5. LINE DISTANCE PROTOCOLS

The goal of conducting line-distance transects is to acquire an unbiased estimate of the density and abundance of desert tortoises. Achieving this requires integration of various field activities, but most directly it requires the ability to define the transect, locate tortoises, and accurately measure the distance from the transect to the tortoise. Two types of practice arenas are used to assess your ability to successfully achieve these goals: 1) a model population of desert tortoises ("styrotorts") is utilized for training and testing on detection and measurement, and 2) practice transects are walked in the Large-Scale Translocation Site (LSTS) near Jean, Nevada.

Desert tortoise monitoring using distance sampling requires that distance from the transect line to live tortoises and carcasses be accurately measured. The current protocol requires tortoise monitors to walk transects at specified locations on predetermined bearings. When a tortoise or carcass is observed you must 1) use a compass to determine the local transect bearing (this may be different from the predetermined bearing), 2) use a compass to determine the bearing (azimuth) from the point of observation to the tortoise or carcass, and 3) measure the distance to the tortoise or carcass using a measuring tape. These data are used to calculate the distance from the observed tortoise or carcass to the local transect line. Accuracy and precision in these measurements are critical for adequate estimates of tortoise density.

Refer to **Appendix I** and **II** for database dictionaries and paper data sheets, respectively.

Objective 1: On or near the transect line, each 2-person team will find all tortoises visible on the surface, in and under vegetation, and in burrows. Crews will apply the search technique as trained.

> **Metrics:** Data collected by each team on tortoise models will be used to evaluate
> 1) Detection functions. These must reflect proper search technique by demonstrating consistent, high detection rates on the transect line out to about 2m, with declining detection rates out to 15m.
> 2) Accurate (without bias) abundance estimates of the two size classes of tortoises. Each team's estimates of abundance of both sizes of tortoise models must include the true value within the 95% confidence interval.
> 3) Dual-observer techniques. Teams will detect close to 100% of all models within 1.5m of the transect center line.
>
> Note that detection curves for teams of crews and proportion of leader-follower detections for each crew will also be assessed on a weekly basis during the field season.

Objective 2: Each 2-person team will complete transects in the prescribed fashion within specified time limits, including minimum start, maximum end, and minimum total time.

> **Metrics:** On practice transects, crews will demonstrate ability to navigate to start points by the preplanned time, will complete transects before a preplanned end time, but will move at a sufficiently slow pace so that tortoise detection is not compromised. Note that these metrics will also be assessed for each team on a weekly basis during the field

season. Upon transect completion, crews will contact telemetry crews so that scheduling of transects and radio-tracking can be coordinated.

Objective 3: Each crew member will accurately and precisely measure the local bearing of a transect, and the azimuth and distance from the point of initial observation to a tortoise/carcass.

Metric: Perpendicular distances of tortoise models to the transect center line should be estimated to within 10% of the known value and without significant bias in 95% of the training trials.

Objective 4: Crews will walk standard (12km square) transects using standard protocols for range-wide monitoring of desert tortoises.

Metric: On practice transects, crews will demonstrate ability to implement the set of guidelines for standard transects, appropriately collecting and entering data on paper and electronic forms.

Objective 5: Crews will appropriately implement techniques to walk non-standard transects when obstacles prevent completion of standard techniques.

Metric: On practice transects, crews will demonstrate ability to implement the set of guidelines for non-standard transects, appropriately modifying the transect and documenting changes on paper and electronic forms.

METHODS

Objective 1: Apply the Search and Detection Technique

This objective will be the emphasis of training in the arenas with tortoise models. See *Distance Sampling Theory* for description of optimal detection functions that should result from correct implementation of search techniques.

Objective 2: Start and Complete Transects to Optimize Tortoise Detections

<u>Optimizing monitoring to coincide with tortoise activity</u>

One adaptation that tortoises have for living in the desert is to restrict surface activity to fairly narrow windows of time during the year. In general, tortoises predictably emerge from deep within shelters (burrows) from mid-March through mid-May and then again (less predictably) in the fall. These periods coincide with flowering of their preferred food plants (in spring) and with annual mating cycles (in fall). The annual range-wide monitoring effort is scheduled to match the spring activity period for tortoises.

During this season, not all tortoises are above ground or visible in burrows. In order to encounter as many tortoises as possible, monitoring is scheduled for early in the day and to be completed before the hottest time of day. Because we are finding tortoises by sight, monitoring is restricted to daylight hours. Based on past experience, we expect tortoises to become most active after 7am at the beginning of April (it is usually too cool before this time), but to emerge earlier and earlier until their optimal activity period is around sunrise by the beginning of May. In May, we also expect daytime temperatures to limit tortoise above-ground activity as the morning progresses to afternoon.

Field crews should complete transects during this optimal period each day. Start times are decided in advance, and crews are likely to arrive at transects at similar times on a given morning. Figure 3 was produced as part of weekly assessments in 2008, as a way to examine the efficiency of crews as they targeted different start times each week (these are agreed to between the field crew leaders and USFWS).

However, completion times will be more variable, and will be affected by terrain, air temperature, number of tortoises encountered, etc. Although we have general expectations about when tortoise are most active each day, and indeed have expectations of the proportion that will be active, density estimates require real-time estimation of daily activity during the actual periods tortoises are counted. The role of telemetry crews is to provide these activity descriptions (=estimates of G_0).

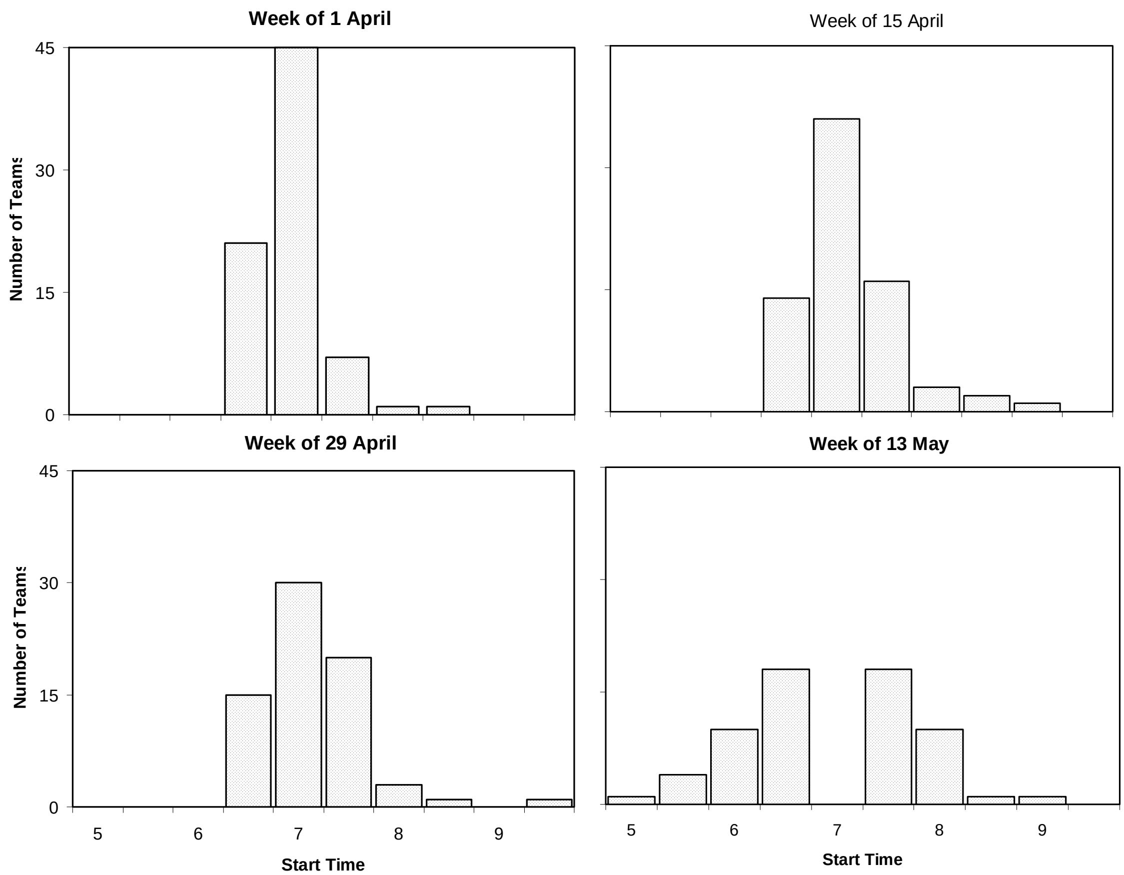

Figure 3. Weekly transect start times for 2008 in half-hour increments.

G_0 graphics from 2008 are presented in Figures 4 and 5. Note that the proportion of radio-tracked tortoises is most consistent and highest in the second week of the field season at this site (Figure 4). Activity was depressed early in the morning earlier in the field season and there is overall lower activity by the end of the field season, especially in the afternoon. Figure 5 indicates that early in the field season, tortoises were in burrows or well-hidden in vegetation in the middle of their activity period, whereas in the second half of the field season, they were more hidden in the early part of the day. This change in behavior does not necessarily coincide with classifying tortoises as visible or not (Figure 4), but does indicate that visibility to crews on transects will be influenced by the search pattern that is used. Crews should remember that after emerging for daily activity, tortoise may withdraw to less visible locations above-ground locations.

Telemetry and transect crews are responsible for beginning the field day at the scheduled time. Each field group will use their own method to communicate between transect and telemetry crews so that telemetry crews monitor until all transects have been completed for the day.

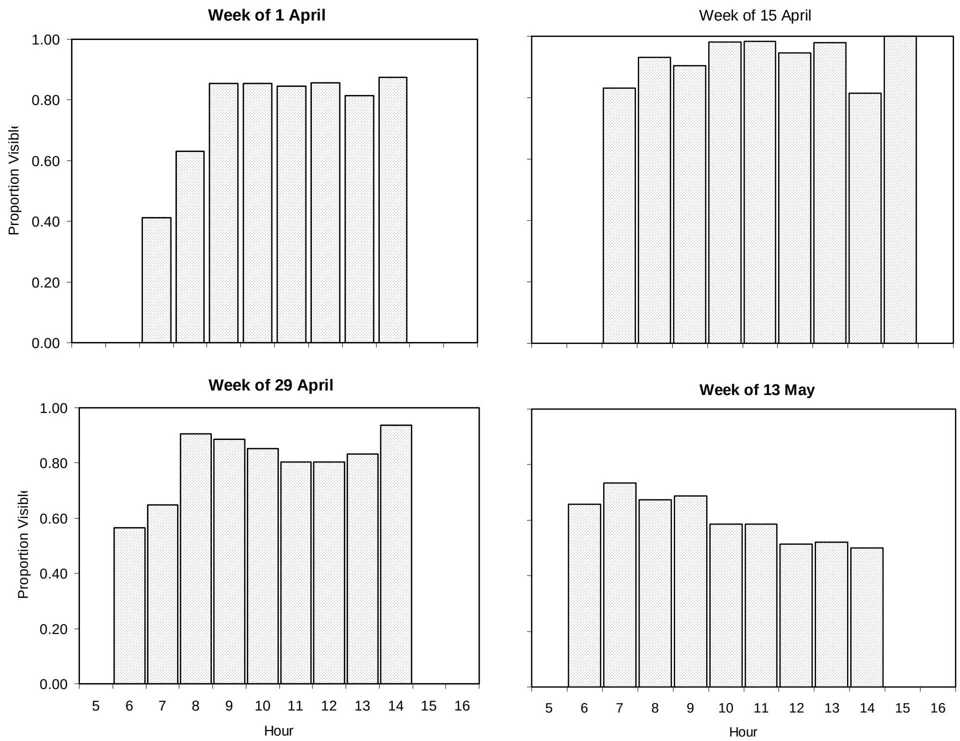

Figure 4. Proportion of tortoises at the Coyote Springs G_0 site that were scored "visible" after detection by radio receiver. Observations are graphed separately for each week and plotted for every other week of the monitoring season.

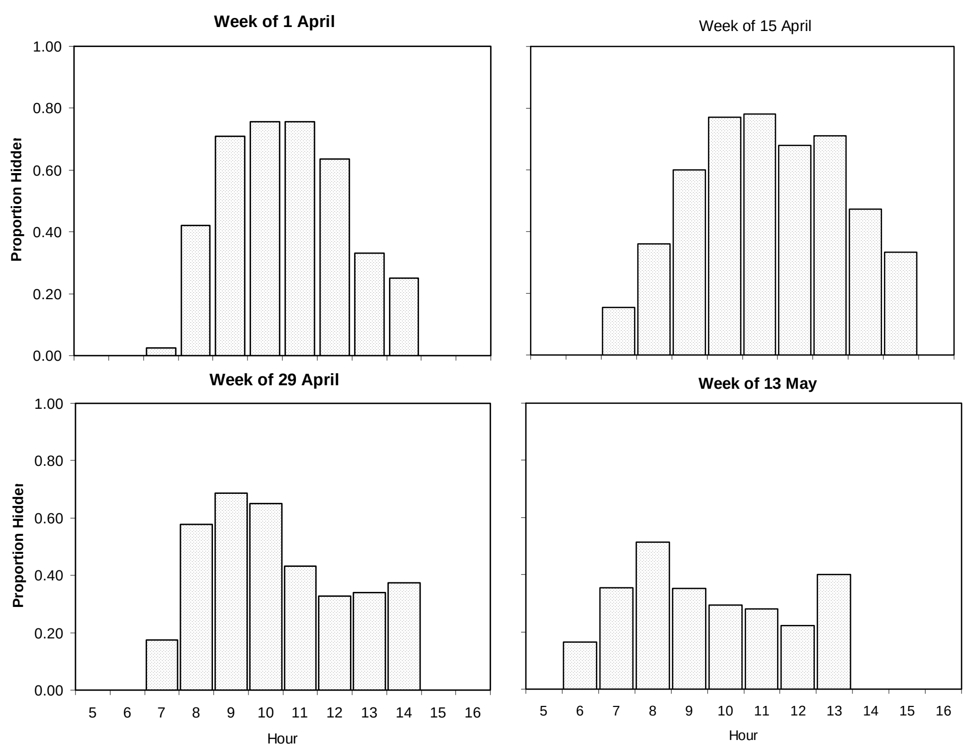

Figure 5. Hourly proportion tortoises that are in burrows or scored "low visibility" in vegetation. These tortoises are hidden, although some may be visible with effort.

Objective 3: Measure the Local Bearing of a Transect and the Azimuth and Radial Distance to each Tortoise

When a tortoise or carcass is found, the position of the leader identifies the moving end of the transect (which is why it is very important to walk a consistent bearing). If the leader locates a tortoise or carcass in the 180^{o} semicircle in front of him/her, the leader stops immediately and drops the 25m line, establishing the position of the transect line. After taking the bearing of the 25m line (the local bearing), the follower comes forward to assist the leader, and together they record the azimuth (compass bearing) and the distance from the end of the line to the tortoise (the radial distance, r). Radial distances are recorded to the nearest 0.1m. The database will calculate the perpendicular distance automatically as r times the sine of the difference between the azimuth and the bearing of the 25m line (Fig. 4). Ideally, the bearing of the 25m line should be close to the transect bearing, but the detection function must be developed using distance from the traversed line, not from the ideal line. In the example illustrated in Fig. 4, the intended transect path would have passed 6.4m from the tortoise, whereas the local bearing determined from the 25m line resulted in an actual perpendicular distance of 7.7m. In all cases when the transect has been paused, the team should recheck the bearing of the transect and the leader should resume walking on the original correct bearing.

Occasionally, a tortoise or carcass will be located behind the follower. The same procedure applies, except the azimuth and distance are measured from the trailing end of the line.

If a tortoise or carcass is located between the leader and follower, there is a transect line on the ground, so perpendicular distance can be measured directly. Data are entered as described above: the distance is entered as the radial distance, but the azimuth is a bearing perpendicular to the transect bearing. You should check that the resulting [calculated] perpendicular distance that is the same value as the radial distance you measured. Because the actual perpendicular distance is used, the [local] bearing of the 25m line is not used in calculations. However, the bearing does need to be entered on the data sheet, and should be reported as the nominal transect bearing.

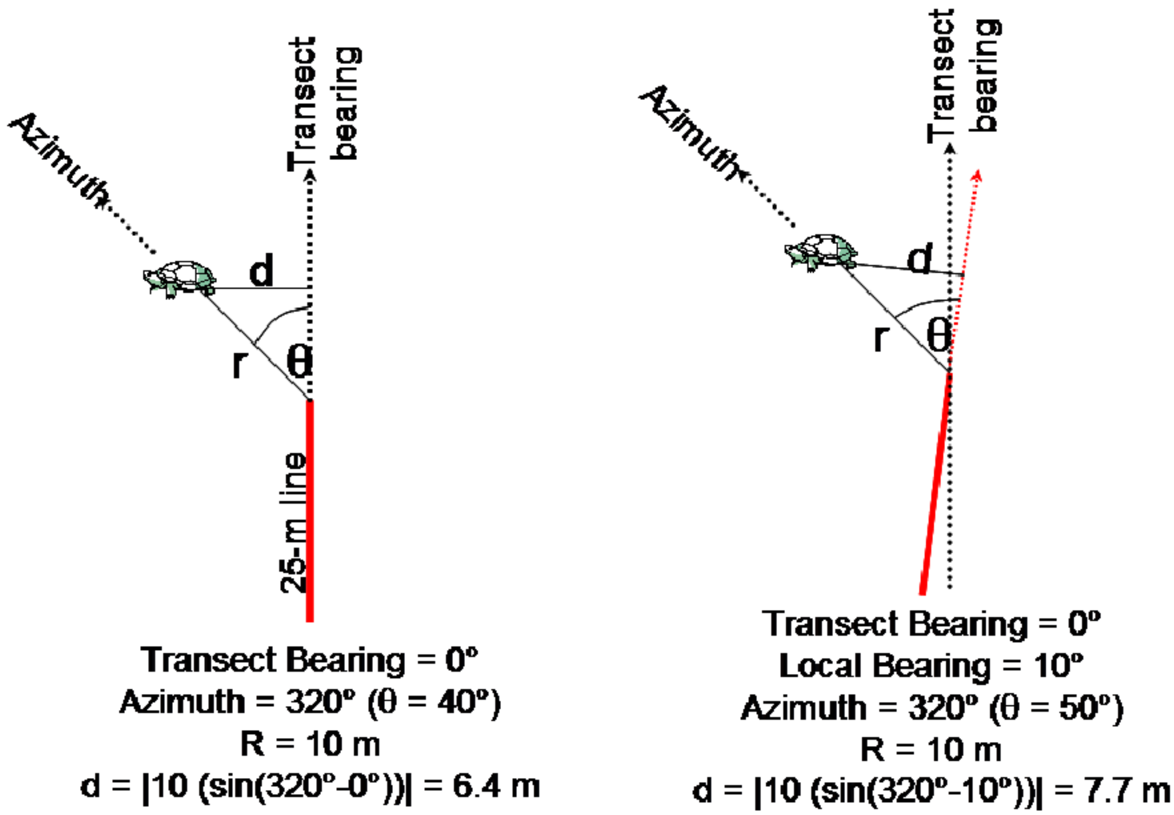

Figure 4. Schematic of position data collected to determine the perpendicular distance from a tortoise to the transect. The perpendicular distance, d, will be calculated automatically by the forms program on the PDA.

Objective 4: Implement Appropriate Techniques for Standard 12km Transects

Monitoring strata are typically a combination of Desert Wildlife Management Areas and USFWS Critical Habitat. A systematic transect design is used to place transects within strata. If there are sufficient transects in a stratum, they will occasionally intersect. Standard transects are 12 kilometers long, comprising 24-500m segments defined by waypoints where coordinates are recorded. The standard transect forms a square with 3km sides (Fig 1). A transect's starting point should be based on the location that is most efficient to access by vehicle (Fig. 2). However, it is desirable to maintain segment lengths (the distance between waypoints) at 500m, so the start point should be a multiple of 500m from the first corner that will be encountered (Fig. 3). Determining this point requires planning and map work before the transect is walked. Spatial files of the planned transects have been provided to GIS specialists for each field team, and have been used to plan access to transects and whether the transect is expected to be completed as a standard 12km square. Once the starting point is located and initial data (transect number, crew information, etc.) are collected, the transect is walked according to the following procedure. Note that all bearings are with reference to true north, so all **compasses must be**

adjusted for appropriate declination (which can be determined from USGS topographic maps or directly from your navigational GPS receiver).

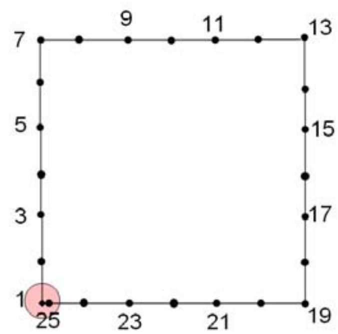

Fig. 1. "Standard" transect design without obstructions. The selected point = SW corner = starting point "1".

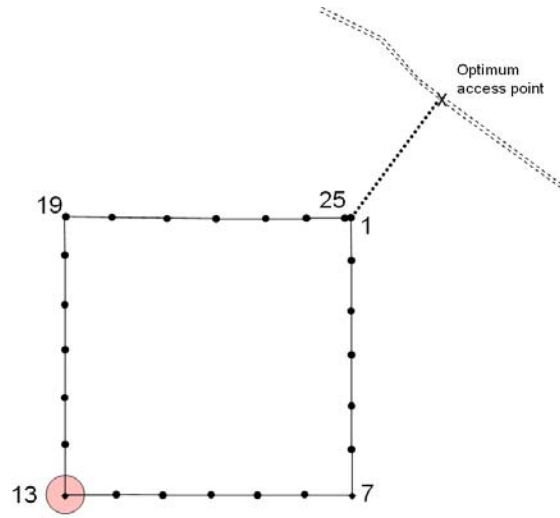

Fig. 2. Standard transect layout with optimal access at the northwest corner.

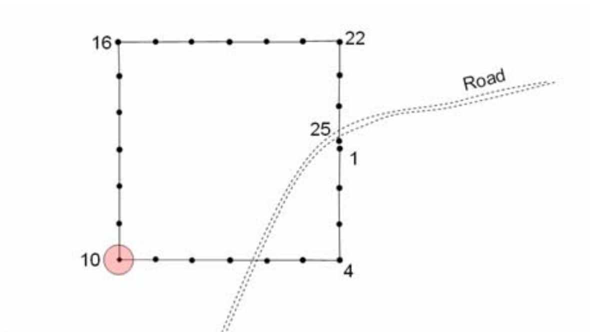

Fig. 3. Standard transect layout with optimal access occurring at a point on the transect. Note that the starting point is south of the road to maintain 500-m segments.

- Under normal conditions, you and a partner will be walking one 12km square transect each day. You will be paired according to evaluations of your desert tortoise detection abilities, and should remain partners throughout the field season. You will alternate lead and follow positions at each corner of each transect, each person spending an equal amount of time in the leader and follower positions. The first leader each day should be the person who finished the previous day (transect) as follower.
- Using a compass adjusted for declination the leader will start walking on the designated bearing and will pull a 25m length of durable line. The path that the leader walks becomes the centerline of the transect. While it is being pulled, the line helps the follower report to the leader on whether the transect is on course; when the line is placed on the ground after a tortoise or carcass is detected, the line facilitates measurement of the local transect bearing.

The walked length of each transect is calculated as the straight-line distance between GPS point coordinates that are recorded along the transect (waypoints). Therefore, it is important to walk as straight a line as possible between waypoints, using reference to the compass, a sighted point on the horizon, and the trailing line. The line should be passed over the top or directly through shrubs or trees that lie in the transect path, attaching the line to a staff if necessary. Waypoints are recorded at 500m intervals and at corners where the transect turns. The leader maintains the correct bearing and has responsibility for determining the correct length of each leg of the transect.

- The follower will trail the leader at the end of the 25m line. Both leader and follower will scan for tortoises independently without leaving the center line, and the role of the crew member finding each tortoise will be recorded in the data. Although the leader will see most of the tortoises, the role of the follower is to see all the remaining tortoises near the centerline, so the follower role is crucial to unbiased estimation of tortoise densities. The follower will also notify the leader if the transect is deviating from the designated bearing.
- The leader progresses along the transect, scanning the ground for tortoises or carcasses.
    - Concentrate on scanning the ground in a radius of about 5m and as far out as 10m. Little time should be spent scanning the horizon (except as necessary to maintain a consistent bearing) or scanning right around one's feet.
    - Special attention should be paid to searching vegetation intersected by the transect.
    - If it is necessary to leave the transect path to investigate a burrow or suspected tortoise or carcass more closely, the leader should drop the end of the line in place, so that the transect path remains unambiguous.
    - Attention should be given to ensuring the transect line does not "drift" toward a tortoise when one is observed. Tortoise density estimates will be biased if the transect consistently bends toward tortoises.
- The follower uses the same search technique as the leader. It is important that both crew members are searching for tortoises in the same manner.
    - If the leader stops to investigate a burrow, the follower should stop, to maintain position at the end of the 25m line.
    - Likewise, if the follower needs to investigate burrow or suspected tortoise, the leader should stop while this is taking place.
- When a live tortoise or carcass is located, the leader drops the line, and the necessary data fields on both the electronic and paper data forms must be completed. Use of electronic data collection reduces data entry and transcription errors, but is not foolproof. Paper data sheets are completed for later cross-checking with the electronic data forms. Paper sheets are independent versions of data on the electronic data forms, *not* backup data. It is essential to take accurate data, and to complete each section of the data sheet in both paper and electronic forms before moving ahead. Refer to *Desert Tortoise Handling* for details on proper handling and measurement techniques.
- When a tortoises or carcass is found, the position of the leader identifies the moving end of the transect (which is why it is very important to walk a consistent bearing). Ideally, the bearing of the 25m line should be close to the transect bearing, but the detection function must be developed using distance from the traversed line, not from the ideal line. In all cases when the transect has been paused, the team should recheck the bearing of the transect and the leader should resume walking on the original correct bearing.

- In addition to tortoise data, crew members will collect waypoints at regular 500m intervals, or more frequently if a corner is needed.
- If an existing tag is present it should be recorded. Various identifying techniques have been used on tortoises for other projects, and the database is equipped to record identifying information from these marks. Crews may need to clean the tags to make them legible, and should have any necessary reading gear with them; the numbers are small and will otherwise be difficult to read. If no tag is present, a tag should be applied to the 4th right costal scute.
- If a tortoise is in a burrow and cannot be removed from the burrow, it is nonetheless important to record whether unhandled tortoises are adult or sub-adult (≥ 180 mm MCL or < 180mm MCL), and the program on the RDA enforces this requirement for any tortoise record.
- When at least half of a tortoise carapace is located, the necessary data fields need to be completed. Shell remains persist for a number of years in the Mojave Desert.
- Teams walking from their vehicle or from a drop-off location to the transect start point that encounter a live tortoise or a tortoise carcass should take all the data that are required on the "opportunistic" tortoise and carcass forms.
- GPS coordinates must be collected at all waypoints, tortoise, and carcass locations. If an automated (Bluetooth) GPS grab is not possible, UTM coordinates will be entered manually.
- Occasionally, transects will encounter obstacles that make it impossible to achieve the default transect pattern. Paved roads with light traffic and rail lines should be crossed (after making sure it is safe) without interrupting the transect. Obstacles that should lead to changes in the transect path include major highways (e.g., all Interstate highways, US Highway 95 and 395, and California Highway 58), hazardous rock formations, or hills too steep for safe navigation. When such obstacles are encountered, the transect path should be adjusted according to *Implementing Protocols for Non-Standard Transects*, below.

Objective 5: Implement Protocols for Non-Standard Transects

Each monitoring transect is associated with a "sampling stratum." For analysis, all data from all kilometers walked in a stratum are combined, and the analysis proceeds from there. If we only walked transects in mountains, we should only related our analysis to mountainous areas of the stratum; if we only walked transects in flat areas, our estimates of tortoise density only apply to flat areas. Instead, each stratum has different terrains, topographies, vegetation types, and substrates. We are pretty sure that each of these attributes affects the density of tortoises, so to apply our tortoise density estimates to the entire stratum, we need proportional, representative sampling across the varieties of habitats that are available.

Transects are selected from all possible transects in a stratum to randomly sample habitat. We would prefer for all transects to be walked exactly as they are selected so that we are confident of the applicability of our tortoise density estimates to the entire stratum. However, there are limits to what can reasonably be sampled. In particular, crews must return safely and be able to rest sufficiently to work safely the next day as well. Crews should be able to return to their vehicles no later than 4pm each day. Secondarily, as the field season progresses, the activity period of tortoises is increasingly constrained by higher temperatures after noon, so there is no benefit to walking every kilometer of an assigned transect if it cannot be completed during the tortoises' activity period. The following material describes the types of changes that will be used to create "non-standard" transects.

<u>*Issues* that lead to non-standard transects.</u>

Where possible, these should be identified before observers are assigned to a transect. Non-standard transects are appropriate under different situations, each with different appropriate solutions that will be described under the next objective:

1. The transect intersects an obstacle parallel to one of its sides. This can be determined before attempting the transect.
   a. Example: Transect sides run east-west and north-south. Many interstates and major highways in the western states also run east-west or north-south. Large roads should not be crossed on foot, so standard transects are not appropriate.
2. The transect intersects an obstacle obliquely. This can be determined before attempting the transect.
   a. Example: There are areas where a corner of a transect is intersected by a body of water (Lake Mead), by land with prohibited access, or other obstacles. Obviously, crews will not proceed on a standard transect in these situations
3. The transect is entirely in rugged terrain. This can usually be determined before attempting the transect. Transects with several deeply incised washes or large stretches of instable substrate probably will not be obvious until the crew has started the transect.
4. The transect is partially intersected by rugged terrain or unstable substrate. The former can often be determined before attempting the transect.
5. The transect must be accessed by hiking in for several kilometers, which increases either the time-to-transect in the morning, or the time-to-vehicle in the afternoon. This can usually be determined before attempting the transect.

<u>Apply the appropriate *solutions* to create non-standard transects.</u>

The numbered solutions below correspond to the numbered issues described above. Some explanation is give for why the alternative provided is the preferred one.

1. Parallel obstacle: For many obstacles created by humans (roads, property lines) there is no expectation that the habitat is qualitatively different for tortoises on the other side of the obstacle. Therefore, our solution does not have to account for the possibility of undersampled habitat types beyond the obstacle. Complete the transect on the side of the obstacle (e.g., highway) where most of the standard transect occurs. Flatten the transect into a 12-km rectangle. If the obstacle is a north-south one, stretch the non-standard transect so that it does not go beyond its east-west standard limits. This means the transect will be shorter in the east-west direction than a standard transect. Reconstitute a 12-km transect in the north-south direction. Do this by adding a similar number of waypoints to the north as to the south. This solution aims to avoid "sliding" the transect in the space of another transect. Note that there is no expectation that the non-standard transect samples different terrain from the standard one (except for the short stretch of "road terrain" that is not walked).

2. Oblique obstacle: For many obstacles created by humans (roads, property lines) there is no expectation that the habitat is qualitatively different for tortoises on the other side of the obstacle. Therefore, our solution does not have to account for the possibility of

undersampled habitat types beyond the obstacle. Reflect the path of the standard transect in upon itself so that the same distance is walked, and only the area intersecting the obstacle is non-standard. For instance, if the NE corner of a transect falls in Lake Mead, fold that corner toward the inside of the standard transect. The folded section will be the *reflection* of the original corner. Again, there is no expectation that the non-standard transect samples different terrain from the standard one (except for the short stretch of "road habitat" that is not walked).

3. Entirely rugged terrain transect: There are 2 options for these transects.
    a. If a slower, 6km transect can be completed, this is the preferred option. This solution samples the original terrain, rather than leaving it out all together. In addition, a standard shape, completed more slowly, is preferable to one where human judgment is required to guide excessive reflection and deflection (right-angle turns around obstacles). These 6km transects will be included as a "substratum" of sampled, rugged terrain. These transects will be in the standard shape, but may be interrupted (see 5, below)
    b. If even a 6km transect is not possible, do not attempt the transect. Like the "long-distance access" transect described above, this will be included in the substratum of too-rugged transects.
4. Partially rugged terrain transect: This will probably be the most common non-standard situation and the most difficult to troubleshoot. The problem arises if the terrain is too rugged to safely complete all 12km.
    a. Is it interrupted by a very short but severe obstacle? Some transects cross a ridge or ravine or other relatively short, steep sections where line distance sampling walking and searching techniques are probably not going to be implemented. When small obstacles occur on a transect, crews can use a short scramble (~20-30m) to get up or over something, look really hard before scrambling, turn around and look really hard again. The lead scrambles up with the line, the follow stays at the bottom. After the line has been examined by both the lead and the follow, the follow scrambles up to meet the lead and the line is resumed as normal. The transect follows the regular assigned path.
    b. Is it interrupted by a relatively short (less than 200m) but severe obstacle like a cliff? In that case, enter a waypoint to interrupt the transect, find a safe route around the obstacle, and resume the transect at the point where it can once again be navigated. The same terrain is sampled as for the standard transect, with the exception of the relatively short stretch that crosses the obstacle.
    c. Is it covered by more than a few hundred meters of un-navigable terrain? Consider it first as a 6km transect, built from the standard transect's southwest corner. If the 6km transect can be completed, then do so. If the 6km transect still includes too much un-navigable terrain, do not complete the transect. This transect will be considered part of the "too-rugged to sample" substratum.
5. Long-distance access: If the transect cannot be accessed, completed, and return to the vehicle accomplished before 4pm, do not attempt the transect. Consider whether the transect can be completed as a 12km transect, a 6km transect, with or without interruptions (as described for the 2 solutions above).

The proposed non-standard transects provide these limits to the compromises that are inevitable:

- As much of the assigned, randomly selected kilometers are sampled as possible.
- When alternate kilometers are used on a transect, there is no reason to believe that the replacement kilometers differ fundamentally from the assigned kilometers. This unhappy situation would be the case, for instance, if we moved transects from rugged to nearby flat terrain. In that case, we would be purposely oversampling kilometers of flat terrain and purposely undersampling kilometers of rugged terrain.
- Transects are completed in standard lengths (0-, 6-, or 12-km) so that in their substratum, all transects provide an equal "sample size" (=number of kilometers).

<u>Use appropriate documentation for non-standard transects.</u>

- At each point where a turn is made for a reflection, a waypoint should be entered. Waypoints should be no more than 500m apart, but can be closer together in non-standard transects. Each waypoint subform includes a section for comments, and it is appropriate to note the start of a reflection or transect shape change in this place. The numbers of waypoints are tracked on your sketch of each transect; the sketch and associated waypoint numbering for non-standard transects is particularly important.

- When all waypoints on a transect are completed, you will be returned to the transect description section of the transect form. Be sure that you identify the types of obstacles (whether terrain or substrate) that led to the non-standard transect. There is room on the paper version to add longer comments if needed.

- If a transect is interrupted as described under Solution 4b above, there are important changes required to document the fact that data are not collected for part of the planned transect. In order to clearly implement this in the database the transect will be officially ended at this point of interruption (i.e. end waypoint 99, end time, summary of observations, etc. are all recorded). After the obstacle is navigated, crews will begin a totally new transect. The number for this transect is based on the original transect number. If the original transect was 42, for instance, the transect number for the section after the obstacle would be 42.1. If another interruption is required, a new transect would be created and designated as 42.2.

  Treating the walkable segments as separate transects is an important bookkeeping device for data processing. A few things will be different though. Waypoints in added transect segments will be numbered sequentially from the last one recorded before the obstacle. For example, if the last waypoint recorded before the end waypoint (i.e. 99) of transect 42 was 7, the start waypoint for transect 42.1 will be 8. Continue transect 42.1 per normal transect procedures. When you have completed transect 42.1 record the end waypoint as 99 just as you normally do. Once you return to the vehicle you will need to record only the return time and waypoint (i.e. 100) for transect 42. No drop off or return times or waypoints will be recorded for transect 42.1.

  Transect live and carcass finds must be summarized for each segment (i.e., separately for transects 42 and 42.1). Opportunistic observations are not recorded under transect 42.1, however. Record all opportunistic observations of tortoises or carcasses under the original transect. In this example, record all opportunistic observations observed on this day under transect 42.

In summary, other than consecutively ordering waypoint numbers, not recording transect drop off and return information, and using the original transect to record opportunistic observations, these subsequent transects will be treated as completely new, they will have their own transect number, their own transect form on the RDA and their own paper data sheets. This also means that at least one extra set of forms should be carried by crews at all times.

EXAMPLE
Transect 42
Waypoints 0, 1, 2, 3, 4, 5, 6, 7, 99, and 100
2 transect live observations
6 transect carcass observations
1 opportunistic live observation
3 opportunistic carcass observations
Drop off time 0630am
Transect Start time 0700am
Transect End time 1043am
Return Time 0432pm
Along with all other regularly recorded transect information.

Transect 42.1
Waypoints 8, 9, 10, 11, 12, 13, 14, 15...25, and 99.
1 transect live observation
4 transect carcass observation
NULL opportunistic live observation (will convert to -99 in QA/QC database)
NULL opportunistic carcass observation (will convert to -99)
Drop off time NULL (will record as 0100am)
Transect Start Time 11:15am
Transect End Time 0400pm
Return Time NULL (will record as 0100am)
Along with all other regularly recorded transect information.

For QA/QC folks, we have suspended the reporting of automatic errors for missing waypoints 0, 1, and 100 for any transect that contains a decimal. However, if no waypoint 99 is recorded an error will be generated. Also, the drop off and return time fields for any decimal transect will eventually be converted to -99, so there is no need to worry about these records. The crews record nothing within the opportunistic summary fields for the decimal transect, and the QA/QC database will correctly convert these to -99 for no data.