# *Anartia jatrophae* (White Peacock Butterfly or Biscuit)

Order: Lepidoptera (Butterflies and Moths)
Class: Insecta (Insects)
Phylum: Arthropoda (Arthropods)

**Fig. 1.** White peacock butterfly, *Anartia jatrophae*.

[http://www.ttnaturelink.com/wp-content/uploads/2010/12/White-Peacock-Anartia-jatrophae-jatrophae-Butterflies-Trinidad-Tobago.jpg, downloaded 5 March 2015]

**TRAITS.** The *Anartia jatrophae* adult butterfly is white or pale on the upper side with brown markings shown in Fig. 1. It is known more commonly as the "white peacock" worldwide and locally as the "biscuit". There are several round, black spots distributed over the wing, usually 1-2 on the forewing and 2 on the hind-wing. The forewing and hind-wing have a double row of light and dark brown crescent-shaped trim at the margins of the wing which are brown to orange in colour and the wings span 5-7cm (Deleszek, 2002). The butterflies have two front legs that do not function, which gives the appearance of having four legs which is a major characteristic of the members of the Nymphalidae family. The white peacock expresses seasonal polyphenism, with different pattern types found in different seasons. In the dry season, the species is paler in colour and larger in size while in the wet season, its form is smaller in size and darker in colour (The Trinidad and Tobago NatureLink, 2010). The eggs are small and yellow-green while the caterpillars are black with silver-white dots and branched red spines and the chrysalis is light green with black dots.

**DISTRIBUTION.** The white peacock is very common in Central America, the Caribbean, as well as southern USA. It has a distribution range from Argentina, to Central America, Mexico, and the West Indies (Fig. 2) and has the widest geographic range of any species in the genus (Deleszek, 2002).

**HABITAT AND ACTIVITY.**These butterflies are commonly found in disturbed, swampy areas in tropical and subtropical regions. They prefer warm, open areas such as fields and around ponds and streams (Deleszek, 2002). The butterflies are commonly observed along roadside ditches where host plants are commonly found. They prefer tropical habitats and terrestrial biomes such as savannas or grasslands and forests or even scrub forests and also have an affinity for aquatic biomes such as rivers and streams and temporary pools (Deleszek, 2002). Some other areas the butterflies are commonly found in are suburban areas on the borders of large cities and towns and riparian areas, located adjacent to a body of water.

**FOOD AND FEEDING.** The white peacock is a herbivorous species that feeds on the leaves and nectar of plants (it is a folivore and a nectarivore). The adults feed and obtain nectar primarily from low growing plants such as *Bidens pilosa* also called Spanish needle, *Bidens alba* or shepherd's needle, *Phyla nodiflora* or frogfruit, *Cordia* and *Casearia.* The larva (caterpillar) uses *Ruellia occidentalis* or ruellia, *Bacopa monieri* or water hyssop, *Lippia* and frogfruit as host plants, and only eats the leaves of the plants, some of which are shown in Fig. 3. The food plants of this species grow well in disturbed areas such as around ditches, along roadsides, and in agricultural areas. The white peacock is a diurnal insect whose feeding and activity times are during the day when plants are open so that that the butterflies can feed, and also act as a pollinator for the benefit of the plant species.

**POPULATION AND ECOLOGY.** The white peacock's lifespan is usually between 1-4 months in the wild (Silberglied et al., 1979). Populations studied showed low survivorship for adults under natural conditions as they were subjected to predation. Its abundance is affected or determined by the presence of its food plants as well as the habitat suitable for its survival. The free movement of the butterflies of this species affects the formation of isolated populations that are distinct in geography (Lederhouse et al., 1992). The *A. jatrophae* species is able to coexist with all other related *Anartia* species as well as unrelated species and they are good colonizers as they utilize a wide variety of plants as food; they have a short period of development, and can withstand the dry conditions of the tropical and subtropical regions they inhabit (Silberglied et al., 1979). However these butterflies are typically solitary and are not usually found in pairs or groups. In some South American population studies on *Anartia* showed that in certain regions there was a significant increase in the presence of males which is thought to be due to the emigration of female butterflies to areas with more ovipositor sites and a greater abundance of food plants and in other areas there were more females which was again due to the availability of ovipositor sites.

**REPRODUCTION.** The white peacock, like all butterflies, goes through complete metamorphosis where there is a significant change from the larva of the insect to the adult form. This species exhibits internal, sexual fertilization with year round breeding and has a polygamous mating system where the males can have multiple females as mates at a given time (Munroe 1942). *Anartia jatrophae* females are oviparous and the mature adults lay their eggs on

the host plants. The males either perch themselves or guard in the areas that contain large amounts of host plants and wait for the female as the females search for oviposition sites in the low vegetation (Silberglied et al., 1979). The male then mates with the female and releases a spermatophore into the female during copulation. The eggs are laid singly on the underside of the larval food plants or close to the plants and the development period is 3-10 days. The eggs are pale yellow while the caterpillars are black and spiny, with silver spots and the chrysalis is green and darkens with age shown in Figs 4 and 5. The caterpillars feed on the host plants that they occupy and then change into the adult butterfly form during the chrysalis stage. Parental care after the eggs are hatched is not found in this species (Munroe, 1942).

**BEHAVIOUR.** The male butterflies are territorial. They often claim a territory approximately 15m in diameter and also perch in those areas and protect them very aggressively from other male butterflies. The butterfly communicates using visual, acoustic (vibrations) and chemical (pheromones) methods and uses sense organs (Deleszek, 2002). These organs detect vibrations and they use pheromones together with the colours of the females to attract a mate for reproduction. Females also leave scent marks on plants where they have laid eggs. *Anartia jatrophae* has the ability to fly fast and erratically which makes it difficult for other organisms to attack and it uses this to protect itself from predators. The caterpillars also have spines to discourage predators and are dark coloured with spots for camouflage as well to release toxic chemicals and they also hide and feed at night. Some predators include insect-eating birds, mice, frogs, spiders, ants and wasps (Deleszek, 2002).

**APPLIED ECOLOGY.** The white peacock is not listed as an endangered species by the IUCN, but is however, protected in an IUCN category II protected area, in the Carlsbad Caverns National Park in New Mexico, USA (IUCN.org, 2015). These species populations are monitored in the United States but the white peacock is considered to be globally secure. The white peacock has not been found to benefit humans except for research and education purposes and there is also no evidence that it causes any adverse affects to humans (Deleszek, 2002). The caterpillars are not considered pests for farmers since all of the food plants utilized by this species are either ornamental or considered weeds.

**REFERENCES**

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Author: Christine Bissoon

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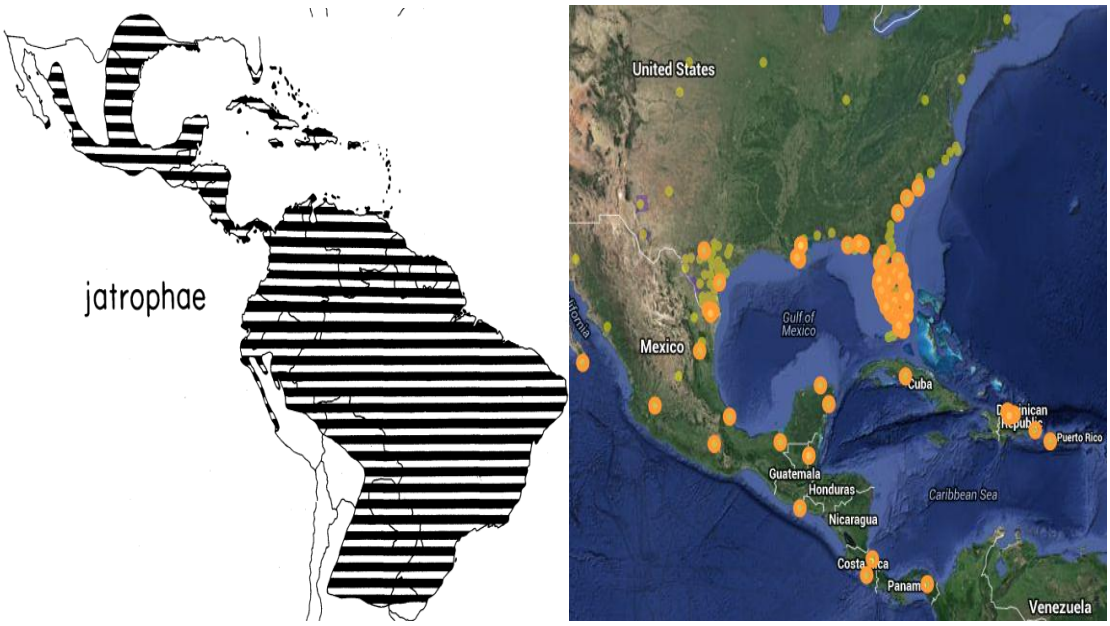


**Fig. 2.** Geographic distribution of the white peacock butterfly.

[From Silberglied et al. (1979)]

**Fig. 3.** Food of the white peacock; *Lippia*, water hyssop, Spanish needle, and *Ruellia* flowers.

[http://butterfliesofamerica.com/anartia_jatrophae_luteipicta.htm, downloaded 2 April 2015]

**Fig. 4.** Egg and caterpillars of the white peacock butterfly.

[http://www.thedauphins.net/white_peacock_life_cycle_study.html, downloaded 26 March 2015]

**Fig. 5.** The chrysalis of the white peacock when formed, and immediately before it emergence.

[http://www.thedauphins.net/white_peacock_life_cycle_study.html downloaded 26 March 2015]