Determination of Coverage from GPS Tracks

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Objective

- Use GPS tracks, operational team information and search segment/probability region details to calculate the ratio of area search to area of the segment or region.

- Coverage provide a more accurate description of how well the team performed than a Team Leader estimate of POD.

- Often times teams accidentally or purposefully search outside of their assigned search area. Using POD for their assignment does not credit the unassigned areas for being searched
During debrief any GPS tracks from the team are collected. In this example tracks from two independent assignments are displayed on the map. Both teams were assigned to search a single segment, but team conducting Task # T1126-01 incorrectly searched more than assigned.
Team Debrief

- During the debrief GPS tracks are downloaded and debrief information is collected.
- Data collected includes:
  - Team Size
  - Sweep Width (m)
- These data are used to create a buffer around the GPS track eventually used to calculate Coverage

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\text{Coverage} = \frac{\text{Area Searched}}{\text{Segment Area}}
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Coverage Tool

- Tool is located in the SAR_Toolbox under Operations
- Only input is “Workspace”
  - Uses the following as inputs
    - Routes_Line – GPS tracks, Debriefing, Search_Segments, Probability_Regions
    - Several other features are created during the process but are deleted.
- During the running of the process, the Assignment Numbers being processed are displayed on screen.
- Next slides walk through the process performed by the Coverage Tool. The end-user will not see these individual steps only the end product.
The primary focus is not to calculate the coverage provided by an individual team, but to determine the coverage for the segment given all of the tasks conducted in that segment. As the tracks are buffered they are dissolved into one big “blob”. This Blob accounts for overlap in tracks so the Coverage is not counted twice. While POD is cumulative you don’t want to count the area searched more than once in determining Coverage as it will artificially inflate the value. The concept of Coverage is to know how much of the area had been search not necessarily how well it had been searched.
Tracks are “Intersected” by the search segments. This allows for only the area of the buffered tracks in an individual segment to only be counted for the respective segment.

The Intersection includes a “Joins” with the segments that includes the segment name and region name.
Coverage Tool

- The area of the Intersected-Buffered tracks is calculated and recorded in the Search_Segment feature class.
- POD is only provided by the team for the segment assigned but Coverage is calculated for any segment they entered.
- The intermediate layers created during processing are deleted.
Coverage for Probability Regions

- The process continues to calculate the Coverage for the Probability Regions