Instructions for using the POD calculator for SAR planning

This is a graphical calculator for computing coverage and POD from known quantities using only a straight edge and pencil.

Information required:

- Effective sweep width for desired object
  OR
  measured average range of detection and object visibility class (low, average, high).
- Estimated speed of searchers while searching
- Area of planning region

You can use the calculator to answer either of these questions:

- If I allocate X searcher-hours to the region, what POD will I get?
- If I want Y POD, how many searcher-hours should I allocate?

If you do not know the effective sweep width W, you must measure range of detection R_d and estimate the visibility of the object:

- Low visibility: an object that blends in with surroundings, i.e. same color or camoflaged.
- High visibility: an object that stands out well against its surroundings, e.g. white or orange against a forest background.
- Average: If you cannot classify the object as high or low-visibility.

  Mark a point on the R_d scale at the measured range of detection.

  With a straight edge, draw a line from your R_d point through the tick for the visibility and extend it to the Sweep Width scale. Mark a point where your line crosses the Sweep Width scale. This is the approximate effective sweep width.

If you have the effective sweep width from a table, you can simply mark your effective sweep width directly on the Sweep Width scale.

To use the calculator to compute the attainable POD from a given allocation:

1. From your mark on the Sweep Width scale, draw a straight line through the searcher speed on the Speed scale and mark the point where this line crosses A.
2. From your mark on the A line, draw a straight line through the region area on the Area scale and mark the point where this line crosses B.
3. From your point on line B, draw a straight line through the allocation in searcher-hours on the Allocation. Read your attainable POD where this line crosses the POD scale.

To use the calculator to compute the effort required to obtain a desired POD:

1. Draw lines just as in steps 1 and 2 above.
2. Draw a straight line from your mark on the B reference to your desired POD. Read required allocation in searcher-hours from the Allocation scale where the line crosses it.