BUTTERFLY TRANSECT FIELD INSTRUCTIONS

- Butterflies will be monitored weekly along transects

- Each transect should be 1 to 5 km (that's 1,000-5,000 m) in length and divided up into 10 sections of similar lengths, typically around 100 m. The length could be measured accurately with a tape measure or approximately (and conveniently) with metric strides

- Extraordinary transects include hiking trails, tracks, dirt paths, and paths between landmarks or topographical features, because a pathway is already provided, making counting easier. Paths along or between farmland, meadows, and grassy places are expected to yield a higher diversity of butterflies

- Transects should represent numerous habitats

- The number of recorders might vary, but one recorder needs to do the actual recording, the **"recorder,"** while another assists by following close behind and holding a camera and the bag of equipment, the **"carrier"** or **"photo-assistant,"** and yet another might drive to where the transect precludes and meet up with the team at the end of each count, the **"driver,"** encouraging quick mobility so that transects could be visited within the same day or within a matter of a few days

- Regarding paperwork, first, the recorders need to fill out the **Butterfly Transect Details Form** with such data as transect name, transect code (if one is provided), map coordinates (GPS), province/district in Lebanon, year transect established (if available), transect length (in m), transect width (m), overall habitat description (vegetation/land cover), habitat code(s) (utilising standard international classifications), land use type (in this case, terraced agricultural land or non-terraced, grazed land or non-grazed, etc.), land conservation status (what type of management? Is it a reserve or nature park?), type of recorder (what experience do they have?), recorder details (names of all recorders), land tenure details (who owns the land?), transect map (preferably a satellite map that can be pasted directly onto the page later on when the details form is computerised), and any field notes and observations that might be helpful

- Additionally, on the form, the details of each transect section should be recorded, specifically those pertaining to coordinates of section location, length of section, habitat (the type and description), and management (what type of land management is in place? That is: no-management, forestry, grazing, mowing or other vegetation clearance, e.g. herbicide spraying, burning etc., pest management, e.g. insecticide spraying, land drainage, or extraction, e.g. turf/sod/peat cutting, aggregate extraction, topsoil stripping, quarrying, etc.

- Typical butterfly habitats include scrub, woodland, grassland, wetlands (including ponds, lakes, marshes, swamps, riversides, streamsides, dry riverbeds, etc.), damp meadows, urban (including gardens and parks), farmland, pastures, fallow, other (e.g. coastal, rock/scree, cliffs/overhangings, sand dunes, semi-desert, etc.), or important ecotones (e.g. forest-grassland edges, clearings, or hedgerows/ditches in agricultural areas), but you need to be more specific with the habitat code and preferably utilise the Corine biotope classification. At least document it or take photographs of the habitat, ask an expert, and write it down later. Should transects be located on the edges or peripheries between more than one habitat type, please record this also

- This details form needs to be filled out **only once**, usually on the first day of the count or earlier during a site visit

- The next step is to fill out the **Butterfly Transect Recording Form**. This form has to be filled out at every count, that is, **once a week**, with data such as transect name, recorder (names of the counting team), year, date, week number (obtain this from the **Butterfly Monitoring Yearly Schedule**), start and finish times, average temperature (with a portable thermometer placed a few minutes in the shade before the count commences), average wind speed (from the Beaufort Scale provided on the form), wind direction (this could be done by looking at the direction at which leaves in a tree blow or tall grass sway), percent sunshine (averaged out from each section, from the formula provided on the form), and the numbers of each butterfly species counted in each section

- Butterflies are active when the weather is:

  •Sunny
  •Warm
  •Calm
  •Not cold, windy, or rainy

  Thus, the count should be conducted only:

•Between 10:45 am and 3:45 pm of each day (sometimes til 5 pm if the weather is exceptionally good), this allows butterflies plenty of time to warm up (typically they start basking at 8 or 9 am and need an hour to raise their body temperatures)

•When temperatures are above 17 or 18 ºC (that's when butterflies are active and out flying around, nectaring, and looking for mates) and under any conditions except rain, or, when temperatures are between 13 ºC and 17 ºC and when there's at least 60% sunshine, and when wind speeds are less than 6 on the Beaufort scale. Do not count when temperatures are below 13 ºC. Rain, overcast days, gusty winds usually preclude a count, so recorders will have to work on another day. On very hot days, butterflies will often aestivate, so try counting in the mornings

- When counting, the recorders should walk at a slow, steady, and constant pace within a recording space of 5 m ahead, 5 m above, and 2.5 m on both sides, an "imaginary box," with no stopping at hotspots, backtracking, or veering off the transect pathway

- Always walk the same transect pathway each time

- Try not to count the same butterflies twice and do not assume that butterflies flying in your path are the same butterflies you already counted

- Do not trample the vegetation on or near the transect path and try your best not to disturb the habitat and wild butterfly community

- Do not try to catch any butterfly and never use any nets

- Use paper as extra tally sheets when there is no space left on the recording forms. Draw out lines with butterfly names or abbreviations with enough space on each sheet

- Butterflies that bask, roost, puddle, or perch should only be counted if they are viewable by the recorder, the recorder should not stray off the path or take long pauses to count them

- An assistant, the “photo-assistant” or “carrier,” can walk alongside or just behind the main recorder and make note of these butterflies and help by photographing and identifying any butterflies that the lead recorder can’t

- When making a brief stop to identify butterfly, do not continue counting butterflies when stationary, as this will increase sampling effort

- While counting, recorders should always refer to the **Butterfly Field Identification Sheet**. These pages include colour drawings from my books *A Field Guide to the Butterflies of Lebanon and the Middle East* and *Butterfly Gardening in Lebanon*, species descriptions, field notes on butterfly behaviours, identifying clues, and fun mnemonic devices that can assist the recorders in memorising butterflies while out counting. I recommend recorders laminate these pages and keep them on a clipboard as quick reference

- Also, keep the butterfly website on standby

- Recorders should also acquaint themselves with the types of plants that butterflies are associated with, i.e. host plants and nectar plants. Take a photograph with the plant included if possible.

- Recorders should also make observations on other insects like day moths, dragonflies, bees, ants, etc.

Wrapping up:

- Typically, a count should be accomplished within 45 minutes to an hour

- Numbers of counted individuals from each butterfly species should be tallied and added up from each section to make a transect total

- These totals will then be added up from each week

- Results should be regularly checked with a butterfly expert or lepidopterist (my email and phone number are provided on this page)

- Forms will be collected every week and the data entered into a spreadsheet where results will be extrapolated and analysed with population trend models of relative abundance, usually the November of every year