Summary

Faculty (nine members) from across campus have been involved in extensive use of the UND Field Stations and these sites have been the focus of multiple on-going nationally and internationally collaborative projects. Supporting these sites for teaching, research, and public use requires on-going coordinated multi-agency efforts. A notable achievement during this period is that we worked to formalize the UND Traill County Biology Field Station and UND’s management of these sites as demonstration areas became the cornerstone of a successful USDA-NRCS RCPP proposal to support additional public-private conservation activities as part of the Grand Forks Prairie Project. All of the field stations continue to generate substantial public interest (as evidenced through phone, e-mail and on-site contacts) and use and we look forward to establishing the Traill County Parcels for this purpose as well.

Below we list the field station activities during the 2015-16 fiscal year.

Mekinock Experimental Ecology Field Station

1. Brief description of any ongoing research activities, including training, education, and outreach activities.

   This field station is the site of three ongoing projects. The Species Pattern and Community Ecology (SPaCE) experiment is a Biodiversity-Ecosystem Function (BEF) experiment that has garnered international attention for its contributions to the advancement of this discipline. The data from this experiment is being used in the cutting edge development of statistical analysis tools for BEF data with Irish collaborators. Yurkonis is part of an international team that is putting out proposals to further fund this work (will be documented with the 2016-2017 report). This field station also houses the Fungal Endophyte Experiment and is the subject of a joint venture with local producers and the Grand Forks County Soil Conservation District to demonstrate Cover Crop practices in Grand Forks County. Additional collaborative projects on grassland climate change are planned with faculty at Valley City State University for the 2017 field season.

   Outreach: N/A

   Directed student learning:

   Advised: Thomas P. McKenna

   Master’s Committee (Yurkonis [Chair], Goodwin, Park), "Effects of land management and fine-scale heterogeneity on grassland pollinators." (November 2015 - Present).
   Advised: Leslie Yellow Hammer

   Supervised Research (Goodwin, Yurkonis), "Insect movement." (June 2016 - July 2016).
   Advised: Jessica Perkins
Supported by a ND EPSCoR UND Research Infrastructure Improvement grant

Supervised Research (Yurkonis, Goodwin), "Effects of vegetation heterogeneity on insect movement." (May 2016 - Present).
  Advised: Devin Snarski
Supported by a ND EPSCoR UND Research Infrastructure Improvement grant

Supervised Research (Park, Goodwin, Yurkonis), "Local and landscape scale effects of plant diversity on native pollinators." (May 2015 - August 2016).
  Advised: Sami Swartz
Former UND advanced undergraduate research award (AURA) recipient.

  Advised: Flint Devine

2. **List of the proposals submitted and currently in review.**
   
   N/A

3. **List of proposals funded.**
   


4. **List of proposals submitted but not funded.**
   

   Goodwin, B., Yurkonis, K., "Purchase of a Robotic Total Station to increase research capacity in spatial and movement ecology at UND," Sponsored by ND EPSCoR UND Research Equipment, EPSCoR, $21,393.00. (January 2016).

5. **List of presentations.**
   


   Peer reviewed journals


   Technical reports N/A

**Oakville Prairie Biology Station and Wildlife Management Area**

1. Brief description of any ongoing research activities, including training, education, and outreach activities.

   Oakville is the site of an on-going long term study assessing the effects of grassland management practices (e.g. fall prescribed fire) on local grassland dynamics which includes long-term data collection on plant phenology. This site is heavily used for teaching, outreach (incl Grand Forks Audubon Club Tour in Aug 2016), and research efforts that span disciplines on campus. In fall 2015 we held a dedication ceremony with approximately 120 attendees to mark the establishment of the site as a joint NDGF Wildlife Management Area and the areas designation as an Audubon Important Bird Area. In fall 2015 we successfully burned one of the seven management units (see attached). Additionally we worked with the Grand Forks County Sheriff’s office to host a UAS training day (June 2016) for regional law enforcement personnel. On-going management and research efforts associated with this site became the basis for a successful USDA-NRCS RCPP proposal to enhance public-private natural resource conservation efforts in the Grand Forks Prairie Project area.

   Outreach:


http://und.edu/news/2016/01/pheno-cam.cfm

Directed student learning:

Master's Thesis Committee (Yurkonis [Chair], Darby, Goodwin), "Invertebrate and plant responses to a salinity gradient in a remnant prairie." (August 2013 – Aug 2016).
Advised: Bryon Deal

Master's Thesis Committee (Goodwin [Chair], Merkord, Yurkonis), "Local and landscape factors associated with grassland bird abundance in Grand Forks County, ND." (January 2014 – Apr 2016).
Advised: Jerry Cole

Others

Advised: Jacob Garibay

Advised: Chelsea Wisner

Advised: Josie Dillon

2. List of the proposals submitted and currently in review.

FUND ed Jul 2017- Dec 2022

3. List of proposals funded.


Rundquist, B. “Monitoring Phenology in the North Central Region of the U.S. (MOD 4)” U.S. Department of the Interior, North Central Climate Science Center. September 1, 2015 - January 2017 $1,000

R. McGlynn, B.J. Darby, “Genomic regulation of abiotic stress responses in the soil nematode Oscheius tipulae,” Sponsored by ND EPSCoR - DDA Program, EPSCoR, $40,880.00. (August 2015-
July 2017).

Yurkonis, K., Goodwin, B., Merkord, C., "Grassland bird and invertebrate distribution and response to fire management within the Grand Forks County saline prairie focus area," Sponsored by North Dakota Game and Fish Department - State Wildlife Grant, Federal, $95,000.00. (April 2014 - Dec 2017).

4. List of proposals submitted but not funded.

Goodwin, B., Yurkonis, K., "Purchase of a Robotic Total Station to increase research capacity in spatial and movement ecology at UND," Sponsored by ND EPSCoR UND Research Equipment, EPSCoR, $21,393.00. (January 2016).


Darby, B., Grant, "Predicting greenhouse gas efflux from land management practices and microbial metatranscriptomics", Department of Energy, Federal, Research, $0, Not Funded. (Submitted January 8, 2016).


5. List of presentations.


Deal, B. W., Goodwin, B., Darby, B., Yurkonis, K., Entomological Society of America Annual Meeting, "Arthropod community patterns and associations along soil environmental gradients in a fine-scale northern grassland habitat," Minneapolis, MN. (November 2015).


Users Conference, "Integration of ground-level and satellite data for monitoring vegetation phenology at the Oakville Prairie," ND GIS, Fargo, ND. (September 2015).

Yurkonis, K., Darby, B., Goodwin, B., Schlosser, I., Ecological Society of America 100th Annual Meeting, "Developing collaborative relationships to enhance field station management and use within the Northern Plains," Baltimore, MD. (August 2015).


Peer reviewed journals
Shahan, J.L.¹, B.J. Goodwin, and B.C. Rundquist. 2017. Grassland songbird occurrence on remnant prairie patches is primarily determined by landscape characteristics. Landscape Ecology (Submitted August 2016; Revise and resubmit October 2016; Resubmitted January 2017; Published on-line March 2017; DOI 10.1007/s10980-017-0500-4).


Technical reports N/A

Forest River Biology Station
1. Brief description of any ongoing research activities, including training, education, and outreach activities.

Establishment of the site as a Joint NDGF WMA has led to substantial public use of the site and interest in the NDGF Archery Deer Lottery. In the 2015 hunting season we had 10 application for the lotter, 5 were selected and hunted at the site, and 2 of the 5 harvested a deer from the site. The forested nature of the site has allowed it to be the subject of on-going research on woodland mammals and contribute to our understanding of Lyme Disease dynamics in North Dakota.

2. List of the proposals submitted and currently in review.

3. List of proposals funded.

4. List of proposals submitted but not funded.

5. **List of presentations.**

Dougherty MW, Stromlund CA, Gualtney RA, Brissette CA, Vaughan JA. Emergence of Lyme disease in North Dakota: Basic epidemiology. 64th Annual Meeting of the American Society of Tropical Medicine & Hygiene, Philadelphia PA, October 2015, Poster Presentation.

Vaughan JA. Emergence of Lyme disease in North Dakota: where and how is it being sustained? Altru Continuing Medical Education program, Lloyd Ralston Lecture Series, Altru Hospital, Grand Forks, ND, August 12, 2015. 45 minute oral presentation with extended question/answer session.

6. **List of publications.**

**Peer-Reviewed Journals**


**Technical reports** N/A

**Traill County Biology Field Station**

During the review period we worked to establish the Traill County Biology Field Station (finalized June 2016) and are currently working to incorporate this site into on-going teaching and research initiatives. Additionally, we are in discussions with NDGF about additionally designating the site as a NDGF WMA to expand the portfolio of public recreation areas in the Red River Valley.