Field Notebook Digitization: Richer data augments narratives

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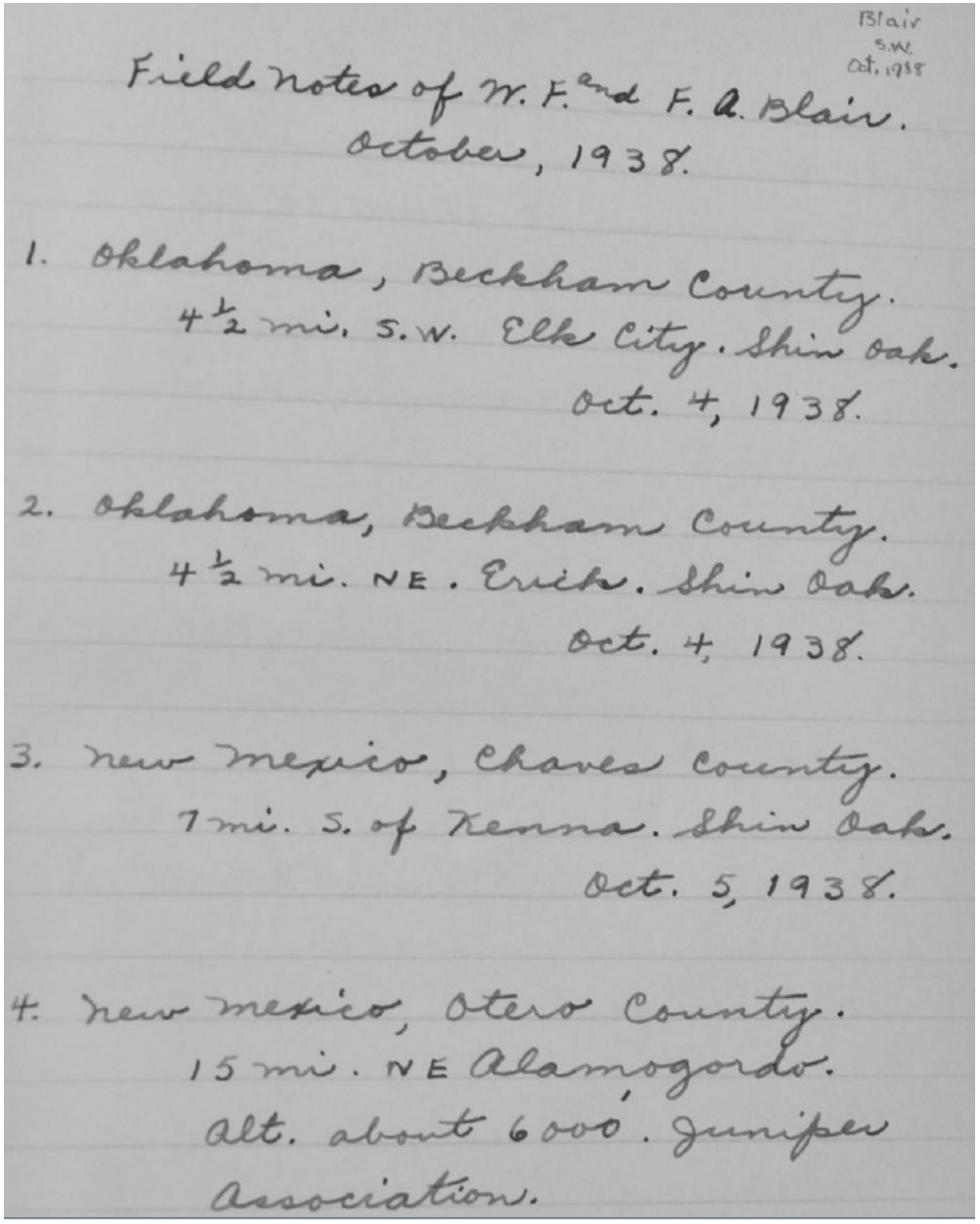
- We have digitized about 150+ field notebooks (out of 400) from the UMMZ Insect Division. While most field notes are examples of brevity, some have provided interesting points of reference that can be compared with current data to show changes in flora and fauna.

- At the heart of the exercise in digitizing field notes is the ability to share these documents beyond the scope of the collections and its archives.

- Primary source data can be shared across disciplines to augment research on climate change, land-use patterns, and related topics.

- The most typical question asked "is there more data than what is on the pinned label?" This is hopefully provided by the field notes.

- Often, there is little more than a corroboration of the label data with the field notes. While brevity provides corroboration, it's not very rich in data.


Blair
S.W.
Oct. 1938

Field notes of W. F. and F. A. Blair.
October, 1938.

1. Oklahoma, Beckham County.
4½ mi. S.W. Elk City. Shin oak.
Oct. 4, 1938.

2. Oklahoma, Beckham County.
4½ mi. NE. Erick. Shin Oak.
Oct. 4, 1938.

3. New Mexico, Chaves County.
7 mi. S. of Kenna. Shin Oak.
Oct. 5, 1938.

4. New Mexico, Otero County.
15 mi. NE Alamogordo.
Alt. about 6000. Juniper
Association.

Example of a field notebook with very brief entries that merely corroborate a labeled specimen.

Sample of a diary-style notebook

Detroit, May 8,1932

One of the great surprises of the winter, a result of the unprecedented warm weather, was the collection of a rare butterfly at Stratford, Ohio, on January 14 by Mr. Trautman. The insect, a goatweed butterfly, *pyrrhanaea andria*, has never before been taken in central Ohio, so far as we are aware. Its range, according to Holland's Butterfly Book, is from Illinois and Nebraska, south to Texas. And think of its being found on January 14!

Museum Echoes
Publ. by the Ohio State Museum, Columbus, Ohio
March 1932.

Today Rawson and Stinson down near Willis south of Ypsilanti added A. andrea to the Michigan list. Two specimens were taken, and several others seen. They were found flying in a bog, and resembled P.interrogatinn closely.

This has been a beautiful day, warm and bright following several heavy rains of last week. Did not get out into the woods but took a long drive in the afternoon. The furnace fire is out for the first time this year.

Detroit, May15, 1932

Another beautiful Sunday. The first part of the week was cool with more rain. The country is pretty well soaked with water now. On the 13th Lawler, Stinson and I went out to Mack Woods. It was an ideal night, and there were numbers of moths flying, but we spent the whole evening trying to get the car out of the mud. The heavy rains have softened the road until it is impassible.

Yesterday afternoon I was out in the woods at Coolidge and the 12 Mile Road for about an hour. It was a beautiful afternoon, but there seemed to be no lepidoptera flying. Saw numbers of P. rapae of course, and two asterias. Phlox and violets are in full bloom, and the trillium are starting. Here in the City the lilacs came into blossom yesterday.

Detroit, Mich.
May 28, 1932.

After a heavy rain on May 21, the next day I was out in the woods with Andrews. Looked over a piece of open woodland north of the East Maple road. Did not look particularly good, but I picked up three moths, all desirable, one of them being Z. undularis, which I had never before taken. But very few butterflies were seen possibly because of the chilly wind. We then went over to Southfield, but I got nothing at all there.

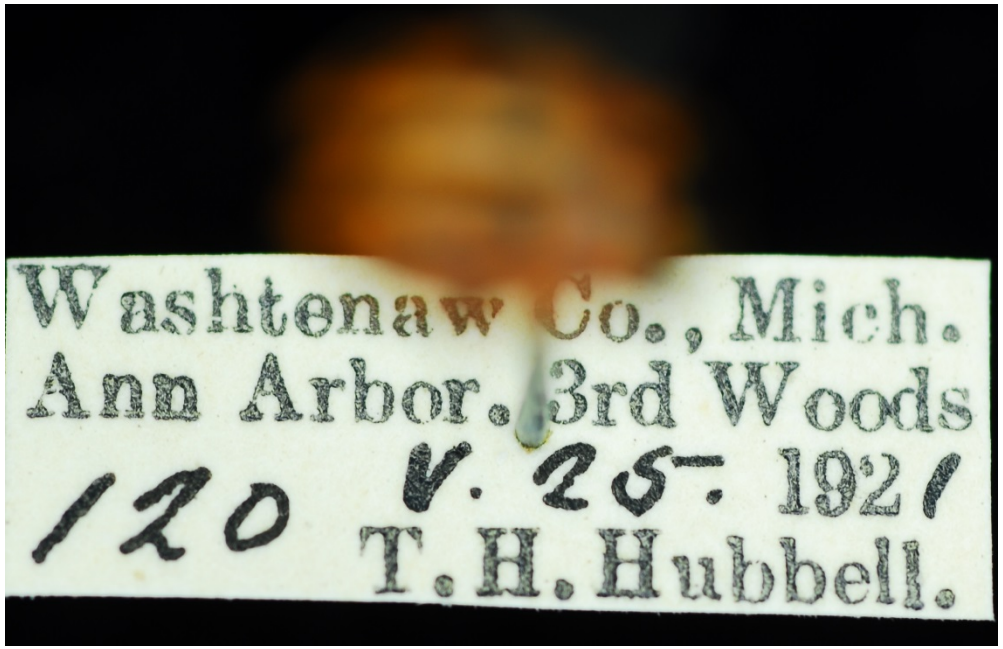
May 24 and 25 were warmer, and in the evening of the last day I went out to Rochester with Rawson. Put up the sheets at the foot of the hill near the road where we had good success last year. The night seemed ideal, close and sultry, with thunder rolling, but there was very little that came to the sheet. My lantern went bad, but at his sheet, except for numbers of erechtea and lachnosternas, there was almost nothing. Sugar produced a few beetles and cockroaches, not a single moth. I rather think that the place

What can we get from this?

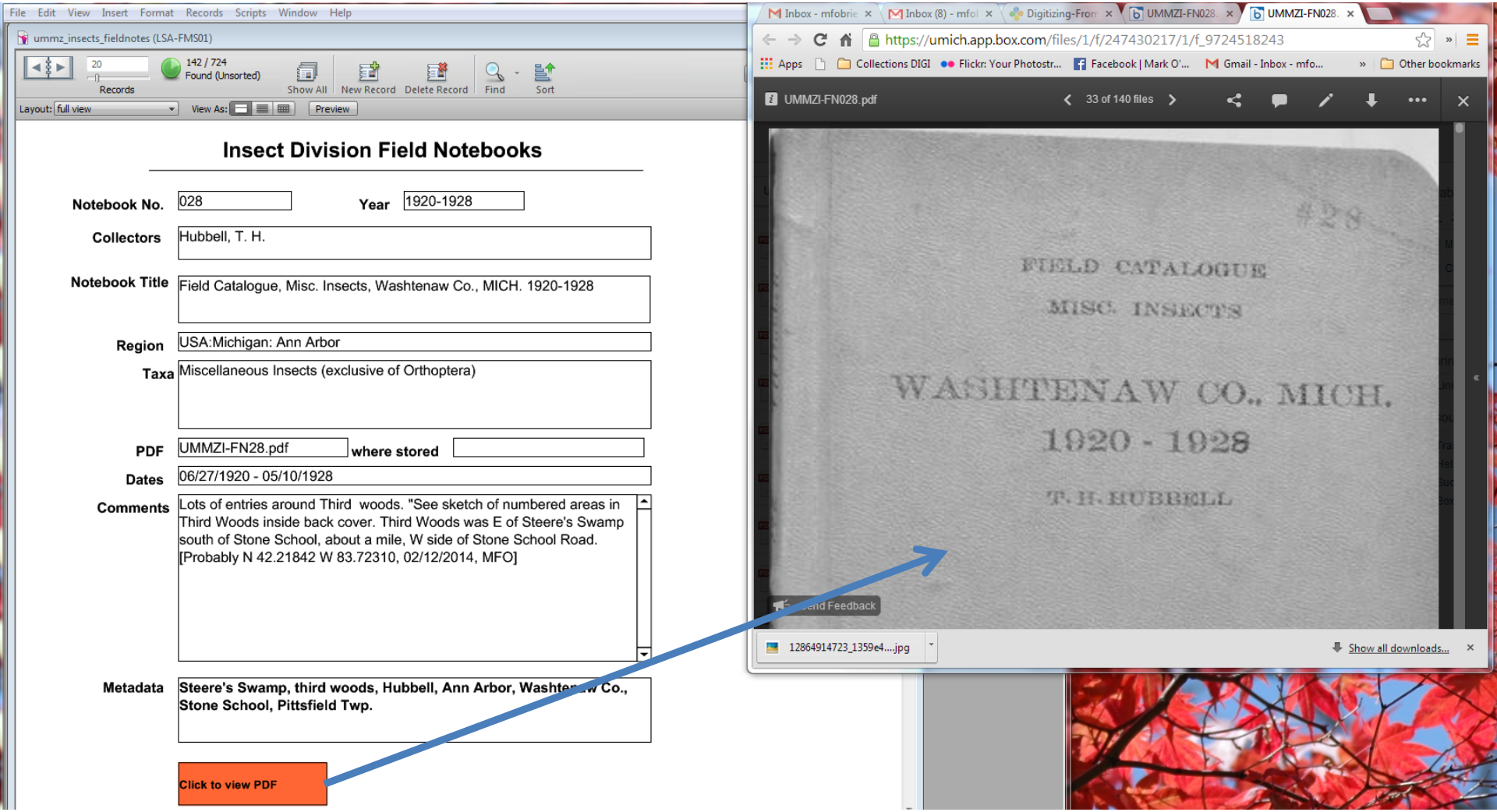
Suppose that you are trying to determine factors for the decline of various species of Coccinellidae across the United States. It would be useful to know something about earlier collections.

This is the 13-spotted ladybird beetle, *Hippodamia tredecimpunctata* (Linn.)

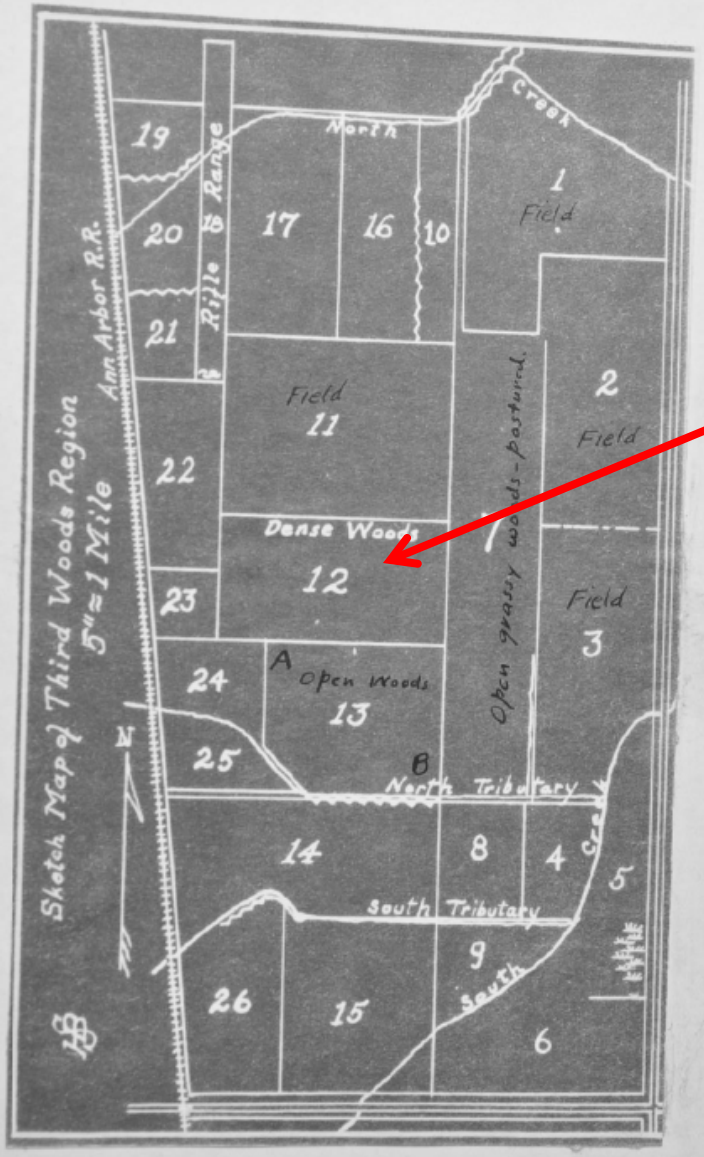
Collected in Washtenaw Co., Ann Arbor, MI in "3rd woods" on May 25, 1921, by T.H. Hubbell. The 120 refers to the field note entry.



By checking our Field Notes Catalog, we can come up with the original notebook entry.



#28



7, 12, & 13 constitute 3rd Woods proper.

A - clearing N.W. corner 13. - Stumps & woodpiles (1921).

B - " S.E. " 13 - " " " " .

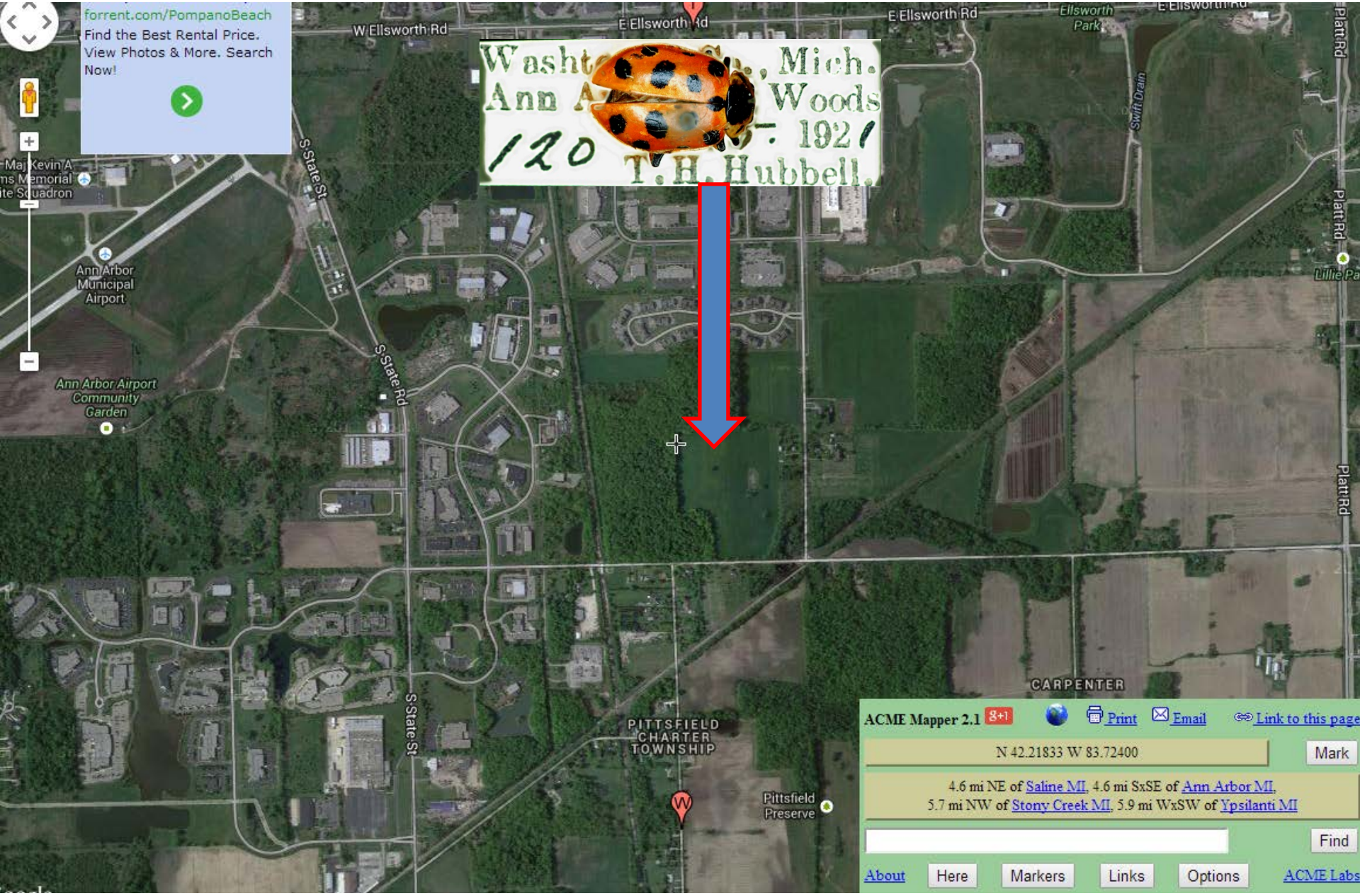
120. Misc. Insects.

Third Woods. V. 26. 1926.

Swept from ground herbage & low bushes in (12).

From T.H. Hubbell's entry – "See sketch of numbered areas in Third Woods inside back cover. Third Woods was E of Steere's Swamp south of Stone School, about a mile, W side of Stone School Road."

We can find the site easily with various online mapping apps.


forrent.com/PompanoBeach
Find the Best Rental Price.
View Photos & More. Search Now!
W Ellsworth Rd
E Ellsworth Rd
E Ellsworth Rd
Ellsworth Park
Swift Drain
Platt Rd
Platt Rd
Platt Rd
Lillie Pa
S State St
S State Rd
S State St
Ann Arbor Municipal Airport
Ann Arbor Airport Community Garden
Maj Kevin A ns Memorial ite Squadron
Mich.
Woods
1921
120
T. H. Hubbell.
CARPENTER
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N 42.21833 W 83.72400
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Is *Hippodamia tredecimpunctata* at Third Woods in 2014?

If all of the specimens collected at Third Woods are cataloged – insects, plants, vertebrates – we would have a snapshot of Third Woods nearly 100 years ago. (Bringing the scope of ATBI into play in modern efforts)

Modern collecting efforts are desirable to substantiate any changes to Third Woods.




Conclusions thus far

- Authors that provide richer details allow for us to have a better understanding of the quality of the habitat at that time, and to make comparisons with later observations.
- It's also important that we accurately add metadata tags to our resources to enable better search results.

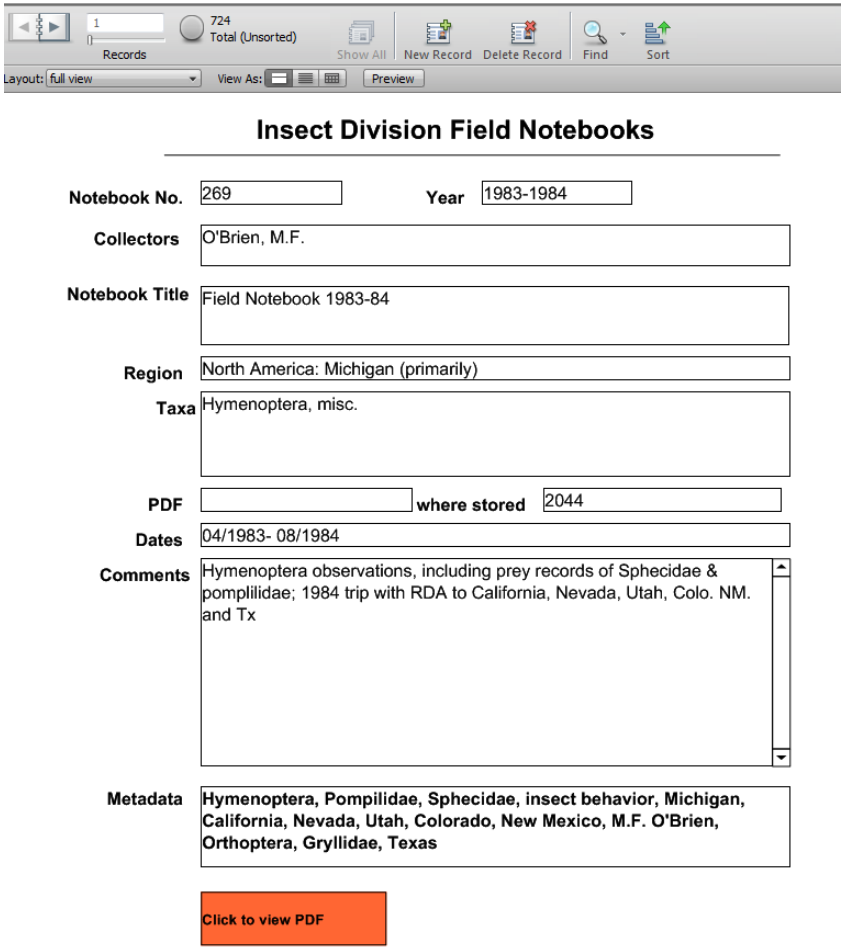
Both of these are time-consuming but pay off later

- Primary Source Data can provide a referential base for modern research efforts and our efforts to digitize them should include useful metadata to aid such research.

- Access to such Primary Source Data will require more innovation than typical specimen catalogs due to the varied nature of the sources.

PROCEDURES AND EQUIPMENT

- In the summer of 2013, I initiated the digitization of the Insect Division field notebooks housed in the University of Michigan Museum of Zoology. We already have a catalog of the notebooks that was transcribed from 3x5 cards into a Filemaker database in the late 1990s, and is currently maintained in the Filemaker Pro 11 database.



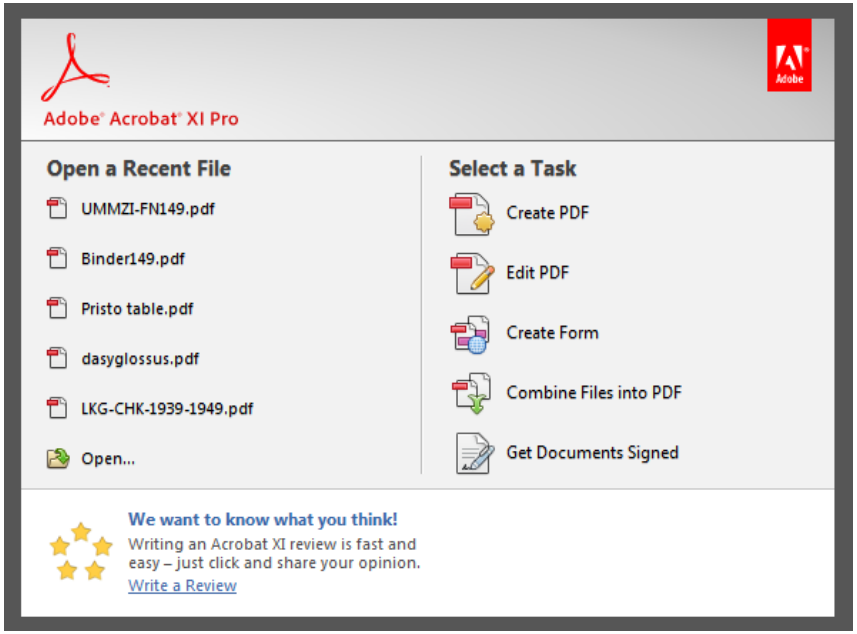
- The field notebooks are predominantly 4-3/8 x 7" perfect bound books with leather or cloth bindings. A smaller number are pocket notebooks or ring-bound letter-sized sheets, and variations in between. The condition, binding, and age of the notebook often determined how it was digitized.

We used two methods to digitize the notebooks.

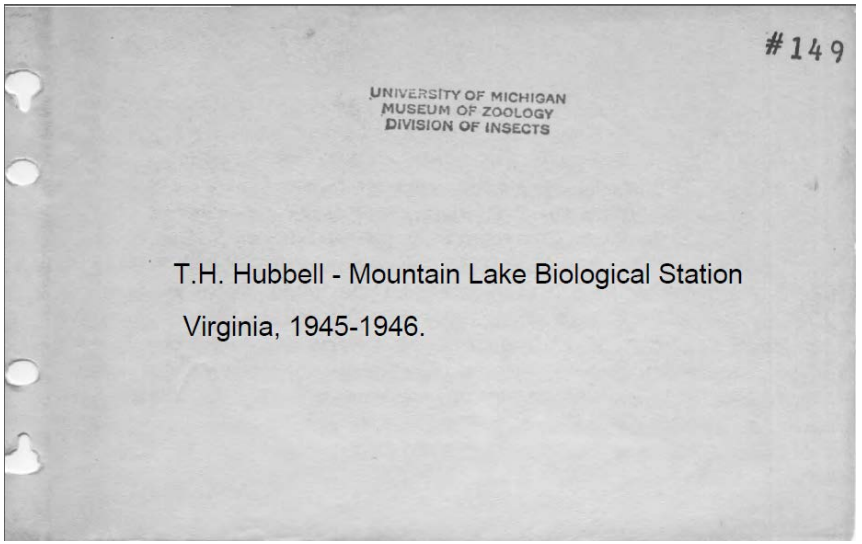
- Digital camera (Nikon D90 SLR) was used for the notebooks with bindings that would not allow then to be flatted or scanned page-by-page. The notebook was placed in a holder to allow the pages to lie at an angle and each page was photographed in sequence.
- Canon Canoscan flatbed scanner - for notebooks that can be flattened against a platen, or that can be done one sheet at a time.
- This was the most used procedure.

- Most notebooks were digitized in gray scale, unless there were color plates or maps; which were done separately in color.

- All pages were assembled in Adobe Acrobat Pro - cropped, rotated, and assembled into a final PDF for each notebook and given a unique Identifying number that matched the number in our database. For example, notebook 45 became UMMZI_FN045.PDF.



- The scanned notebooks are then checked back against the catalog, where we can correct the entries, add metadata and notes that enhance the usefulness. Our eventual goal is to have the pdfs viewable in whatever software/web solution that we use in the coming year - most likely in EMu.



#149

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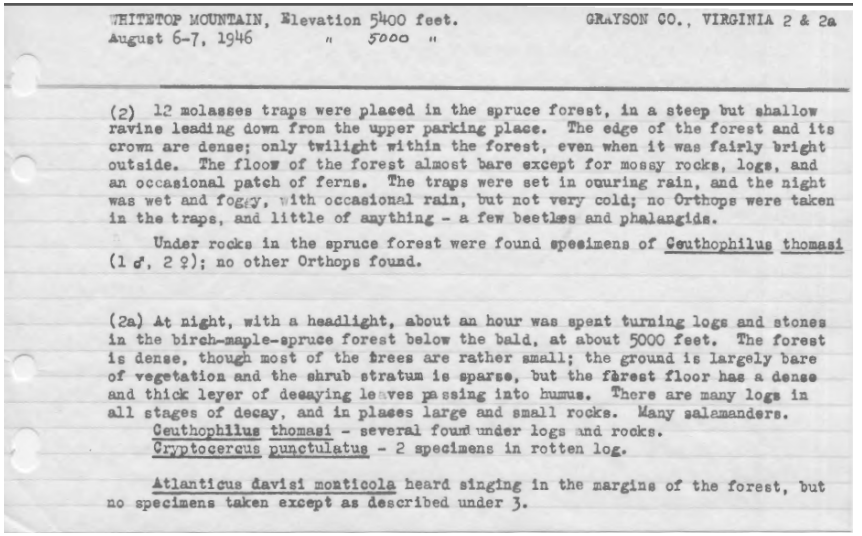
DIVISION OF INSECTS

T.H. Hubbell - Mountain Lake Biological Station

Virginia, 1945-1946.



WHITETOP MOUNTAIN, Elevation 5400 feet. GRAYSON CO., VIRGINIA 2 & 2a
August 6-7, 1946 " 5000 "

(2) 12 molasses traps were placed in the spruce forest, in a steep but shallow ravine leading down from the upper parking place. The edge of the forest and its crown are dense; only twilight within the forest, even when it was fairly bright outside. The floow of the forest almost bare except for mossy rocks, logs, and an occasional patch of ferns. The traps were set in couring rain, and the night was wet and foggy, with occasional rain, but not very cold; no Orthops were taken in the traps, and little of anything - a few beetles and phalangids.

Under rocks in the spruce forest were found specimens of Ceuthophilus thomasi (1 ♂, 2 ♀); no other Orthops found.

(2a) At night, with a headlight, about an hour was spent turning logs and stones in the birch-maple-spruce forest below the bald, at about 5000 feet. The forest is dense, though most of the trees are rather small; the ground is largely bare of vegetation and the shrub stratum is sparse, but the forest floor has a dense and thick layer of decaying leaves passing into humus. There are many logs in all stages of decay, and in places large and small rocks. Many salamanders.

Ceuthophilus thomasi - several found under logs and rocks.
Cryptocercus punctulatus - 2 specimens in rotten log.

Atlanticus davisi monticola heard singing in the margins of the forest, but no specimens taken except as described under 3.

Challenges in Field Note Digitization

Scanning Process

- Faded ink on yellowed paper
- Penciled notes
- Disintegrating bindings
- Maintaining quality of reproduction
- Sticking to workflow
- Acrobat sometimes crashing.

Post-scanning

- Metadata tagging
- Image cleanup
- Cross-referencing with database
- Deciphering handwriting
- Consistency of final product - PDFs

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Cheryl Meneghini for her hard work in producing the pdfs

Frank E. Ammerman fund at the UMMZ

iDigBio for creating a wonderful community for the various digitization efforts