

## Butterfly survey protocol

### **Background**

Altered from [http://faculty.wvu.edu/jmcl/Wildlife/bfly\\_walk.pdf](http://faculty.wvu.edu/jmcl/Wildlife/bfly_walk.pdf)

Butterfly presence and abundance are sampled using transect counts, modified from Pollard (1977). Transect routes are established as appropriate for each site. Observers record butterflies seen within a 5 meter radius on both sides and above them while walking a transect at a slow and steady pace. Species identifications are made visually, using binoculars when needed. Occasionally, identification may require capture with nets, after which the insects are released unharmed. Transects are walked during midday hours (10:00am–4:00pm). Sampling is restricted to relatively calm conditions and times when air temperature exceeds 11°C in sunny weather or 17°C in cloudy weather. LTER treatments T1-T4, T7 sampled annually starting in 2019, treatment T6 and CLE (not an LTER treatment) sampled annually starting in 2020.

### **Materials**

Stopwatch	Binoculars
Watch	Datasheets
Clipboard with LTER MCSE map, CLE map	Kestrel weather meter
Pencil	Butterfly ID guide
Butterfly net	

### **Location**

6 treatments: T1=Conventional crop, T2=No Till crop, T3=Reduced Input crop, T4=Biologically Based crop, T7=Successional, CLE=Conservation Lands Experiment

LTER T1, 6 replicates – sampling transect  
LTER T2, 6 replicates – sampling transect  
LTER T3, 6 replicates – sampling transect and prairie transect  
LTER T4, 6 replicates – sampling transect and prairie transect  
LTER T7, 6 replicates – sampling transect  
CLE, 6 replicates – prairie transect

### **Methods**

Surveys are conducted on two main types of transects: sampling transects (152m) and prairie transects (100m). Each transect should be surveyed on at least one day during each 10-day sampling period. Sampling transects should be surveyed by walking from one end to the other, doubling back only in the portion of the pathway that leads to station 4 (see Fig. 1 below). Prairie transects should be surveyed by walking from one end of the transect to the other without doubling back.

- Sampling transects follow pre-determined station paths in the LTER and are surveyed for 12 minutes.
- Prairie transects are present in two types of plots: LTER (T3, T4) and CLE
  - LTER: Prairie strip transects are on a north-south axis along the west edge of the prairie strip and are surveyed for 8 minutes.
  - CLE: Transects are flagged in restored prairie plots and are surveyed for 8 minutes. One half of the survey (4 min, 50m) takes place in high plant diversity, one half in low plant diversity. The transect is recorded as a single survey but the surveyor should distinguish between the two plant treatments. Draw a line down the center of the tally sheet and designate high and low diversity (flags are marked “H” and “L”). When the center flag is reached (marked “50m”), switch to the other side of the line and continue recording butterflies (see Fig. 2 below).

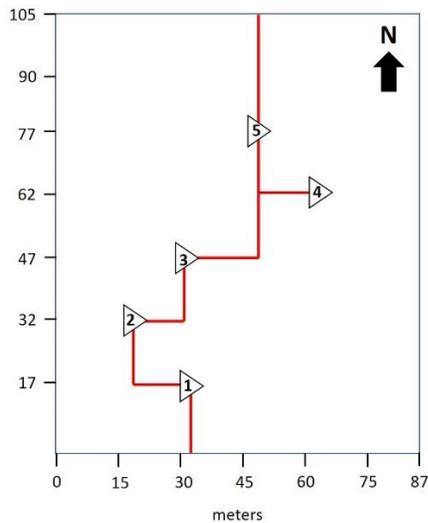


Fig. 1

Butterfly species	Number seen (tally)
Cabbage white	
Black swallowtail	
Eastern-tailed blue	
Monarch	
Northern/pearl crescent	
Painted lady	
Red admiral	
Silver spotted skipper	
Sulphur	
Tiger swallowtail	

Fig. 2

Immediately prior to surveying each transect, record date, plot (treatment, replicate), surveyor initials, estimate cloud cover (%), use Kestrel to measure average temperature (°C), maximum wind speed (km/h), and average wind speed (km/h). Hold the kestrel at head height and facing perpendicular to the wind (so that the wind is passing the fan). Allow the Kestrel to acclimate for at least 30 seconds before recording climate variables for each survey. Record time of day and start the stopwatch at the beginning of each survey.

Record all butterflies seen within a 5 meter radius from left to right and above you, not recording butterflies behind you (see Fig. 3). Record species or higher taxa using common names and keep a tally per butterfly taxon (ex. If you see 1+ swallowtail butterflies but can't identify to species level, write "Swallowtail sp"). Prairie strips are approximately 5m wide, a good distance reference. Walk at a steady pace. Make no special effort to record butterflies settled out of sight in dense vegetation. Record each individual once only. Stop timer if you pause to capture, identify, photograph, or take notes on a butterfly.

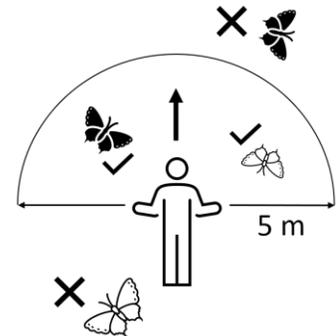


Fig. 3

### References

- New, TR 1997. Butterfly Conservation, 2nd Edition. Oxford Univ. Press, Melbourne, Australia.  
 Pollard, E, and TJ Yates. 1993. Monitoring Butterflies for Ecology and Conservation. Chapman & Hall, London, UK.  
 Pyle, RM 2002. The Butterflies of Cascadia : A Field Guide to All the Species of Washington, Oregon, and Surrounding Territories. Seattle Audubon Society, Seattle, WA.

### Identification Resources

- Nielsen, M.C., 1999. Michigan butterflies and skippers: A field guide and reference, Michigan State Univ. Ext., East Lansing.  
<https://wisconsinbutterflies.org/>  
<http://accdc.com/mba/en/checklists.html>  
<https://www.butterfliesathome.com/black-swallowtail-butterfly-comparison.htm>