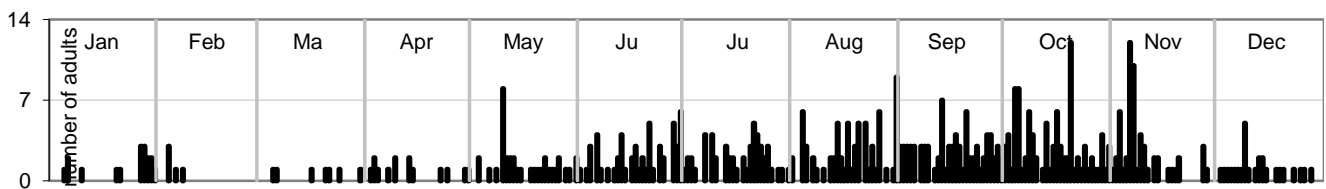
***Utetheisa ornatix* (L., 1758) and *Utetheisa bella* (L., 1758)**  
(Lepidoptera: Arctiidae) in Louisiana

by  
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**Fig. 1.** Adult *Utetheisa*, wild collected "pink hindwing phenotype" variations captured in Louisiana: a - v.

In the most recent checklists (Hodges, et al., 1983, Schmidt and Opler, 2008), two species of the Arctiidae genus *Utetheisa* Hbn. are listed for North America, *Utetheisa bella* (L.) and *Utetheisa ornatix* (L.) as separate species, but that status will be revised to one species (Lafontaine and Schmidt in prep.) based on the results of DaCosta (2007). This probable single species of *Utetheisa* is quite variable as illustrated by a



**Fig 2.** Adult *Utetheisa* "all wild captured phenotypes" from Louisiana. n = 506



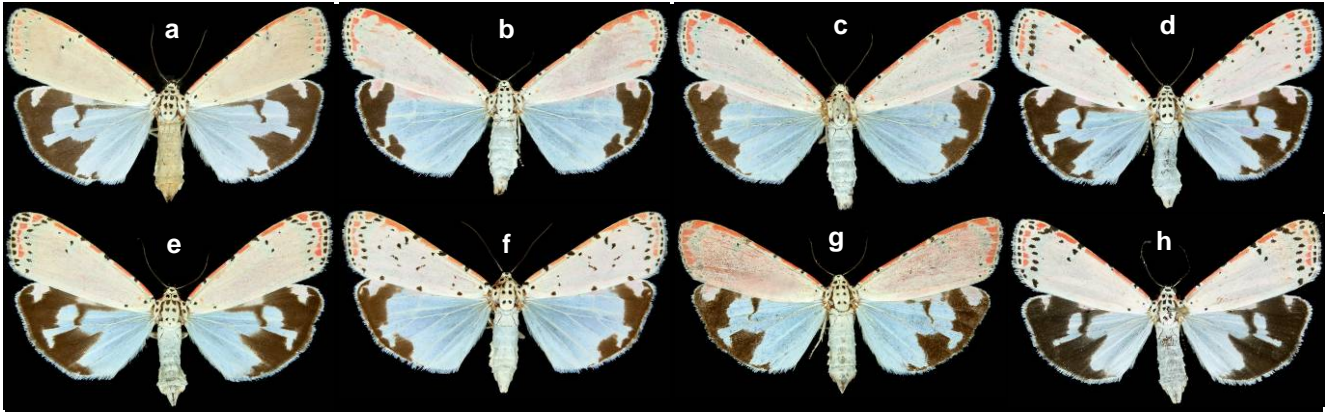
sampling of some of the many variations depicted in this study. All of the 506 specimens in this report were captured using ultraviolet light traps over many years, though no specific effort was made to obtain them (Fig. 2). I have observed pink phenotypes in the fall months visiting flowers of Goldenrod (*Solidago* sp.) during bright sunshine. I discuss the various entities in this article and have segregated the images of adults into three groups based upon visual attributes of wing color, especially hindwing color: "***bella***" (*pink phenotypes*) (Fig.1), "***bella/ornatrix***" (*pink-white phenotypes*) (Fig. 3), and "***ornatrix***" (*white phenotypes*) (Fig. 4).

It is quite evident that some Louisiana specimens are impossible to place into what is traditionally considered to be species "***bella***" and species "***ornatrix***" and I have illustrated some of these confusing variations (Fig. 3). There are no established criteria to distinguish what percentage of color or maculation attributes delineate one so called distinct species versus the other. When one looks at specimens from other geographic locations, there are still other variants of what is being called ***ornatrix***, some quite different than those exhibited in this Louisiana investigation, especially from more tropical areas of its reported range. Also some of these specimens (Fig. 3) look remarkably similar to other world species of genus.

Forbes (1960) determined that the new world entities exhibited a "wide variation of color, with a single type of genitalia". He further considered two North American species to include ***Utetheisa idea*** Clarke from



**Fig. 3.** Adult ***Utetheisa***, wild collected "*pink-white hindwing phenotype*" variations captured in Louisiana: a - v.



**Fig. 4.** Adult *Utetheisa*, wild collected "white hindwing phenotype" variations captured in Louisiana: a - h.

Swain's Island, Newfoundland, only known from the types, and questions the validity of the type locality for this isolated species, and *Utetheisa ornatrix* (L.), including *bella* which he considered a "race" or subspecies of *ornatrix*. Swains Island is in American Samoa; there is a specimen located in the Canadian National Collection labeled (Swains Island, Newfoundland) which has a note correcting the geographic location. Forbes further discussed some named variations of *ornatrix/bella*, though the significance of such names seems nonsensical in light of the innumerable variations found in a significant sample from even a single state as seen in this investigation.

Forbes (1960) stated that *ornatrix* was one of the best examples of the folded type of "rassenkreis", which forms a circle, e.g., (Forbes, 1960) starting in Kansas with *bella*, occurring in a variety of forms in the Greater Antilles, then, typical *ornatrix* occurs from Puerto Rico around the Caribbean and back to Mexico to Kansas. In Kansas, the extremes of *ornatrix* and *bella* meet and behave as separate species of the genus.

The definition of "rassenkreis" is a species composed of several geographical subspecies, a polytypic species. The definition of a ring species comprises populations whose range is distributed in the shape of a ring. These populations continuously intergrades around the ring except in one area, where populations are sympatric but do not exchange genes.

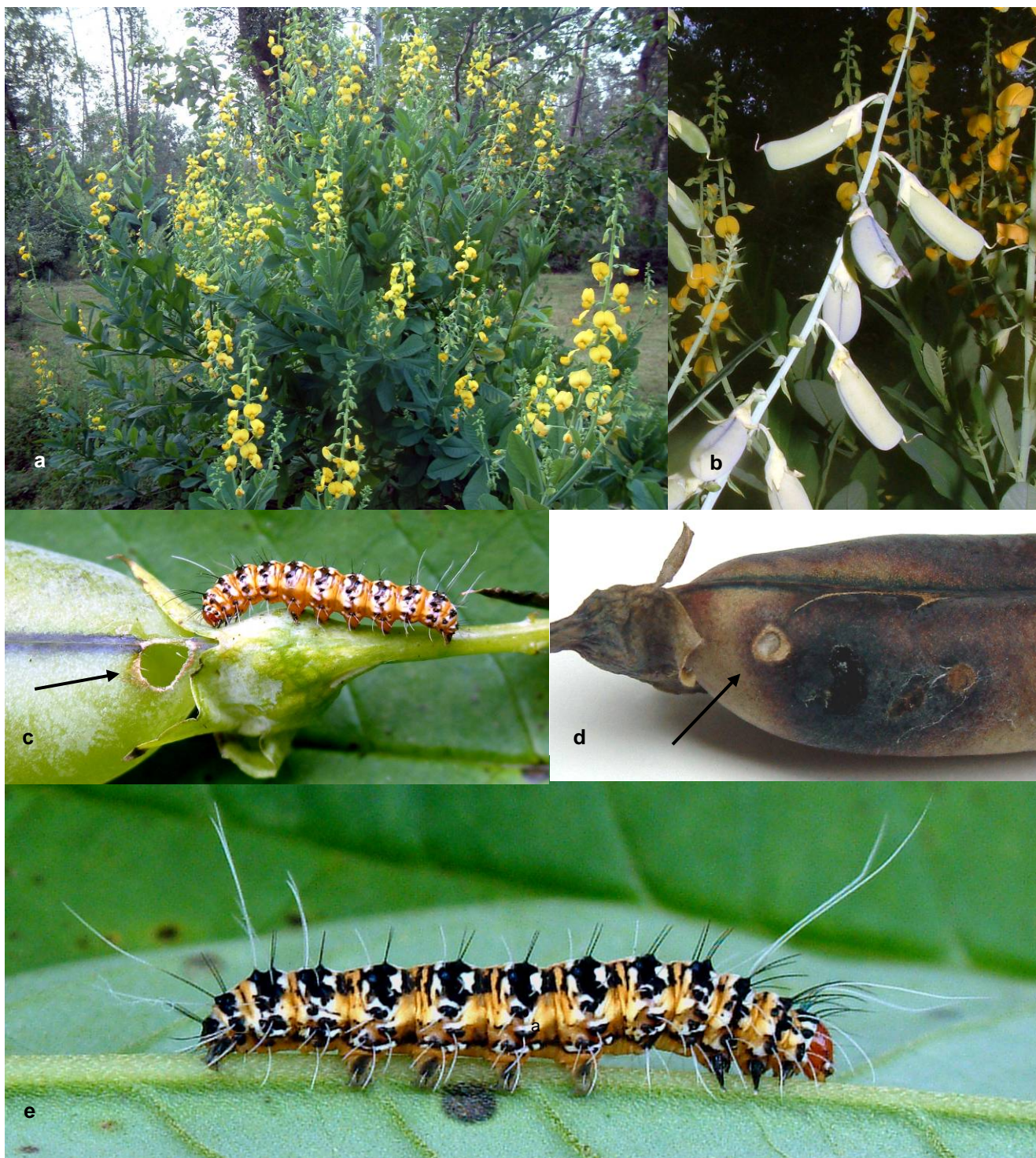
Hayes (1975) described three new species of *Utetheisa* from the Galapagos Islands and also listed and pictured *ornatrix* from there. The black and white pictured specimens of *ornatrix* by Hayes are not visually dissimilar to the Louisiana *ornatrix* illustrated in Fig. 4.

Larvae of *Utetheisa* are found inside developing green pods of alkaloid-bearing *Crotalaria* (Fabaceae) species. At the Abita Springs study site, larvae occur during the month of November on *Crotalaria spectabilis* Roth, a species native to Asia, found across the southeastern U.S. and introduced to the Abita Springs study site by this author to rear this species. In my study, seeds of *spectabilis* which begin sprouting naturally in April, do not have resulting green seed pods until late September to early November, at which the almost woody stalk-like plants can be seven to eight feet in height. Although eggs are reportedly deposited naturally on the leaves of the plant, apparently, the larvae show little interest in feeding on leaves. In my rearing activities, I found that larvae reluctantly fed on leaves, and only when seed pods were unavailable. It has been reported in literature that the concentration of pyrrolizidine alkaloids in unripe seeds is about five times greater than in the leaves of the plant. I have illustrated the foodplants used in my rearing activities and the larval interactions with the seed pods in Fig. 5 and Fig. 7.

Four species of *Crotalaria* are native to the southeastern U.S. More than 50 years ago, numerous other foreign species of *Crotalaria* were introduced into the southeastern US for soil improvement and forage. *Crotalaria* plants are toxic to livestock, and can potentially be fatal due to the presence of pyrrolizidine alkaloids.

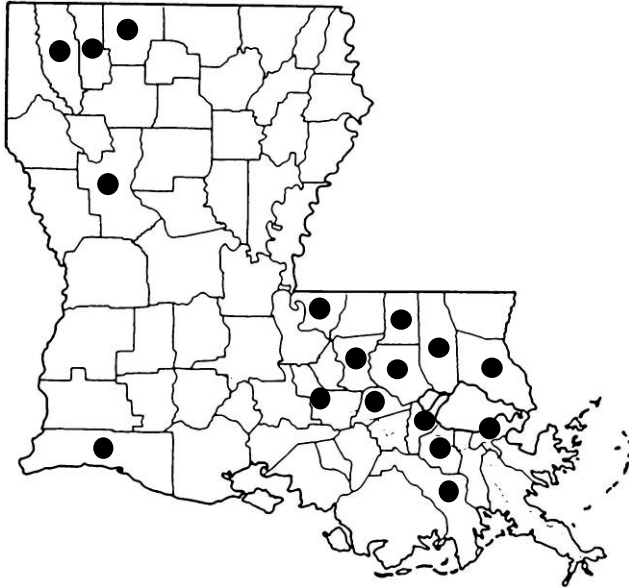
Heppner (2003) listed the range of *ornatrix* to include Florida and West Indies and Texas to Argentina and the range of *bella* to include Nova Scotia to Florida and Minnesota to Texas, West Indies, and Mexico to Argentina. The Louisiana parish records for all *Utetheisa* are illustrated in Fig.6.





**Fig. 5.** a. *Crotalaria spectabilis* Roth (Fabaceae) mature plants at the Abita Springs study site, b. seed pods on stem, c. mid instar larvae creating entrance hole near base of green seed pod, d. mature, drying seed pod illustrating internal silken pad over entrance (this drying pod with intact silken internal pad will usually contain a single larvae), e. mature larvae removed from seed pod.





**Fig. 6.** Parish records for all *Utetheisa* phenotypes.



**Fig. 7.** a. mature larvae feeding on seeds of cut open unripe seed pod, b. pupating larva in typical flimsy

Covell (1984) pictured only *bella* and listed its range to include Nova Scotia to Florida, west to Minnesota, Kansas, and Texas with July and September broods northward and breeding continuously in the deep south. Regarding *ornatrix*, this same author stated it is tropical and occurs in south Florida and south Texas and flies year-round. Covell provided a number of foodplants for *bella*, including some which seem unusual, namely: *Crotalaria*, *Lespedeza*, lupines, elm trees, fireweed, *Prunus* species, and sweet gale. For *ornatrix*, Covell listed only unspecified legumes as foodplants.

The earliest report of *bella* in Louisiana was by von Reizenstein (1863), specifically at City Park, within the city of New Orleans, Orleans Parish. Hine (1906) listed *bella* as occurring in Cameron Parish. Jung (1950) listed *bella* common throughout Orleans Parish. Knudson and Bordelon (1999, 1999, 2004) either list or comment on *bella* and *ornatrix* in three of their Texas publications. Schmidt and Opler (2008) list both *bella* and *ornatrix* as distinct species in the latest revised checklist of tiger moths of the continental U.S. and Canada.

It is not my intention in this article to cover all that is known about the well known but still misunderstood species, *Utetheisa ornatrix* and *Utetheisa bella*, as there is already a plethora of published articles, books, research, and web available information. My purpose in publishing this information is to document on the record what I have found and illustrating these two confusing entities and the great number of variations present here in Louisiana. Interested readers would be advised to view a web based article by Florida Cooperative Extension which is a pdf recreation of their bulletin at <http://creatures.ifas.ufl.edu> by Hall (2005), which lists some of the more relative information and a nice listing of references on this species.

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### Literature cited

- Covell, Jr., C.V.** 1984. A field guide to moths eastern North America. The Peterson Field Guide Series No. 30. Houghton Mifflin Co., Boston. xv + 496pp., 64 plates.
- DaCosta, M.A.** 2007. Phylogenetic studies of *Utetheisa* Huebner, the rattlebox moth, and other arctiines (Lepidoptera: Noctuoidea: Arctiidae). PhD dissertation, University of Minnesota.
- Forbes, W.T.M.** (1960) Lepidoptera of New York and neighboring states, part IV, Cornell Univ. Agr. Exp. St. Mem. 371. 188 pp.
- Hall, D.W.** 2005. Bella Moth, Rattlebox Moth, Inornate Moth or Calico Moth, *Utetheisa ornatrix* (Linnaeus) (Insecta: Lepidoptera: Arctiidae: Arctiinae), Florida Cooperative Extension Service, EENY-358 (IN644), 6pp.
- Hayes, A.H.** 1975. The larger moths of the Galápagos Islands (Geometroidea: Sphingoidea & Noctuoidea). Proc. Calif. Aca. Sci. LX, 7: 145-208.

- Heppner, J.B.** 2003. Arthropods of Florida and neighboring land areas, vol. 17: Lepidoptera of Florida, Div. Plant Industry, Fla. Dept. Agr. & Consum. Serv., Gainesville. x + 670 pp., 55 plates.
- Hine, J.S.** 1906. A second contribution to the entomology of the region of the Gulf Biologic Station, Bull. No. 6, Gulf Biol. Sta.
- Hodges, R.W. et al.** 1983. Checklist of the Lepidoptera of America north of Mexico. E.W. Classey Ltd. and The Wedge Entomol. Res. Found., Cambridge: Univ. Press. xxiv + 284 pp.
- Jung, R.C.** 1950. An annotated list of the Lepidoptera of the New Orleans area. Proc. Louisiana Acad. Sci. 13: 46-47.
- Knudson, E. & C. Bordelon** 1999. Texas Lepidoptera Survey, Illustrations of Lepidoptera from Texas. Pub. 6, pt 2. 77 color plates. Privately printed
- Knudson, E. & C. Bordelon** 1999. Texas Lepidoptera Survey, Checklist of the Lepidoptera of Texas 2000 edit. Privately printed
- Knudson, E. & C. Bordelon** 2004. Texas Lepidoptera Survey, Illustrated Checklist of the Lepidoptera of the Lower Rio Grande Valley, Texas Vol 2B: Macro-moths. Privately printed.
- Lafontaine, J.D. & B.C. Schmidt.** in prep. Checklist of the Noctuoidea of North America. ZooKeys.
- Schmidt, B.C. & P.A. Opler** 2008. Revised checklist of the tiger moths of the Continental United States and Canada. Zootaxa 1677: 1-23.
- von Reizenstein, L.** 1863. Catalogue of the Lepidoptera of New Orleans and its vicinity. Isaac T. Hinton. New Orleans, 8pp.