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Underwing moths at the UWM Field Station

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UNDERWING MOTHS AT THE UWM FIELD STATION

ABSTRACT

This paper summarizes the findings of my study (1977-1982) of the presence and phenology of moths in the genus Catocala at the UWM Field Station. Use of sugar bait and blacklight traps resulted in the capture of 19 species. This report includes a phenological list of the specimens and line drawings of each, depicting size and hindwing coloration.

INTRODUCTION

The Underwing Moths (genus Catocala, family Noctuidae) are characterized by drably mottled forewings of gray, brown or black and hindwings of discrete bands of black and bright colors of yellow, orange, pink or red. Because of this interesting contrast of color, Catocala moths have long fascinated collectors and scientists. Whether one is pursuing specimens for their aesthetic appearance or for biological data of occurence, distribution, phenology, etc., interest is piqued and collecting begins. Data collected since the beginning of my interest in Underwing moths in 1977 will be reported here in three ways: 1) a list of the species collected at the Field Station, 2) line drawings depicting their size, shape and prominent markings and 3) a phenological list of specimens collected.

METHODS

There are many ways to collect Underwing Moths, such as the use of sugar bait, blacklight, Robinson mercury vapor light trap, daylight search and tree tapping. The predominant collecting technique at the Field Station was the use of sugar bait (a mixture of beer, sugar and molasses), which is painted on tree trunks and then checked after nightfall for feeding moths. This process is explained in more detail by Holland (1903). Trees on a path coursing through the Swamp Hardwoods and

then paralleling the edge of the Upland Woods (approximately 50m. in) were used. Baiting in later years was also done on a path through the bog to the first island. Blacklights were set up at the field-forest edge near the lab building and near the old bird banding shelter.

RESULTS AND DISCUSSION

Specimens of 19 species were collected. Following is a list of these species with basic information on the ground coloration of wings, flight period, larval food plant, and behavior (from Sargent, 1976) of each. They are listed in the order in which they appear in Figure 1 , which depicts each species in a line drawing. The line drawings were made of actual specimens and, therefore, their size is accurate, although a given specimen may vary due to factors such as sexual difference (females are larger) or poor larval diet. The postmedial line on the forewing also varies somewhat within the species but those pictured are representative of the species. I hope this information will provide a starting point for identification of Underwings at the Field Station. For diagrams illustrating wing markings see Sargent (1976). For a key to the species see Forbes (1954).

Catocala crateagi Saunders -- Forewing is light greenish gray, hindwing (other than the black bands) is yellow-orange including the apex and fringe. Flight period is July and August. Food plants are hawthorn and apple. Moth has a tendency to rest head-down on trees during the day.

Catocala mira Grote -- Forewing is gray, hindwing is yellow-orange including apex and fringe (deeper color than C. crataegi). Flight period is end of July through August. Food plants are hawthorns. Moth rests head-down on tree trunks and has been captured feeding at night on wild bergamont (Monarda).

Catocala praeclara Grote and Robinson -- Forewing is light greenish gray, hindwing is light yellow-orange including the apex and fringe. Flight period is mid-July through mid-September. Food plants are shadbush (serviceberry) (Amelanchier spp.) and chokeberry (Aronia spp.). Moth is often associated with bog edges and other acid soil areas. Moth rests head-down.

Catocala grynea (Cramer) -- Forewing is dull greenish gray, hindwing is yellow-orange. Flight period is mid-July through the beginning of September. Food plants are hawthorn, apple and plum. Moth rests head-down on tree trunks.

Catocala clintonii Grote -- Forewing is pale gray, hindwing is pale yellow-orange. Flight period is early. It is the earliest Catocala on the wing, flying in June in the north. In eastern Ontario (Rockburne and LaFontaine 1976) it was collected in late June and July. Food plants are plum and apple spp.

Catocala serena W. H. Edwards -- Forewing dull gray, hind wing yellow-orange. Flight period is mid-July through the beginning of October . It is apparently subject to long-term fluctuations in abundance. Rockburne and LaFontaine (1976) thought it rare in eastern Ontario since there was only one specimen in their collection. Only one specimen was collected at the Field Station by Cynthia Meyer in October of 1971. Food plants are thought to be hickories and walnuts. Moth rests head-down, often on hickories.

Catocala habilis Grote -- Forewing is light gray, hindwing is orange. Flight period is mid-August through mid-October. Food plants are hickories and walnuts. Moth rests head-down on tree trunks usually three to eight feet above the ground, often on Shagbark Hickory and sometimes partially hidden under the "shags".

Catocala ultronia (Hübner) -- Forewing is gray-brown with a distinctive brown apex, hindwing is orange-red with a white apex and gray fringe. Flight period is mid-July through September. Rosaceae spp. such as apple, cherry and plum comprise their food plants. Moth rests head-down on tree trunks usually from six to twelve feet above the ground, often under a large branch.

Catocala briseis W. H. Edwards -- Forewing is grayish black, hindwing is scarlet with white apex and fringe. Flight period is end of July through September. Food plants are poplars and willows.

Catocala concumbens Walker -- Forewing is light silvery gray, hindwing is pink with white apex and fringe. Flight period is the end of July through the beginning of October. Food plants are willows and poplars. Moth rests head-down, often low on tree trunks, also on fence posts, rock surfaces, etc. It tends to drop to the ground when disturbed and comes readily to bait.

Catocala relicta Walker -- Forewing is white and gray, hindwing is black with a white band and fringe. Flight period is the end of July through September. It is subject to considerable fluctuation in annual abundance. Food plants are poplars and willows. Moth rests head-up, especially on the trunks of light trees and comes readily to bait.

Catocala retecta Grote -- Forewing is light gray, hindwing is totally black with white fringe. Flight period is August through the beginning of October. Food plant is hickory. Moth rests head-down on tree trunks, usually two to eight feet above the ground and often on hickories. Comes readily to bait.

Catocala unijuga Walker -- Forewing gray, hindwing orange-red to scarlet-red with white apex and fringe. Flight period may be the longest of any Catocala, the beginning of July through the beginning of October. Food plant is poplar and willow. Moth rests head-up on tree trunks, often high off the ground. It has been captured feeding at night on milkweed and joe-pye weed and comes readily to bait.

Catocala palaeogama Guenée -- Forewing is dark gray, hindwing is orange including the apex and fringe. Flight period is mid-July through the beginning of October. Moth is subject to wide fluctuations in abundance from year to year. Hickory and walnut comprise their food plants. Moth rests head-down on tree trunks, usually four to eight feet above the ground and often on hickories. It seems to be taken more commonly in all light traps than at bait, so it may be a late flyer.

Catocala ilia (Cramer) -- Forewing is gray, hindwing is orange-red including the apex, with cream-colored fringe. Food plant is oaks. Flight period is early July through the beginning of October. In my experience it is the most common species at the Field Station. Moth rests head-down on tree trunks, often high off the ground and frequently on oaks. Comes readily to bait.

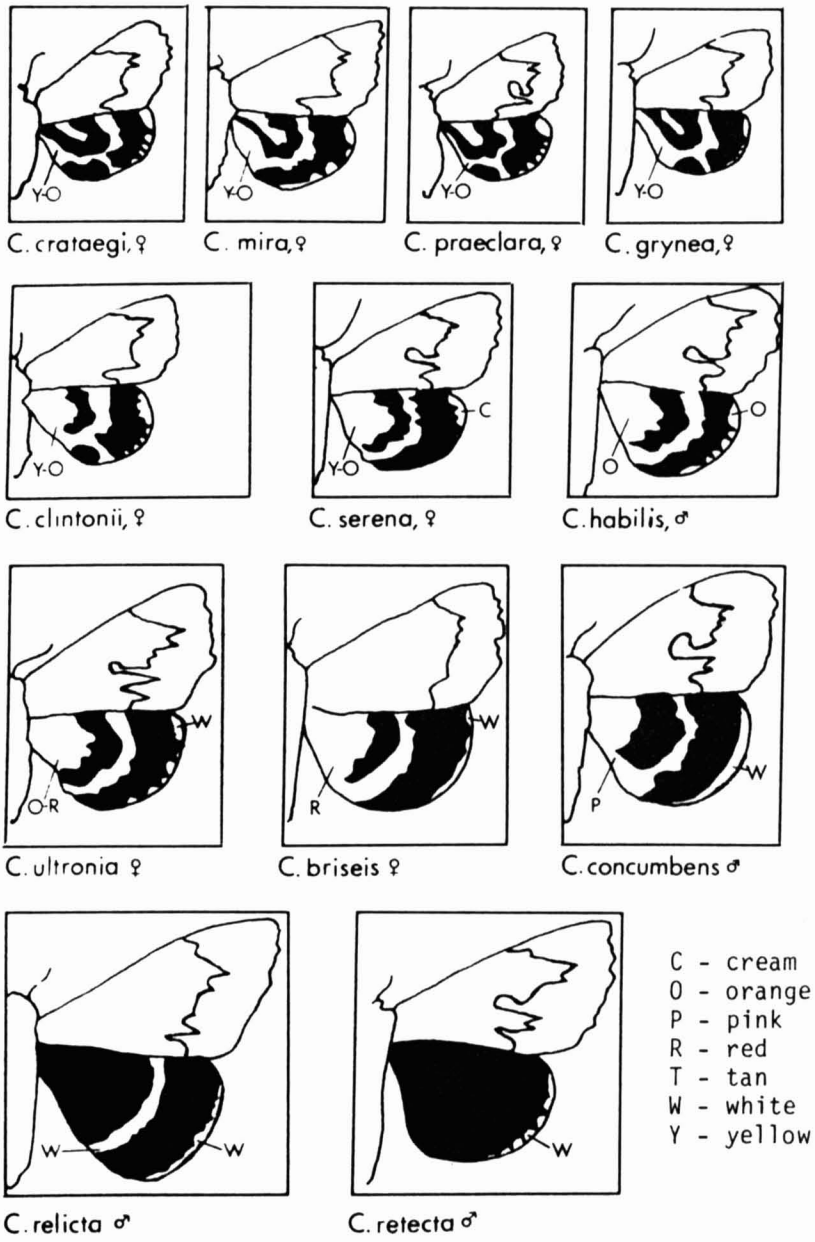
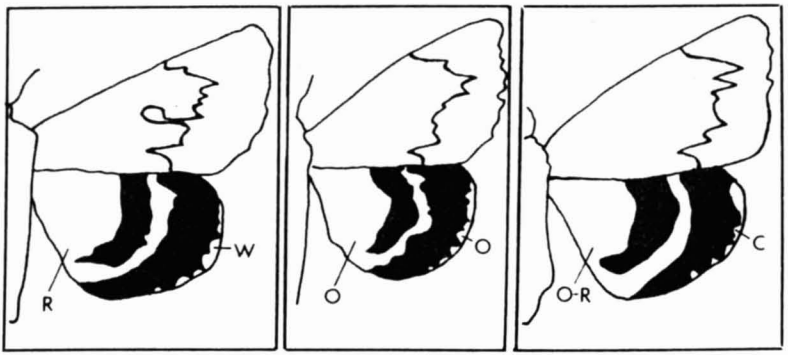
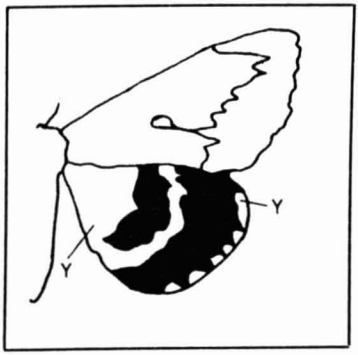


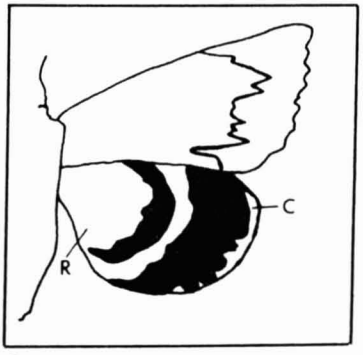
Figure 1. Line drawings of Catocala spp. at the UWM Field Station, depicting size, forewing postmedial line and hindwing coloration.



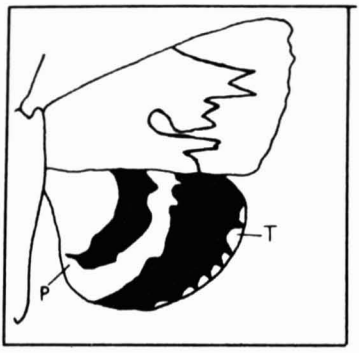
C. unijuga ♂ C. palaeogama ♂ C. ilia ♀



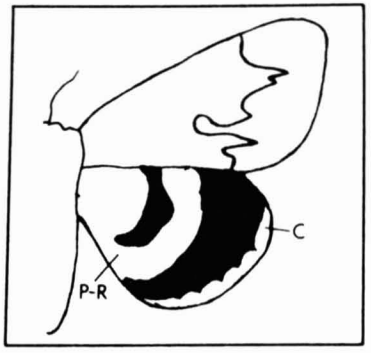
C. cerogama ♀



C. parta ♀



C. cara ♀



C. amatrix ♀

Catocala cerogama Guenée -- Forewing is light gray, hindwing is yellow including the apex and fringe. Flight period is August and September. Food plant is basswood. Tietz (1952) also lists Swamp Maple and poplar as food plants. Moth rests head-down, often on light colored, large trees especially White Oak.

Catocala parta Guenée -- Forewing is light gray, hindwing is salmon-red with cream-colored apex and fringe. Flight period is August through mid-October. Food plants are willows and poplars. Moth rests head-up on tree trunks, usually from four to eight feet above the ground, often on White Oak and is quite skittish.

Catocala cara Guenée -- Forewing is dark gray brown, hindwing is deep pink with tan fringe. Flight period is August through October. Food plants are willows and poplars. Moth often rests in protected places such as caves, under eaves, bridges, etc. For example, one of my specimens was collected under a building overhang after blacklighting nearby the previous night. When resting during the day on trees, the moth does so head-down, usually three to five feet above the ground and is often quite skittish. Comes readily to bait.

Catocala amatrix (Hübner) -- Forewing is dull gray-brown, hindwing is pinkish red with cream-colored fringe. Flight period is August through mid-October. Food plants are willows and poplars. Moth often rests in protected places as is the case with C. cara, and especially on buildings. It is very skittish, often flying long distances if disturbed, but does come readily to bait.

Summarizing the larval food plant preferences of the nineteen species results in the following:

Salicaceae	(Poplars and Willows)----------	7 spp.
Rosaceae	(Hawthorn, Cherry, etc.)-------	7 spp.
Fagaceae	(Oak)----------	1 sp.
Juglandaceae	(Hickory and Walnut)----------	4 spp.
Tiliaceae	(Basswood)----------	1 sp.

A large proportion of Underwings are hickory and walnut feeders and it was for this reason that I chose an Upland Woods trail with Shagbark Hickory. Despite this, I did not capture many hickory feeders. Perhaps the large number of species feeding on Salicaceae and Rosaceae is due to the fact that the trail was near the edge of the Upland Woods proper and coursed through Swamp Hardwoods. It was also near an area which served as a small orchard before the land became Field Station property.

The following Catocala species were collected along the bog boardwalk as well as the Upland Woods trail: C. briseis, cerogama, concumbens, crataegi, grynea, ilia, palaeogama, praeclara and relicta. C. ultronia was baited at the pine row just east of the bog. C. unijuga was baited only in the bog and in the pine row east of the bog.

General life history of Catocala moths begins with overwintering eggs laid on the bark of the food plant, either tree or shrub. Larvae usually look bark-like on their dorsal surface, whereas the underside is often tinted with the color which will be the ground color of the moth's hindwing. The pupa forms in a thin cocoon

between leaves and is strongly powdered with white bloom. All species are single-brooded with moths usually flying in August (Forbes 1954). Sixty-six percent of the moths collected at the Field Station were collected from mid-July through August (Table 1), probably due to the greater chance of warm, muggy nights during these months which seem favorable to the capture of Catocala. Collecting dates as early as mid-May and June were tried, but without success. Most of the capture dates seemed to fall around the date that Sargent (1976) determined to be the median date of capture, using the records of Sargent and Hessel (1961-1973) in Massachusetts and Connecticut. In fact, the majority of Field Station captures occurs slightly before the median date. However, dates as late as October 17 were successful, and 22% of the total was collected in October.

Sargent (1976) found the five most common Catocala species to comprise 50-60% of the total sample. I also found five species to be the most common (N greater than 10) and comprising 56% of the total.

Most of the species sampled were fairly equal in their sex ratios. For Catocala mira, briseis, parta and habilis, there were only male specimens. For Catocala clintonii, serena, unijuga and palaeogama there were only female specimens. For all of the above species, fewer than five individuals were captured, therefore, more data would be needed to determine statistical ratios. Sargent (1976) noted a larger percentage of males at bait for C. ultronia and C. concumbens. My C. concumbens data agreed with this ratio (11 males vs. 6 females). However, the C. ultronia was equal (6 males vs. 6 females). With C. ilia, according to Sargent (1976), females were most common on bait (68.7%). My data resulted in nine males and two females, but a trend cannot be stated, since all specimens seen feeding at bait were not collected.

Since Sargent (1976) lists 71 Catocala species east of the Mississippi River, and Rockburne and LaFontaine (1976) list 38 species for Ontario and Quebec, I would assume the total number of species to be found at the Field Station has not yet been determined. To this end, I recommend the use of the Robinson mercury vapor light trap to be included as a technique so that collecting would occur for a longer season and later in the night since some species, such as C. palaeogama may fly after usual baiting attempts stop at one or two o'clock. If further studies are attempted, I also recommend that as much behavior as possible be noted upon capture. Data such as type of tree or collecting technique, time of night, sex of moth, distance flown when disturbed, etc., are important pieces of information needed to increase our knowledge of Catocala moth behavior.

ACKNOWLEDGMENTS

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TABLE 1. Catocala Moths collected at the UWM Cedar-Sauk Field Station (1971, 1977–1982)

Number listed after species name indicates total of specimens tallied. Shaded areas represent range of data from Sargent (1976). * marks the median date of Sargent (1976) data.

SPECIES		JULY				AUGUST				SEPTEMBER				OCTOBER			
C. clintonii	1					1											
C. crataegi	4			1	2*	1											
C. ilia	11			3	4	*3	1										
C. unijuga	2			2					*								
C. ultronia	12			2	3	5*	1	1									
C. grynea	3					1*		1						1			
C. praeclara	5			1	3	1*											
C. palaeogama	2			1		1			*								
C. serena	1						*							1			
C. relicta	4					3	*							1			
C. concumbens	17					5		3*			1			1	1	6	
C. mira	1					1	*										
C. briseis	5				1	2	2	*									
C. parta	2				1			1			*						
C. retecta	10							1			*			5		4	
C. cerogama	16					8		3			5						
C. cara	7							2		*	2				3		
C. amatrix	2									*	1			1			
C. habilis	4										2*				1	1	
TOTAL	109			10	14	32	4	12			11			10	5	11	

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