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THE GULF FRITILLARY (*AGRAULIS VANILLAE*): BREEDING IN RICHMOND, VIRGINIA. – The Gulf Fritillary (*Agraulis vanillae*) is a tropical and subtropical species that has infrequently been reported from Virginia. Opler et al. (2006) show records for the species from the following Virginia localities: Northampton and Roanoke counties and the cities of Danville, Roanoke, Suffolk, and Virginia Beach. Glassberg (1999) claims that the Gulf Fritillary is an irregular migrant north to North Carolina and a rare stray in the East as far north as New Jersey. Young (2000) reports having seen the Gulf Fritillary many times in late summer on Virginia's Eastern Shore barrier islands. Taber (2003) lists the Gulf Fritillary as a species rarely seen during 1995-2003 butterfly surveys in Northampton County near the southern tip of the Delmarva Peninsula. Opler & Krizek (1984) report that temporary late summer breeding populations occur rarely as far north as Illinois, Missouri, and Virginia. Their range map for the Gulf Fritillary, however, includes only the outer portion of the Coastal Plain for Virginia.

Many records for the Gulf Fritillary in Virginia are from the Norfolk-Virginia Beach area. Clark & Clark (1951) report Virginia records for this species only from Norfolk and Princess Anne County (now the City of Virginia Beach). Cech & Tudor (2005) state (citing Roble et al., 2000) that this species occasionally forms temporary breeding colonies as far north as southeastern Virginia. Knudson (2009) writes that members of the Butterfly Society of Virginia, an organization based in the Norfolk-Virginia Beach area, saw more adult Gulf Fritillaries in 2008 than in recent years. It is the policy of the society to encourage its members to collect butterfly and moth caterpillars in the wild, raise them in captivity, and release the adults back into the wild. Knudson (2009) reports that 54 Gulf Fritillary adults were released in 2008. I know of no records or sightings of the species in the Richmond area prior to 2008.

From 21 August through 7 November 2008, I sighted Gulf Fritillaries on 21 occasions in the downtown Richmond area. One to three individuals were seen at each sighting for a total of 37 sightings of single butterflies. Of these 37 sightings, 23 were of males, 10 of females, and four were of undetermined sex. Undoubtedly, in many instances a single individual was seen on more than one occasion. In fact, several individuals had distinctive identifying markings such as a notch in a particular place on the wing margin or, in one case, white blotches on the upperwings where

scales had apparently been scraped off.

The sightings were made at six locations centered around the James River: A flower garden 0.60 km north of the James River in Maymont Park, a residential yard 1.25 km south of the river, a butterfly garden on the south bank of the river in James River Park, flower gardens 0.12 km north of the river near the Federal Reserve Building, a small sandy island in the river 0.74 km SSE of the Virginia State Capitol and 20 m from the river's north bank, and the weedy bank of the river just north of this island. The area that encompasses these six locations covers about 454 ha. Most of these locations are planted gardens where the butterflies showed a preference for nectaring on Brazilian verbena (*Verbena bonariensis*), lantana (*Lantana* cf. *camera*), and butterfly bush (*Buddleia davidii*), none of which are native to Virginia.

A search was made for Gulf Fritillary caterpillars, which feed on passionflowers (*Passiflora* spp.). Both species of passionflowers native to Virginia occur in the Richmond area: Yellow passionflower (*Passiflora lutea*) and maypops (*Passiflora incarnata*). The former is an herbaceous vine with small, inconspicuous, pale greenish-yellow flowers that is common in floodplain forests along the James River and as a garden weed in nearby residential areas. The latter, also an herbaceous vine, has large, showy purple and white flowers and is occasionally found in open floodplain forests along the river and in disturbed habitats such as fences along roads and alleys. Maypops is also sometimes planted as a garden ornamental.

After searching for many weeks, caterpillars were found on 8 October 2008 on the small (ca. 24 x 98 m), sandy island (mentioned above) located near the north bank of the James River. The caterpillars were feeding on a fairly dense colony of maypops sprawled out on the sandy substrate within a 14 x 21 m area adjacent to the water's edge and extending about 3 m up into several scattered trees. A census was made on 9 October: 18 Gulf Fritillary caterpillars were counted, ranging in size from 0.4 to over 4.0 cm and mostly located on the undersides of leaves. Numerous exuviae were observed, but no eggs were found. A female adult was observed flitting just above the passionflower plants. One chrysalis was located and collected. This chrysalis was situated about 30 cm above the ground on a small mimosa (*Albizia julibrissin*) sapling.

A second census of this area was made on 14 October by Steven M. Roble and the author. The estimated number of caterpillars seen on that day was 25-30. Again, a female was seen flitting above the host plant. A second chrysalis was located about 45 cm above the ground on a slippery elm (*Ulmus rubra*).



Fig. 1. Gulf Fritillary (*Agraulis vanillae*) caterpillar feeding on maypops (*Passiflora incarnata*) near the James River, Richmond, Virginia.

Three additional caterpillars were found on 9 October feeding on a second patch of maypops located on the same island about 27 m to the west. This maypops colony occupied a 12 x 14 m ground surface area and extended up into scattered trees for 6 m. Several Variegated Fritillary (*Euptoieta claudia*) caterpillars had been seen feeding here on 9 September 2008.

Another population of Gulf Fritillary caterpillars was located on 15 October by Catherine Byrd in a residential yard located 1.25 km south of the James River. Five caterpillars, ranging in length from 1.5 to 4.0 cm, were found in a 2 x 2 m area of weedy garden dominated by bearded iris (*Iris germanica*). The caterpillars were feeding on yellow passionvine, several small plants of which grew in the iris bed and on the adjacent chainlink fence. A single adult Gulf Fritillary had been seen on three occasions (7 September, 2 October, and 13 October) nectaring on a butterfly bush located a few meters away. Caterpillars were seen here until 21 October, after which colder weather set in.

The chrysalis collected on 9 October was kept on a screened-in porch and then brought inside on 23 October when the weather turned cold. The adult, a female, emerged on 5 November and was released outside, apparently healthy, on 7 November during a late-season warm spell.

Steven M. Roble, Zoologist, Virginia Department of Conservation and Recreation, Division of Natural Heritage, received three other reports of Gulf Fritillary sightings in the City of Richmond in the fall of 2008 and one report of a sighting in Giles County (pers. comm.). These reports, along with the large number of sightings in the Norfolk-Virginia Beach area, suggest that 2008 was a banner year for Gulf Fritillaries in Virginia.

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