

Neil Dankert July 2nd, 2024

Meet Neil

Location: Middle Creek at Niobrara Valley Preserve

Butterflies mentioned: Two-spotted Skipper (*Euphyes bimaçula*), Dion skipper (*Euphyes vestris*)

Chris: “*There’s two in here, but... two-spotted?*”

Neil: “*Yep.*”

Chris: “*Yeah!*”

Neil: “*On the underside, the wings are- the veins are outlined in white.*”

Chris: “*Ok*”

Neil: “*So, you can tell without even opening it.*”

Chris: “*So, it’s got two spots on top...*”

Neil: “*So, you can tell that its female. And the other one’s a dirt skipper.*”

Chris: “*A dirt skipper.*”

Neil: “*Yep.*”

Text: These are soundbites from the [annual butterfly surveys](#) at Niobrara Valley Preserve. Every year, Lepidopterist Neil Dankert is joined by his partner, Jen, and assisted by Johnathon Nikkila and his son in his search for butterflies and moths that fill the records of the Lepidopterists Society and Niobrara Valley Preserve.

[Lepidoptera](#): a group of insects that includes butterflies and moths

Butterflies mentioned: Silvery Checkerspot (*Chlosyne nycteis*), Gorgone Checkerspot (*Chlosyne gorgone*)

Neil: “*Gorgone kind of have that little arrowhead markings. And then silvery checker spot just kind of has those ovals instead of arrowhead kind of shaped things.*”

Text: Those of us who hadn't participated in surveys in the past first met Neil the night before. It was an informal gathering around a mercury vapor light, set up against a sheet to attract moths. We were pointing out moths and insects as they swarmed the sheet (and our faces) when Neil joined us, answering questions and identifying moths. The target of the night was the abbreviated underwing (*Catocala abbreviatella*), a species identifiable by the showy orange on its bottom two wings. It was a sight to behold; hundreds of moths and flies and insects that flit through the night.

The next morning, we passed around some of Neil's finds, temporarily housed in orange pill jars, until Neil interjected to set the day's course, leading with the announcement that this would be his 40th year of surveying butterflies at Niobrara Valley Preserve.

We first hiked through woodlands swatting at more mosquitos than butterflies. But we caught sight of the occasional Wood Satyr (*Megisto cymela*) and Wood Nymph (*Cercyonis pegala*). Our second site was at a prairie on rolling hills where we chased our main targets for the day: skippers. Skippers are small brown butterflies that Neil's partner, Jen, describes as looking like paper airplanes. To an untrained eye, skippers often look nondescript and indistinguishable from each other. So, we brought them to Neil, like offerings in Ziploc bags, and waited patiently for him to confirm or deny our guesses and acknowledge that this was an exciting find, or just another name and tally for the list.

Butterflies mentioned: Least skipper (*Ancyloxypha numitor*)

Chris: "Four skippers, I think they might all be different. Least [skipper]?"

Neil: "Nope that's male of the same thing"

Text: Our third site was Middle Creek, which runs to the Niobrara River from the north. Here, Neil and I let the others do the hard work of chasing butterflies, while Neil invited me to "pull up a tailgate" as we discussed his 40 years surveying butterflies and moths at Niobrara Valley Preserve. Neil needed no prompting to launch into his story while I scurried to record –

Notes For Context:

Dr. Hal Nagel: A biologist at University of Nebraska Kearney

Dr. Paul Opler: studied Lepidoptera for over 50 years. He wrote a number of field guides including the Peterson Field Guides to Butterflies of Eastern and Western North America

The Lepidoptera Society: A collective of Lepidoptera lovers, scientist and non-scientist, dedicated to the study, recordkeeping, and preservation of butterflies and moths

County Record: the first time a species is recorded in a particular county

Neil: *“By happenstance, that uh, I ended up here. So, when Conservancy bought the preserve, they didn't have a, hadn't hired a full-time manager. They just had an opportunity to buy the land. So, they decided they'd go with an advisory committee on land management decisions and stuff.*

And so, I don't know who else was on it, but my college advisor was Hal Nagel. Doctor Nagel. And they hired him on as part of the management committee. And, he was, soils, plants, and invertebrate guy by trade. And so, he came up here a couple times. They had. He came back and I said he was my advisor. And... [laughter]

Whether he thought I needed a project or a little guidance or whatever, but he was like, “We ought to go up to the preserve and sample, you know, see what butterflies are up there.” And I was a nontraditional student. So, I just kind of, you know, going to college was kind of my hobby. You could afford it as a hobby at that time.

And so, we ended up coming up here and it was really poorly- Well, you know, 40 years ago there was not a lot of knowledge, and, about Nebraska butterflies. So, at this being such a unique area, we made some unique finds and, we-

I was kind of out of the loop at that time, just starting, so I had a question on identifying a lot of the stuff that we've collected up here. So, I cold called, dropped in on Doctor Paul Opler up in Fort Collins, Colorado, who worked for the Fish and Wildlife Service.

And he was kind enough to give me 15 minutes of his time and, and, yeah, so he identified everything I had.

Then he said, “If you're going to do this, you should probably get in touch with Dick Rochet,” who is the state coordinator for the Lepidoptera Society.

And they have state coordinators, the zone coordinators that you turned your records in to. And they, you know, decide what's new county record. You're just kind of record keepers.

And so, I got a hold of him and, and so it started- he was like, "Yeah, all this stuff you're finding up at the preserve is, is county records, and range extensions, and neat stuff like that."

So, then it kind of- you kind of gotten a little bit juiced about what you were doing then. So, we had decided after some initial just, you know, come up for a weekend once in a while, we decided we'd come up every 2 or 3 weeks for two years and catch whatever, you know, and so sample all the different habitats so we know what was flying at each different habitat when and stuff.

So, we did that for two years and then we. Just started doing annual butterfly counts after that. So, I said this is 40 years of me coming up here. So, we started at about 84, I guess. But."

Text: You can find a link to the 1988 butterfly survey [HERE](#). The survey covered seven sites across Niobrara Valley Preserve. It recorded 24 Brown County records and 42 Keya Paha County records, as well as 16 species at the edge of their geographic range.

What Neil Doesn't See

Location: One of the sites where Weidermeyer butterflies were recorded at Niobrara Valley Preserve

Neil's interview was peppered with visits by surveyors, consulting Neil and sharing what they'd found with others

Butterflies mentioned: [Little Glassy Wing \(*Vernia verna*\)](#), [Northern Broken Dash \(*Polites egeremet*\)](#), [Silvery Checkerspot \(*Chlosyne nycteis*\)](#)

Neil: "Yeah, I think that might be a male, but yeah. That's a little glassy wing. I think that's a northern broken dash. Yep! A silvery checkerspot, nycteis."

Jen: "It's show and tell, let's see."

A: "I caught a question mark for fun. I don't know if that was one of..."

Jen: "That's new on the list today"

Neil: "Yep."

Text: Here's one of the surveyors -

Butterflies mentioned: Orange Sulfur (*Colias eurytheme*)

Neil: “*And then, at one time- Yes, sir?*”

“*Sulfur?*”

Neil: “*Yep. And if you get it to open up, you see there’s a little tinge of orange there? There’s orange sulfurs and there’s clouded sulfurs, which don’t have any orange on them at all. And then just to make things even better, they hybridize.*”

K: “*Oh good*”

Neil: “*So, anything with any orange on it at all is not a clouded sulfur so I just label it an orange sulfur.*”

Text: Back on topic now.

Neil’s career began with Niobrara Valley. And with guidance from other scientists and lepidopterists that shepherded Neil into the field, Neil holds a special perspective of the Niobrara Valley that spans decades. He’s watched species come and go. Some he relies on seeing every visit, others surprise him with their presence or their absence. He’s wondered at what he’s missed in the decades before his arrival that make his 40 years seem like a blink of an eye.

Notes for Context:

Weidemeyer’s Admirals (*Limenities weidemeyerii*) : *Black butterflies with bold white lines forming a wide U across their wings*

(Other) Butterflies mentioned: Viceroy (*Limenitis archippus*), Red Spotted Purple (*Limenitis arthemis astyanax*), Taxiles skipper (*Lon Taxiles*), Acadian hairstreak (*Satyrrium acadica*)

Neil: “*We found, when we first came out here, Weidemeyer’s Admirals were here.*

And that's an eastern range extension of a Rocky Mountain species. And they were here for about ten years, not very many. And it was right at the end of their range. Edge of their range.

There were two other species of the same genus viceroys and red-spotted purples were here as well. And so, we ended up finding them hybridizing and so there's three different hybrids of red spotted purples and Weidermeyer's and one hybrid of viceroys and Weidermeyer's that's been collected here.

And about 15 years ago they disappeared. You know, they, their eastern range extension is somewhere farther west now. They're, they can be found relatively common in the Pine Ridge. So somewhere between here and the Pine Ridge is their new eastern but...

...it would kind of be nice to have 100 years' worth of data as you knew how long they had been here? You know, they could have just showed up the year before we started, and they were here for ten years and then they... you know... But we don't know how long they'd been here. So, whether this was formerly kind of a permanent, you know, edge of their range or, you know, but a lot of- at the end of their range, it kind of moves back and forth as, you know, conditions change.

So, why? Don't know. What caused the Weidermeyer's to go back west? I don't know, but this is... those hybrids aren't found very many places.

So that's kind of a feather in, feather and, preserves cap. And this is as far east as taxiles skippers get. That's another Rocky Mountain western species. We have them here. Haven't seen them in a while. That's another one that flies toward the middle of July. "So, whether they're still here or not, I have no idea, but..."

Text: Read Neil's blog post about these hybrids [HERE](#).

Neil's comment raises a question. What species do we miss when we choose only one day out of the year to survey and how do we account for them?

Neil: "Yeah, we kind of... when the Xerces first started out, butterfly counts, they were all this kind of 4th of July butterfly count. So that's kind of, you know, where we, you know, made it end June beginning of July and the, the stuff that's rare or uncommon is... even if it's here, the numbers are so low that, you know, you're not going to find it every year, just from the, you know, if there's just so few up around, even if you're in the right population or you're in the right area, there're just so few up around.

A funny example was. I came up here after our official count was over at one year to this area, and it was later in the day, probably 4:35, maybe 6:00 in the

evening. And there were *Acadica* hairstreaks. You couldn't walk ten paces without running into another pair of mating *Acadicum* hairstreaks. They were just- there must have been 20 or 30 mating pairs just in this little area. And I came back the next day in the middle of the day and could not scare up a-one."

Claire: "Are they very uncommon species?"

Neil: "No. Well, you know, that's."

Claire: "Yeah, that's the question."

Neil: "Yeah. If, if you know, there's 40 of them in this area and you can't find one. You know, it's like it's not because they're not there. It's just because, you know, for some environmental reason, they decided they didn't want to fly that time of day or whatever, you know. So, whenever somebody asked me, is this butterfly rare?"

You know, it's like, "I didn't find it." That doesn't mean it's not there."

Text: Maybe this presents an opportunity for deeper research. But in the meantime, the data that we do collect is no less meaningful.

Neil: "It provides background data. Like we talked about, the Weidermeyers, were here. Weidermeyer's admirals were here when we came here back in the '80s then 10 or 15 years later, they moved back west. Then you had no historical data on how long they'd been here, if that was, you know, how significant was that?"

You know, I mean, had they been here for 100 years and now they're gone? Or had they just, you know, it's a fluctuating margin of the range? So, this kind of doing long-term surveys kind of gives some background as to what populations are there. And of course, the populations fluctuate every year, you know, due to ecological conditions and predator prey and stuff like that.

So, but, you know, from year to year they kind of fluctuate. But it kind of gives you a long-term idea on what species are here and have been here. And so, if they disappear for a long period of time, that maybe there was a reason for concern."

Text: Neil reflects on how his experience and the preserve has changed in the years since he began.

Neil: *"It's kind of, it's not a reflection on the place. It's just kind of a reflection on, on, the years, you know, you kind of- At first you found new things all the time, and, you know, and after 40 years, you're not finding new things all the time, you know? So, it's still a way cool place to come.*

You know, and then there's things that have disappeared or, you know, I don't come up here as often. So, there's some things that I'm just not going to see because of when I come up.

But it's like Weidermeyer's admirals moving back west and stuff you know. And there is a little bit of. Well now they know it's sumac encroachment and stuff. So, some of the- some of the habitats have changed over the last 40 years. But you know, it's still a way, way fun place to come."

Jonathan: *"Is that a silver checker spot?"*

Neil: *"Yep.*

Chris: *Eey!"*

Jen: *"You saw it first."*

Jonathan: *"It wasn't letting me see the hind wing. I was making up all kinds of words. I was like "Is it this one? Is it that one?" I just thought, "What's every butterfly that I haven't photographed yet that I want to photograph?""*

Chris: *"Well, speaking of fritillaries, should we go and find some?"*

Text: 40 years of data can tell a long story. Neil watches changes on the landscape and how it impacts his butterflies. He mentions seeing the habitat change as the number of shrubs on prairies increases, an issue that concerns many grassland conservationists. Annual surveys can help us to understand how this impacts butterflies, by impacting things like access to host plants. But NVP is 56,000 acres with butterflies active for a third of the year. And speaking with Neil makes me so curious to know how much information exists beyond our 1-day survey. Who was flying in the far west corner of the preserve 2 weeks before we arrived?

Fire on the Ridgetop

Location: The northern ridgetop, where ponderosa pines and eastern redcedars burned in the 2012 wildfire

Text: Our closing ceremony of the survey is a count of all of the species we've seen, listed off in pieces scattered between surveyors and sites, and dutifully recorded by Neil. We've made our contribution to the list of 2000+ individual lepidopterans recorded in Nebraska.

Later, Neil and I continue our discussion.

Butterflies Mentioned: Two-tailed swallowtail (*Pterourus multicaudata*), Dusky wing (*Erynnis sp.*), Yucca Giant-Skipper (*Megathymus yuccae*)

Neil: *Up on the other side of the river was always a ... there's certain butterflies in their behavior, like to ridgetop. And so that would always be a good spot to find swallowtails that like to ridgetop. We'd find two-tailed swallow tails up there. And this is about as far east as they- yeah, they're kind of a western thing.*

And then there was always some dusky wings there nectaring on sumac. And so- and found a butterfly that larvae feeds on an Indian paintbrush up there. And so that was always- then we'd find yucca giant skippers up there too. So that was an interesting site that we sampled up there for a couple of years after the fire. And just weren't finding much.

Text: 2012 was a drought year in Nebraska, resulting in several significant wildfires across the state. In July 2012, a lightning storm set off one such wildfire in Niobrara Valley Preserve. The fire burned 74,000 acres, including 30,000 acres of the Preserve. There were painful losses in the way of homes and facilities, but there's an argument to be made for positive ecological impacts that the fire had on the preserve. For example, the fire burned through many eastern red cedars crowding out grasses and wildflowers on the northern ridge-side. That doesn't mean there weren't worries after the fire.

Hear Amanda Hefner talk about the fire in "[Amanda Hefner 2: In the aftermath of the wildfires](#)".

Neil shares the story from his perspective.

Neil: *"Oh, it was heartbreaking. We'd already done our survey, and that was, that was a really dry year. We'd done our survey. And then later in July, we were actually coming back from vacation to Arizona. And we picked up a USA today.*

And it has each state's news. You know, it's like, "Oh, there's a fire up on the Niobrara."

and then later I talked to Tracy Nelson, who was working who was managing the place at that time, and she said there was one little cloud came across the river. Dropped one bolt of lightning over by Fairfield Creek. Didn't drop a drop of rain. It just moved on. And that started the whole fire and there was big winds out of the south, and they had school kids up here that day, and they got the school kids out.

They went into damage control, but like I said, it was kind of heartbreaking that lose all the pine trees on the north side of the river because that was always, a really nice landscape to look at when you came over the, came over the ridge from the south. And, for a couple of years then all you saw with toothpicks, you know, the dead pines were still sticking up, hadn't fallen over yet.

So, and like I said, it's... it was hard, but nothing's forever. So, you just, one foot in front of the other and move on. So."

Neil: *"Yeah, I guess for the sake of even bad numbers are still results. So, we maybe should have, you know, kept going up there. But got discouraged with no results so we kind of dropped that site.*

But that hillside there, that's always been a good spot for skippers and stuff. And, but as the years go on and your joints start to go, it's kind of, it's still one of my favorite spots, but something's just kinda become inaccessible to you so. But that was a favorite

Actually, half of the areas that we originally counted, we don't survey anymore due to inaccessibility, basically because up on the ridgetop there's a lot of fallen trees and obstacles blocking the road. So, so we've kind of, kept going to the places that we found productive. So, Fairfield Creek and East Middle Creek and the hillside.

They're pretty much unchanged. There's sumacs have been encroaching on the hillside. And the middle creek periodically gets a flood come through there and gets cleaned out and you know, so then it just kind of rejuvenates itself. So, where the things come from, you know, I have no idea of but, you know. But it seems to kind of like the fire.

It's like just about everything we found here before the fire we found after the fire. So, there's little relic populations somewhere that survived that repopulate the area."

A Butterfly Network

Location: Another site from the original survey at Niobrara Valley Preserve

Text: Neil highlights it here, but throughout our discussion, his mention of names, advisors, and mentors shines a light on something I have loved experiencing in conservation: the interconnectivity of conservation and the importance of shared knowledge. It's not so important to remember the names here as it is to understand how many people relied on and learned from to be where he is today.

Butterflies mentioned: [Great Spangled Fritillary \(*Argynnis cybele*\)](#), [Monarch \(*Danaus plexippus*\)](#), [Yucca Giant-Skipper \(*Megathymus yuccae*\)](#), [Silvery Checkerspot \(*Chlosyne nycteis*\)](#)

Neil: "Some of it I'm sure you learn stuff by yourself. but there was once I found a hybrid here and put it in the **season summary**."

Oh, is that great spangled fritillary or a monarch. It looks like a monarch I guess...

There it goes. And there's our contribution."

Claire: "Hard at work over here."

Neil: "But, I put the... that we found hybrids in the LepSoc [Lepidopterist Society] season summary. And I got a call from a fella in Omaha and- Jim Reiser and Steve Fulmer were kind of the two amigos in the state, and- so Jim was interested in that hybrid. So he, he came up here and he actually found one as well."

But [I] started going on field trips with him. And you... pick up a lot from them. You know what they've, you know, the lore that they've, you know, accumulated over the years. And then as you kind of go out, you know, exploring by yourself and- there was a state list of butterflies that came out that Dick Roche published."

So that helped you identify a lot of stuff on your own. And then if you had a question on something, Steve or Jim would help identify it. But so, you kind of

became proficient, you know, identifying stuff once you had a narrower list to look at and then you kind of started to build up your own, "This is where I'm finding this." And, you know, "This is a wetland butterfly, and this is a hilltop butterfly." And, you know, so there's some self-education that goes with it, but a lot of it is shared knowledge, you know, like they say, "Let's go out to Crescent Lake and collect giant yucca skippers." Like what? I never heard of such a- you know, it's like, oh, this is cool, you know?

And so, it's just by going to people's secret spots and, you know, learning the habitats, you kind of, some of it is handed down and some of it you just gotta go out exploring. Yeah. "Wheeler County doesn't have any county records. Let's go see what's there." Yeah. You know, let's start looking at all the different habitats. You just kind of start associating this species with that habitat and stuff.

Text: This sense of community extends to Neil's experience at Niobrara Valley Preserve.

Neil: *"I'm just thankful for all the hospitality over the years. It's they've changed managers, you know, 4 or 5 times in that period of time. And, and everybody's always been, you know, happy to host ya and grateful for your results. And the place has evolved, but they've always been really gracious. I was thankful to be able to come out here for 40 years. They've taken good care of the place."*

Text: Neil was joined by his wife Jen, who shared her perspective of the survey and the community.

With a moment of reflection, Neil shares his closing remarks.

Jen: *"So it's been, and, you know, been lifelong friends too so and a little better in our little collecting world. Yeah. That's I think..."*

Neal still gets excited about butterflies! It's so that's a good thing because we always are like, "Oh, Neil's gonna like this." And so, it's like we try to find something that he's going to like, things like that. So, he still gets excited about the little things or, you know, no matter what things like that.

Oh, but so we try to do our best to find something that we think he's going to love."

Neil: *“Yeah. In the beginning, the first counts. My old advisor would come up. Yeah. So he developed Parkinson's later. But he would always come up and he and his wife and little Ann Nicole, who was in grade school then, and then another couple they knew from the college, and we'd always stay at the old school house. So that was always kind of a retreat for everybody involved.*

So, a lot of life experiences here. Coming up here. Kind of got me started on the whole lifelong hobby. So, this is where it started. So, it's got a kind of a special tie for me.

Collected a looooooot of county records. I got my name in the record books.

Kind of an ego thing too you know. You were the first one to find something somewhere.”