

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Invertebrate Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Speyeria nokomis coerulescens*
COMMON NAME: Blue Silverspot Butterfly
SYNONYMS: *Argynnis nitocris* var. *coerulescens*
FAMILY: Nymphalidae

AUTHOR, PLACE OF PUBLICATION: (Holland) *Argynnis*. Ent. News, 11:332 (1900).

TYPE LOCALITY: Head of Rio Piedras Verdes, Sierra Madre region, Chihuahua, Mexico. Designated by dos Passos and Grey, American Museum Novitates, (1370): 10 (1947).

TYPE SPECIMEN: Lectotype in Carnegie Museum, designated by dos Passos and Grey.

TAXONOMIC UNIQUENESS: There are four species in the genus *Speyeria* in Arizona. This is one of two that have been recorded on Coronado Forest Service land. The other is *Speyeria atlantis nausicaa*. The sexes of *Speyeria nokomis coerulescens* are dimorphic making it unique among Arizona *Speyeria*. This species was originally placed in the genus *Argynnis*.

DESCRIPTION: Wingspan 63-78 mm (2.5-3 in).
Male: Upperside brownish-orange with numerous black spots and crescents. The inner parts of both wings dark brown, the upper edge of the hindwing with a thick patch of dark brown hair. The outer edge of the forewing is nearly straight. Underside forewing mostly orange-red, tan at the apex with numerous black spots and crescents. The hind wing is two-thirds greenish-brown, the outer third tan with three curved rows of silver spots outlined in black and various silver spots basally. (Brock and Prchal 2001).

Females: Upperside purplish-black especially near the base, cream to blue bands and crescent marks running down the outer edges of both wings. Black spots and crescent marks are visible in these bands. Underside forewing dark red-orange, creamy -tan on the outer part. Underside hindwing greenish-brown basally overlaid with cream scales, the outer part cream with three curved rows of silver spots outlined in black with various silver spots basally. (Brock and Prchal 2001).

AIDS TO IDENTIFICATION: There are (where) no other sympatric members of the genus *Speyeria*. The variegated Fritillary is similar to male *coerulescens* but lacks the heavy black brown basal scaling of *coerulescens*. Other members of the nymphalids are smaller with much more irregularly shaped forewings and they also lack the dark basal suffusion. The Red-spotted Purple is similar to the female *coerulescens* but is without cream and blue bands dorsally or silver spots ventrally. Pipevine Swallowtails usually have tails and do not have silver spots ventrally. (Brock and Prchal 2001).

ILLUSTRATIONS: B&W photos of upperside male and females (Bailowitz and Brock, 1991 pp. 216-217)
Color photos of upperside female, males and larva (Scott, 1986: Plates 3,8,25).
Color photos of upperside male type and females including type (Holland, 1931: Plate LV).

TOTAL RANGE: South through the Huachuca Mountains to Durango state in Mexico. There are no confirmed records for the United States since the 1938.

RANGE WITHIN ARIZONA: Historically from the Santa Catalina Mountains, Pima County, Arizona, south through the Huachuca Mountains. A reported sighting in the Huachuca Mountains in 1950 resulted in an intense and thorough search in 1967 and 1972 by Ron Wielgus with no further confirmed sightings. (Brock and Prchal 2001).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: *S. n. coerulescens* appears to have only one generation per year. However, according to Johnson (1992), larvae may be opportunistic in that after feeding temporarily they may return to diapause, depending on conditions. Consequently, larvae may sometimes overwinter as third instars and emerge following spring rains, though this spring flight is unconfirmed.

Possibly males wander more widely than females. Males have been observed several miles from known colony locations. However, males difficult to identify to subspecies so identification problematic. Eclosion occurs after 12-24 days, these larvae apparently do not feed. Instead, seek shelter in ground litter and pine needle mat where hibernation occurs in state of diapause for at least eight months. This species sometimes overwinters as third instar larvae with appearance of high mortality during this period. (Johnson 1992)

Flight Period: Historically this species was reported on the wing from 9 August to 22 October in the Santa Catalina Mountains, Pima County, Arizona. It is known to fly in Chihuahua state of Mexico from mid-August to mid-September. In colonies of this butterfly elsewhere, most males usually precede most females in flight by a week to ten days. There is (was) a single brood. (Brock and Prchal 2001).

REPRODUCTION: Females often remain in or near shrubbery while conspicuous males fly continuously low to ground in search of females. Mating occurs at any time of day. Females seem to mate very soon after emergence, possibly laying "more than 600 eggs usually low to the ground (5.0-10.0 cm [2.0-4.0 in.]) on plants or other objects near violets" (Johnson 1992).

Per Brock and Prchal (2001), "The egg is cream when fresh turning tan after a few days and strongly ribbed. The first instar larvae hibernate under leaf litter without feeding on violets. The last instar caterpillar is light yellow with black spots and lines and numerous long spines down the body. The head is pale reddish-brown. The larvae eat violets following hibernation and mature a few weeks before the flight. The pupa is orange with black markings."

FOOD HABITS: The specific violets for ssp. *coerulescens* were never reported. All other populations feed on violets. Throughout its range *nokomis* adults feed at flowers especially thistles. *S. nokomis coerulescens* adults were observed feeding at larkspur (*Delphinium* sp.) and *Tigridia pavonia* in 1998 in northeastern Chihuahua, Mexico. (Brock and Prchal 2001).

In spring, larvae begin feeding on *Viola* spp. Adults take nectar from flowers of numerous plant species, most frequently thistles (*Cirsium vulgare*, *C. californicus*) and other purple-white species, but also sunflower (*Helianthus* sp.), burdock (*Arctium minus*), thoroughwort (*Eupatorium* sp.), red clover (*Trifolium pratense*), goldenrod (*Solidago* sp.), *Aster* sp., and bee balm (*Monarda* sp.) (Johnson 1992).

HABITAT: Spring-fed meadows are the usual haunts for this species over most of its range. However, *coerulescens* populations in Chihuahua are associated with violet laden, fern covered hillsides above moist canyon bottoms in pine forests. (Brock and Prchal 2001).

Presence of *Viola* spp. depends on continuous supplies of water, mild summers, and cold winters, conditions that rarely occur in arid southwestern United States and northern Mexico. Consequently colonies of *S.n.*

coerulescens are generally disjunct, occurring sporadically throughout geographic range, usually along moist stream beds and spring-fed meadows surrounded by pine forests at elevations above 5,000-6,000 ft. (Johnson 1992).

ELEVATION: Above 5,000 - 6,000 ft. (1,525 - 1,830 m) (Johnson 1992).

PLANT COMMUNITY:

POPULATION TRENDS: *S. nokomis coerulescens* apparently no longer exists in Arizona. The subspecies *S. nokomis nitocris* occurs in the White Mountains of central eastern Arizona. (Brock and Prchal 2001).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1994]
[C2 USDI, FWS 1991]
[C2 USDI, FWS 1989]

STATE STATUS: None

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999)
[Forest Service Sensitive USDA, FS Region 3 1988]

MANAGEMENT FACTORS: Threats include farming, construction, human use of water supply, irrigation, haying, grazing and possibly fire suppression (Johnson 1992). Brock and Prchal (2001) state that management factors are no longer applicable, since this subspecies no longer occurs here.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Current status needs to be evaluated by extensive field surveys combined with reintroduction to historic sites. Survey historic sites in Arizona and New Mexico to assess habitat suitability of these sites if colonies are lacking. Reintroduction using eggs from captive females would be fairly easy but success of such reintroduction would depend on continued presence of appropriate habitat. Consequently, periodic habitat management may be necessary to keep meadow habitat open and to prevent shrub invasion. Mt. Lemmon site in Santa Catalina Mountains probably best initial site to attempt reintroduction, though agreement with U.S. Forest Service, Coronado National Forest, to periodically restore the meadow should be made. Reintroduction efforts should be supplemented with extensive field surveys throughout central Mexican highlands to determine status and colony location in that area and to obtain specimens for taxonomic analyses. (Johnson 1992).

Extensive field surveys should be undertaken in the Rincon and Galiuro Mountains, two ranges virtually uncollected and not adequately surveyed (Brock and Prchal 2001).

LAND MANAGEMENT/OWNERSHIP:

SOURCES OF FURTHER INFORMATION

LITERATURE CITATIONS:

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

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- Kim Wismann, Hayden Library, Arizona State University, Tempe, Arizona.

ADDITIONAL INFORMATION:

There is little doubt that this subspecies no longer exists in the Huachuca and Santa Catalina Mountain ranges. There is no evidence that this subspecies ever occurred in the Chiricahua Mountains. Most other mountain ranges are not high enough in elevation or lack sufficient habitat to support this species. Most of these mountains are well surveyed and collected. The exceptions are the Rincon and Galiuro Mountains which may be high enough to support populations of this butterfly. (Brock and Prchal 2001).

The two known Arizona colonies are considered extirpated, mainly due to alteration of the habitat. Extirpation from the Huachuca Mountains site was attributed largely to long-term drought, though tapping of springs and invasion of shrubs and trees also modified the habitat and contributed to this species demise. The other Arizona colony in the Santa Catalina Mountains, appears to have been extirpated when the spring was tapped to supply water to an Air Force radar station. This station was subsequently abandoned and the spring now flows out of a pipe. At present, the nearby town of Summerhaven may deplete this water source. Violets are abundant at this site, though the original meadow has become overgrown with shrubs and trees (inappropriate for adults). (Brock and Prchal 2001).

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