12-28-2001

Initial Survey of the Butterflies and Skippers in the Vicinity of the Buck Creek Serpentine Barrens, Clay County, North Carolina

Ronald R. Gatrelle
International Lepidoptera Survey

Volume 3 **28 December 2001** **Number 5**

The Taxonomic Report

OF THE INTERNATIONAL LEPIDOPTERA SURVEY

Initial Survey of the Butterflies and Skippers in the Vicinity of the Buck Creek Serpentine Barrens, Clay County, North Carolina.

Conducted by the International Lepidoptera Survey for the US Forest Service. May – October 2001

SUMMARY

General. Serpentine barrens are generally low in biotic diversity. However, these barrens are known to frequently harbor unusual species of plants and animals not usually found elsewhere. A survey was conducted from 4 May through 2 October 2001 in and around the Buck Creek Barrens located in Clay County, North Carolina to document the butterfly and skipper taxa present at this location and their status. The site was visited 15 times during this period with at least two visits each month except September and October. A total of 76 different taxa were located with another 14 being likely (90 total). Two new state records were recorded, one new mountain record and several unusual species. One of the two new state records is an undescribed species and the other a possible undescribed subspecies.

Species status. Throughout the Southern and Eastern United States the 2001 season was characterized by unusually low numbers of most species. In many areas even usually common species were found in low numbers. Because 2001 was an unusual year for population density, it is not possible to give an accurate assessment of the "normal" levels for many taxa found in the 2001 survey. But because the primary researcher is an expert field lepidopterists with several years of experience with western North Carolina taxa, an educated projection is given for most taxa recorded.

Barrens area. It is our opinion that the barrens area once supported a much more robust and diverse butterfly and skipper fauna then it does today. We find the area in poor health and in much need of increased management and in a manner that caters more to invertebrates. Burns are needed but should be limited in size as the rarer species seem to not be evenly distributed throughout the barrens area. More and smaller burns are recommended in a grid manner rather than on entire slopes at a time. We also recommend the thinning and removal of trees on the periphery of the serpentine areas to help provide a buffer and transitional perimeter.

AREAS SURVEYED

The survey site was segmented into four areas. 1) East Barrens. This area is on the east side of FS Road 350 up the west facing slope to just above FS Road 6269. 2) West Barrens. This area is on the west side of FS Road 350 and extends in an irregular pattern up the east facing slope parallel to road 350 to the junction of FS Road 350A. A power line cut runs the length of this area. In the southern portion of this section the barrens habitat goes to the top of the ridge. The power line cut connects the West Barrens to the next area. 3) Meadow at the old church property end of FS Road 350A. Though man made, this meadow functions as an extension of the West Barrens due to the flyway created by the power line cut. This area should be maintained as an integral part of the Barrens system. 4) Surrounding area. The area of Hwy 64 at the eastern junction with old 64 where there are large open areas; Hwy 64 between east and west junctions of old 64; up FS Road 6237. These surrounding areas act as man made habitat reservoirs where several of the grass/sedge feeding species of the Barrens have found suitable habitat that is now less available in the Barrens areas. Areas to the north are too forested to support Barrens specific taxa.

SURVEY DATES AND METHOD

The survey area was visited the following dates. May 4, 10, 14, 18, 29; June 18, 29; July 6, 16, 31; August 10, 21, 28; September 18; October 2. The time of each daily survey was basically the same. The day usually began between 08:30 and 09:30 and ended between 16:30 and 19:00 depending on day length and weather. Weather was good to excellent on all dates – morning fog was the biggest factor. A set pattern was established and followed each of these days. Area 3 was always visited first as it received the most morning sun enabling species to fly there much earlier than the other areas. Area 3 was left between 11:00 and 12:00 each visit. Area 2 was surveyed next ranging from about 11:00 to 14:00. Area 1 was surveyed last as it only had full sun from noon onward. The beginning time in area 1 varied from 12:00 to 13:30. Depending on what taxa were located in the initial round of daily searches, the three areas were surveyed again with the most time spent in the most fruitful area on a given day. The area 4 peripheral sites were checked sporadically with the large open area at the eastern junction of old and new highways 64 being visited most frequently as it was the exit route from the Buck Creek site. This part of area 4 had the latest sun which provided the opportunity for even early evening surveying in mid summer.

VERIFIED SPECIES LIST

NAME	AREA				DATE	STATUS
HESPERIIDAE	**1**	**2**	**3**	**4**	**Month - day/day/day**	**occurrence**
1 *Epargyreus clarus*	X	X	X	X	all 15 dates	abundant
2 *Thorybes bathyllus*		X			8-21	undetermined
3 *Erynnis icelus*	X	X	X	X	5-04/10/14/18/29; 6-18/29; 7-06	abundant
4 " *brizo*	X	X	X	X	5-10/14/18/29	abundant
5 " *juvenalis*	X	X	X	X	5-04/10/14/18/29	abundant
6 " *horatius*	X	X	X	X	8-10/21	common
7 " *baptisiae*		X	X		7-31; 8-10/21	common
8 " *lucilius* ?			X		7-16; 8-10	rare
9 *Pyrgus communis*	X			X	10-02	undetermined
10 *Nastra lherminier*	X	X	X	X	7-31; 9-18; 10-02	not uncommon
11 *Lerema accius*	X		X	X	7-16/31; 8-10/28; 9-18; 10-02	uncommon
12 *Ancyloxypha numitor*	X	X	X		5-29; 8-28; 10-02	uncommon
13 *Hylephila phyleus*	X	X	X	X	7-31; 9-18; 10-02	not uncommon
14 *Polites peckius* ssp.	X	X	X	X	8-10/21/28; 9-18	common
15 " *origines*	X		X	X	6-18/29; 9-18; 10-02	undetermined
16 *Pompeius verna*	X	X		X	8-10; 9-18	uncommon
17 *Atalopedes campestris huron*	X	X	X	X	8-10/21/28; 9-18; 10-02	common
18 *Atrytone logan*	X	X	X	X	7-06/16/31	not uncommon
19 *Euphyes vestris metacomet*	X		X	X	7-16; 9-18	uncommon
20 *Atrytonopsis hianna*		X			5-14	rare ?
21 *Amblyscirtes hegon*	X	X	X		5-10/14	common
22 " *vialis*	X	X		X	5-10/14/29	not uncommon
23 *Panoquina ocola*				X	9-18; 10-02	undetermined

PAPILIONIDAE	1	2	3	4	Month-day/day/day	occurrence
1 *Pterourus glaucus*	X	X	X	X	5-04/10/14/18/29; 6-29; 7-06/16/31; 8-10/21/28; 9-18; 10-02	abundant
2 *Pterourus* new species	X	X	X	X	5-10/14/18/29; 6-18	abundant
3 *Pterourus troilus*	X	X	X	X	5-04 through 9-18	not uncommon
4 *Papilio polyxenes asterius*		X	X		5-10; 7-31; 8-21	undetermined
5 *Battus philenor*	X	X	X	X	5-29; 6-18/29; 7-31; 8-10/21/28; 9-18	common
PIERIDAE						
1 *Pieris rapae*	X		X	X	5-14/29; 7-16; 8-21; 9-18	uncommon
2 " *virginiensis*	X	X	X	X	5-04/10/14/18/29	abundant
3 *Anthocharis midea annickae*		X	X		5-04	undetermined
4 *Colias philodice*	X		X	X	5-29; 6-18; 7-06; 9-18; 10-02	common late
5 " *eurytheme*	X	X	X	X	5-04/10/29; 6-18/29; 7-06/31;8-21; 9-18; 10-02	not uncommon
6 *Phoebus sennae eubule*		X	X	X	5-14; 9-18; 10-02	occasional
7 *Eurema lisa*				X	9-18	undetermined
8 " *nicippe*	X		X	X	6-29; 8-10/21; 9-18	occasional
9 *Nathalis iole*			X		7-31	occasional
LYCAENIDAE						
1 *Feniseca tarquinius*		X		X	5-04/10/14	not uncommon
2 *Satyrium calanus falacer*	X	X	X		6-29; 7-06/16/31	abundant
3 " *liparops*			X		7-06	uncommon
4 *Parrhasius m-album*				X	5-14	occasional
5 *Deciduphagus henrici*				X	5-14	undetermined
6 *Strymon melinus humuli*	X		X	X	7-06; 9-18	uncommon
7 *Calycopis cecrops*	X		X		9-18	uncommon
8 *Celastrina ladon*		X	X		5-04/10	undetermined
9 " *neglectamajor*	X			X	5-29	undetermined
10 " *neglecta*	X	X	X	X	6-29; 7-06/16/31; 8-10/21	common
11 *Everes comyntas*	X	X	X	X	all 15 visits	abundant
12 *Glaucopsyche lygdamus* ssp	X				5-04/10/14	not uncommon
NYMPHALIDAE						
1 *Euptoieta claudia*	X		X	X	6-29 through 10-02	not uncommon
2 *Speyeria cybele*	X	X	X	X	6-18 through 10-02	common
3 " *aphrodite cullasaja*	X	X	X	X	6-18 through 9-18	common
4 " *diana*	X		X		7-16; 8-10/21; 9-18	uncommon
5 *Chlosyne gorgone*	X	X			5-10/14/18	uncommon
6 " *ismeria nycteis*	X	X	X	X	5-29; 6-18/29; 7-06	common

7 *Phyciodes maconensis*	X	X		X	5-10/14/18/29	not uncommon
8 " *tharos*	X	X	X	X	5-10 through 10-02	common
9 " *cocyta* ?	X			X	7-06 through 9-18	undetermined
10 *Polygonia comma*	X	X	X		5-10/29; 7-06/16; 9-18	uncommon
11 " *interrogationis*	X	X	X	X	5-10/14/18; 7-06/1631; 8-10; 9-18	not uncommon
12 " *progne*				X	5-18	rare
13 *Nymphalis antiopa*	X	X	X	X	5-29; 7-16; 10-2	not uncommon
14 *Vanessa atalanta*	X	X	X	X	5-29; 7-06/16/31; 8-10/21/28	not common
15 " *virginiensis*	X	X	X	X	5-10 through 10-02	common
16 " *cardui*	X	X	X	X	7-06 through 10-02	erratic/common
17 *Junonia coenia*	X	X	X	X	5-10/29; 6-29; 7-06 through 10-02	not uncommon
18 *Limenitis archippus*	X	X	X	X	5-29; 6-18/29; 7-16	uncommon
19 " *arthemis astyanax*	X	X	X	X	5-29; 6-29; 7-16; 8-21/28	common
20 *Agraulis vanillae nigrior*	X		X	X	9-18; 10-02	occasional
21 *Enodia anthedon*			X	X	6-18; 8-10	uncommon
22 *Satyrodes appalachia*	X	X	X		6-29; 7-16/31	not uncommon
23 *Cercyonis pegala carolina*	X	X	X		7-31; 8-10/21/28; 9-18	very common
24 *Megisto cymela*	X	X	X	X	7-06/16/31	not uncommon
25 *Hermeuptychia sosybia*	X	X	X		6-18/29; 7-06/31; 8-10/28; 9-18	not common
26 *Cyllopsis gemma*		X	X		6-29	uncommon
DANAIDAE						
1 *Danaus plexippus*	X		X	X	7-31 through 10-02	common

PROBABLE AND ADDITIONAL SPECIES LIST

Jason Love of the Coweta FS Station tentatively identified a few other species for this site in 2000. Gatrelle also expects a few other species to be likely for the Barrens area. These species are as follows.

LOVE RECORDS	**1**	**2**	**3**	**4**	**DATE**	**STATUS**
1 *Hesperia sassacus*		?			5-29	possible
2 *Erynnis zarucco*	?	?			7-16	probable
3 *Wallengrenia egeremet*	?	?			9-10	probable
4 *Deciduphagus augustinus*	?	?			4-16	very probable
EXPECTED					**WHEN FOUND**	
5 *Polites Themistocles*	X	X	X	X	May-June and August-September	very probable
6 " *vibex*	X	X	X	X	June to August	very probable
7 *Poanes zabulon*	X	X	X	X	May-June and August-September	very probable
8 " *hobomok*	X	X	X	X	May to July	very probable
9 *Wallengrenia otho*	X	X	X	X	June to August	possible

10 *Celastrina nigra*	X	X		X	late March into May	very probable
11 *Deciduphagus irus*	X	X	X		May into June	possible
12 *Incisalia niphon*	X	X		X	mid April through May	very probable
13 *Satyrium edwardsii*	X		X	X	June-July	probable
14 *Polygonia faunus smythi*	X			X	June to August	probable

SPECIAL COMMENTS

Six taxa are of special interest.

1) A new species of Swallowtail in the genus *Pterourus* is in the process of being described. This species seems endemic to the Appalachian region. The Buck Creek site will be its type locality. This species is univoltine and flies from mid spring to early summer. In the below picture, the top two individuals are the common Eastern Tiger – *Pterourus glaucus glaucus*, the two lower individuals are the new species. Black females are not known in the new species while they are dominant in *glaucus* (at Buck Creek). As can be seen, these sympatric Buck Creek species are most easily told apart by size in the males.

2) *Chlosyne gorgone gorgone* is known from only two locations – one in Georgia and one in South Carolina. It is a univoltine species of the Sandhills region. Other populations are known from the foothills regions of northern Georgia and South Carolina. It has been determined that these multivoltine upstate populations are not the nominate subspecies and have tentatively been referred to subspecies *carlota* (which is a Midwestern taxon). A unique population of *C. gorgone* was found at the Buck Creek barrens. (This colony is 2500 feet higher than the Georgia/South Carolina foothills colonies.) This is a new North Carolina state record and the only known record of *gorgone* in the Appalachian mountains (an old 1800s West Virginia record is uncertain). Gatrelle will collect a small series of this population as it is possibly an undescribed relict subspecies – and hopefully work out its local life history in 2002. The population seems to be well established at this site in both the east and west barrens areas. This is by far the most unique taxon at this site.

3) *Phyciodes batesii maconensis* (Appalachian Crescent) is at times a common butterfly throughout the survey area. This North Carolina/Georgia southern Appalachian endemic (described by Gatrelle in 1998 from Macon County, North Carolina) has now undergone mtDNA analysis (by Dr. Wahlberg) against nominate *batesii* of the northeastern US and eastern Canada. It has been determined that the mtDNA of these two taxa are very different. This means that *maconensis* is possibly a species distinct from *batesii*. It is so treated by Gatrelle in this paper – *Phyciodes maconensis* (new combination).

4) One specimen of *Polygonia progne* (Grey Comma) was found along old Hwy 64. This may be the southernmost record for this typically northern species. This specimen may have been a stray but this is doubtful as it was found early in the year and was in poor condition. This indicates that it was bred in the area and overwintered there. This taxon is very unusual in North Carolina. It may well have a colony in the survey area including the stream bottom that divides the east and west barrens.

5) One freshly emerged male specimen of *Atrytonopsis hianna* was found in the West Barrens. This is a new North Carolina mountain region record for this species. Jason Love recorded *Lerema accius* from this same area on April 16, 2000. It is Gatrelle's opinion that this is in fact a misidentification of *hianna*. Love did not voucher his record, and these two can look very similar to an inexperienced lepidopterist. This is the second most unique taxon in the barrens.

6) Five *Erynnis* Skipper specimens were collected in the area 3 meadow and tentatively determine to be species *lucilius*. This determination was made by dissecting the male genitalia and comparing the adults with reared specimens of *lucilius* from West Virginia. (Reared by Tom Allen.). The problem is that the larval host, Columbine (*Aquilegia canadensis*), was not located by Gatrelle in the immediate area. This host needs to be documented in this vicinity. If plants of this host are found, a search should be made for *lucilius* larvae on these plants to confirm this record. *E. baptisiae* is an almost cryptic sibling species to *lucilius*. *Erynnis lucilius* is a unique species for North Carolina and its status there needs a lot of detailed survey work.

In conclusion, this survey is but a beginning. The Lepidoptera found to date in this initial survey reveals that much more work and analysis needs to be conducted in this unique Serpentine Barrens and the adjoining areas.

Survey conducted by Ronald R. Gatrelle, president, The International Lepidoptera Survey.
Report submitted December 27, 2001. Financial support provide by the US Forest Service.