



**OBSERVATION PROTOCOLS – PANAMA 2017**

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**Objective of the Study**

The Neotropical Flyways Project aims to fill large gaps in our knowledge of the needs of migratory birds while they are on migration through the Neotropics. Remarkably, we still know little of the routes used by most species and less so the sites and strategic habits that they use during stopovers in order accumulate the energy reserves they need to migrate.

To fill these gaps, the Project will use four protocols to determine where and when migratory bird stop along the length of the flyway from the Yucatan Peninsula through Central America to northern Colombia. The quality of the data and the resulting analyses depend primarily on the ability of observers to detect the migratory birds present. Therefore, it is critical that observers are **highly attentive** during counts and try hard to record all the species of migratory birds present – it is therefore essential that observers do not get distracted by resident species but focus on migratory species recorded both visually and by calls. Indeed, observers **must respond to any vocalization** that is believed to be that of a migrant and if he/she cannot identify the species on call alone, they should attempt to locate the individuals and identify it.

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**Passive Transects (daily during the first 4 hours of light, e.g. 6:15 – 10:15)**

One-hundred meter long transects are the principal methodology of the study and are repeated on multiple occasions in order to estimate occupancy rates and rates of immigration and emigration. The analysis is highly dependent on one having a high probability of detecting a species if it is present within 25 m either side of the transect.

**Equipment:** Binoculars, notebook, pen

**Transect length:** 100 m marked with White tape at start and finish.

**Distance between transects:** minimum 150 m, 200 m where trail length permits.

**Duration:** 10 minutes. See below for when it is permitted to stay longer.

**Transect ID:** First two letters of the site and two numbers e.g. Gamboa = GA01, GA02,.....GA12

**Repetitions:** In each round of transects at a site, **4 repetitions** should be carried out. In case of rain, the minimum requirement is 3 repetitions, one of which can be a Playback (see below).

**Timing:** 6 a 10 am, weather permitting, can be later if rain stops play.

**What to record:** All migratory birds. As individuals if they are alone or in single species groups if more than one individual is in a flock. Whether they are within or beyond 25 m and if they are overflying they should be marked with an **S** (sobrevuelo in Spanish).

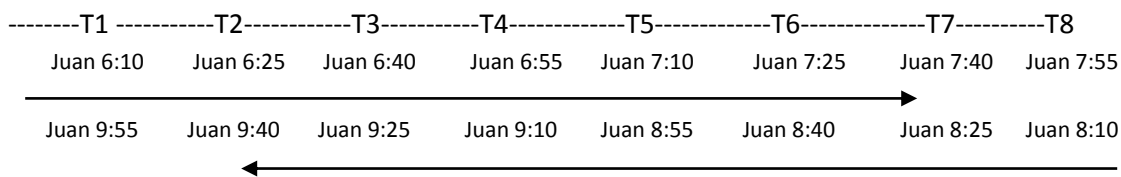
**Description:** Transects should have been marked prior to initiating surveys. Ideally, transects will be surveyed during the first four hours of light, approximately 6.15 to 10.15 am. On arrival at the first transect, record the

time and initiate a countdown timer with a duration of 10 minutes (available on most cel phones or watches). During the 10 minutes walk the length of the transect as many time as is necessary to feel confident that the majority of migratory birds were detected. Typically an observer will walk from one extreme to the other and back again in the course of 10 minutes. The observer is free to focus on flocks and vocalizations during this time and if necessary walk of the line of the transect to facilitate the identification of calling or difficult to see birds. It is important to note that the rectangle that represents the survey areas, includes 25 m either side but not beyond the start and end tape – birds beyond these two points DO not count.

If a large number of migrants are present on a given transect and the observer feels that they did not have enough time to record them all, the time can be extended provided the observer records the final duration e.g. 15 minutes.

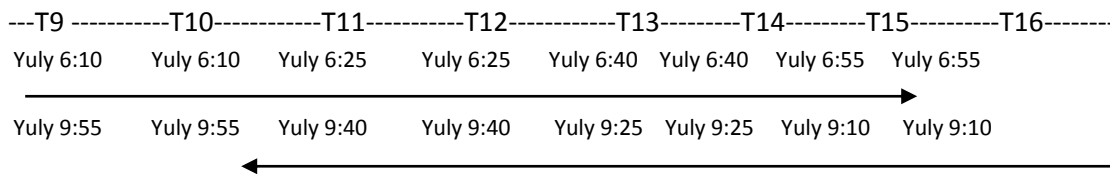
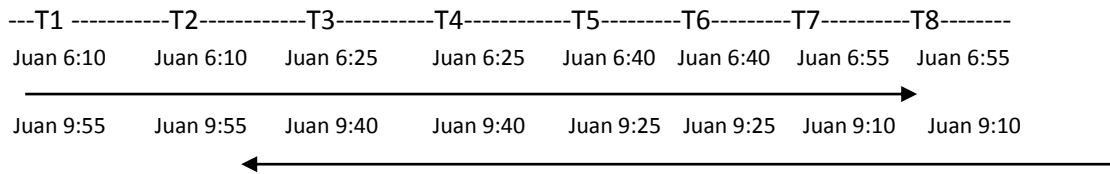
Taking into account that an observer typically takes 3 to 5 minutes to walk between transects, most observers will complete 4 or 5 transects per hour and can cover 16 transects comfortably in a morning. In several sites in Panama, observers are expected to cover just 10 transects per morning, taking into account the reduced activity as the morning heats up. At most sites, the ideal situation is to complete two repetitions on morning one and the second two repetitions on morning two. It is important to **vary the order and observer** between transects each morning, to minimize biases in the data, in the following examples are different options for doing this:

*1 Observer – 2 repetitions (Followed by playback in alternate transects after 10 am e.g. T2, T4, T6, T8)*



*2 Observers – 2 repetitions (for 15 or more transects)*

*Day 1*

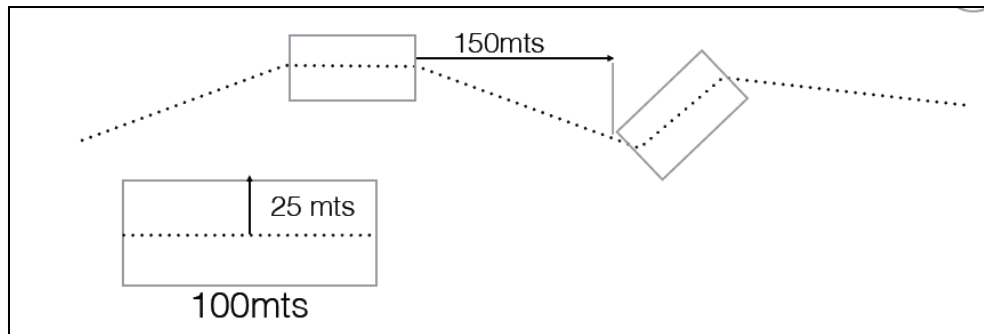


*Day 2*

*Juan starts at T16 and does 16 to 9 and 9 to 16*

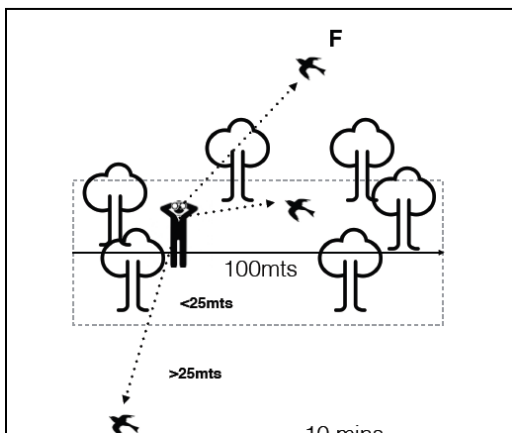
*July starts at T8 and does 8 to 1 and 1 to 8*

## Transect configuration



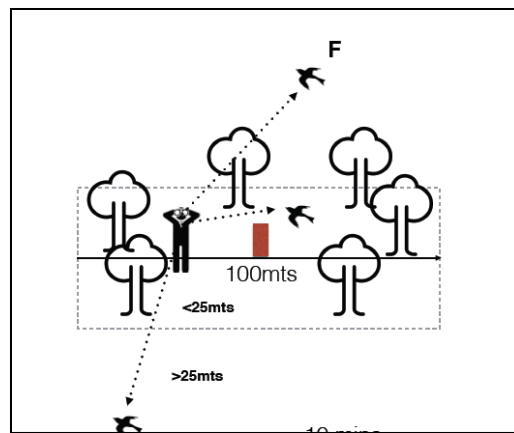
### Passive Transect

10 minutes moving



### Playback

5 minutes stationary in middle of transect



### Playback (daily in alternate points and only one passive transects are completed)

The Playback points involve the reproduction of a five minute owl-mobbing sequence followed by a minute of silence. During the 6 minutes all migrants should be recorded without moving. The playback is typically placed in the middle of the transect (e.g. 50 m), in an area where you have good visibility of arriving birds, and it is best to stand approximately 5 m from the speaker. Playbacks after carried out **after** completing passive transects and in every other transect, alternating even and odd transects between days. They do not have to strictly be carried out in the morning and can also be completed in the afternoon.

**Equipment:** Binoculars, notebook, pen.

**Duration:** 6 minutes.

**Repetitions:** One for each transect during a round of visits e.g. each transect should have 4 passive repetitions and 1 playback in each period.

**Timing:** Generally after 10 am but can be at any time of day.

**Foraging observations (1-2 hrs during one afternoon on each visit to a site)**

The foraging observations and foraging rates that can be calculated afterwards are a good indicator of the resources available at a site and also provide much needed information on the diet of Neotropical migrants while on migration in the Neotropics.

The observations should be carried out during one afternoon per site by one or two observers during one or two hours e.g. 15.30 – 17.30 but can be carried out opportunistically at any moment. Observations involve locating an individual of one of the species commonly stopping over at the study site or one of the focal species, such as Cerulean or Canada Warbler, and then following it for as long as possible. When an individual is located, the observer should start a stopwatch, stopping or pausing it when the bird is lost to view. While following the individual, all directional pecking behaviors with the bill or sallies in the case of a flycatcher should be recorded as an attack. Attacks on insects, fruits and flowers (nectar) should be differentiated – in cases where its not possible to see the exact prey item, it is assumed that it was an insect, regardless of whether the observer was sure if the birds consumed something or not.

Sequences will typically last between 10 and 120 seconds and for each the species, habitat, time of day, and duration in seconds should be recorded. No more than two sequences should be taken for each individual.

**Equipment:** Binoculars, stopwatch (cel phone), foraging data sheet, pen.

**Timing:** One to two hours during one afternoon per site. Opportunistic observations count!!

**Record:** Date, hour, site, general habitat. Number of attacks against three prey items – insect, fruit, flower. If possible, record tree species.

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**Migration counts**

Several species of interest and in steep decline migrate by day, particularly among the aerial insectivores. While these are recorded on transects, specific counts help to quantify the main migration corridors for these species. The timing of counts will depend on the main species of interest migrating over the site. Early morning and late afternoon counts are generally best for swallows, swifts, Dickcissel and Common Nighthawks. Late morning and early afternoon counts are best for raptors.

Ideally observers will sample several times of day at each site, carrying out short 20 to 30 minute counts, with longer counts one afternoon. For example, if there are two days at one site, counts could be carried out as follows:

- Day 1. 5.40 – 6.00 am (1 observer pre-transects)
- Day 1. 17.00 – 18.00 pm (one or both observers)
- Day 2. 11.30 – 12.00 am (1 observer post-transects)

If an additional observer is available for counts, longer surveys can be tailored to passage at a site. If most movement involves aerial insectivores, counts from 6-9 am and 4-6 pm are recommended. If raptor passage is also expected, then counts from 10-12 am and 1-3 pm can be highly effective.

**Equipment:** Binoculars, migration data sheet, pen

**Duration:** 20 o 30 minutes or longer where possible, stationary.

**Timing:** 1. 5.40 am to 6:00 am; 2. 5 pm to 6 pm. Two counts per visit.

**What to record:** Date, hour, site, number of individuals per species migrating overhead.

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### **Vegetation**

For each transect, a description of the habitat should be made **ONCE** during a migration season. To collect all the information in the vegetation sheet, you will need one or two afternoons per site. Alternatively, one or two points could be done per morning while returning from transects.

For each transect, the following variables are recorded rapidly in four points separated by 20 m along the length of the transect (20 m, 40 m, 60 m, 80 m): **1. Canopy Height** in meters - estimate; **2. Canopy Cover** – estimate percentage of vision covered by vegetation when looking directly above through the lens of an inverted binocular. **3. % natural vegetation** – estimate the percentage of natural vegetation within a 10 m radius of the point; **4. Trees >15 m in a radius of 10 m** – record the number of trees taller than 15 m within a 10 m radius around each point; **5. Understory (scale 0-3)** – classify the understory on a scale of four where 0 = understory basically absent, **1.** Understory open but present, **2.** Understory dense but passable for a human. **3.** Understory very dense, impassable.