Probability Modelling for Optimization of Evidence Searches

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Abstract

Evidence searches (seeking human remains or objects related to criminal cases) have characteristics that differ from searches for lost persons. Often, evidence searches are focused on relatively small areas and seek hard-to-detect objects that may have been initially concealed by criminal behavior and subsequently scattered by animal activity or environmental changes. Because of these characteristics, the success rate for evidence searches can be quite low.

For that reason, it is imperative to focus search efforts in areas that have the highest likelihood of containing sought-after evidence. Traditional application of search theory involves mapping planning regions, which are assigned Probability of Area (POA) and Probability Density (Pden) values via a consensus process. Search segments mapped within planning regions inherit their POA and Pden from their parent planning regions.

We describe an application of search theory concepts aimed at optimizing the success of evidence searches. The approach consists of: Mapping search segments of uniform size; identifying Evidence Probability Factors (EPFs) based on terrain analysis, historical criminal behavior, and animal behavior; assigning relative values to EPFs via a proportional consensus process, and then representing EPFs on a map to develop a probability mosaic which provides POA and Pden for each search segment.

KEY WORDS: *Search theory, search planning, probability modelling, human remains, evidence search.*

Introduction

Evidence Search Challenges

Human remains may be deposited in natural environments as a consequence of routine activities (lost hikers), via historical actions (Native American burials), via abnormal behavior (suicide), or via criminal behavior (abduction and murder). Finding human remains in criminal cases has always been of vital importance, both for law enforcement and for families of the victims (DiBiase, 2023). Moreover, the recent advent of new DNA identification technology (Bukyya et al, 2021) and genealogical matching techniques (Kling et al, 2021) has dramatically improved the ability to identify victims, and made it even more crucial to recover human remains.

For many reasons, however; finding human remains in wilderness or rural areas can be exceptionally difficult. Criminals may purposefully conceal bodies by burial or in bodies of water (Congram, 2013; Nethery, 2002). Animals may degrade or disarticulate remains and distribute them over great distances (Sincerbox & DiGangi, 2018). Foliage and fallen leaves may cover and conceal scattered bones (which can take on the same color as the surrounding environment), and weather and natural terrain changes may distribute remains. In addition, searching for aged evidence (e.g., scattered bones, fragments, or bits of clothing) is extremely time and resource intensive. Law enforcement personnel (often aided by search and rescue volunteers) seldom have the capacity to thoroughly search large areas for potential evidence. Because of these factors, the success rate for many evidence searches can be quite low.

The remains of murder victims in natural environments are acted upon first by criminals, and then often acted upon by animal scavengers. In this paper, we describe how search theory concepts can be systematically integrated with knowledge of past patterns of criminal behavior and with understanding of natural animal behavior to optimize searches for human remains. Such a planning synthesis can be readily adopted by law enforcement agencies and used to focus searching in areas of higher probability, thereby increasing the likelihood of finding and recovering human remains.

Applying Search Theory to Evidence Searches

A primary strategy for improving the success rate of evidence searches is to focus efforts in areas that have the highest likelihood of containing sought-after evidence. Traditional application of search theory involves developing and quantifying an initial model of probability in the search area, followed by systematically assessing how search sorties reduce that probability in segments that have been traversed by search teams (Cooper et al., 2003; Frost, 2000). In this paper, we describe an application of search theory concepts aimed at combining subject matter expert input with probability modelling to optimize the success of evidence searches. Some of our approach is analogous to how search theory is applied to maritime searches (Department of Homeland Security, 2011). As shown in Figure 1, our methodology can be summarized in three phases:

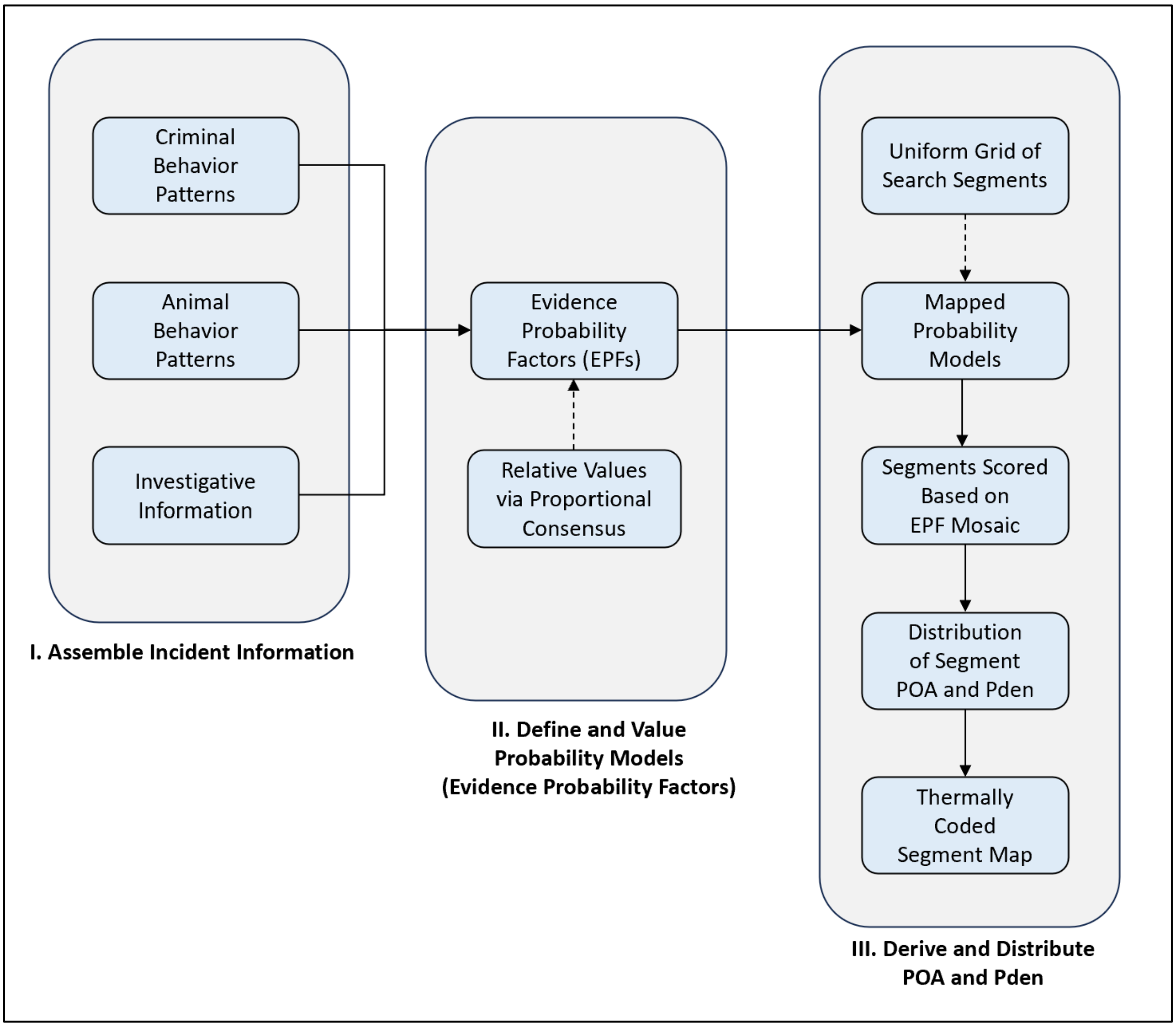

Figure 1: Overview of Evidence Probability Factor Methodology

I. Assembling Incident Information: We begin by assembling as much investigative information as is available. Ideally, this will include (a) key facts from the incident case file, and (b) information about the search area derived from terrain analysis, and (c) any previously found clues or remains.

II. Defining and Valuing Probability Models: This incident-specific information, combined with known patterns of criminal and animal behavior, serves as the basis for a curated set of probability models. These Evidence Probability Factors (EPFs) can be based on historical data or on subjective assumptions. Each EPF is assigned a relative value (based on a proportional consensus process) and then represented on the search planning map.

III. Deriving and Distributing Segment POA and Pden: Once all EPFs are mapped, an overlay of a uniform grid of search segments is applied to the map. Each search segment inherits a cumulative score, based on the underlying EPF models that it contains. These cumulative scores are normalized to derive Probability of Area (POA) and Probability Density (Pden) for each search segment. The quantitative POA/Pden values can be conveniently represented as a thermally-shaded probability mosaic.

Methods

Translating Criminal and Animal Behavior into Evidence Probability Factors

The remains of murder victims in natural environments are acted upon first by criminals and then may be acted upon secondarily by animal scavengers. A body of literature exists about how criminal behavior (Congram, 2013; Killiam, 2004; Koester, 2016; Manhein et al., 2006,) and animal behavior (Beck et al., 2014; Berezowski, MacGregor, Ellis, et al. 2023; Gleason, 2008; Haglund & Sorg, 1997; Moraitis & Spiliopoulou 2010; Rossmo, 2025; Sincerbox & DiGangi 2018) interact with terrain features to influence the location of human remains. For example, criminals will often seek road pull-outs to discard bodies. Animals may move remains along their natural travel paths. This literature can be used to characterize conceptual probability models, as shown by the examples in Tables 1 and 2 below. The goal of our approach is to objectively distribute POA to grid segments based on systematic consideration of these factors.

Conceptual Model	Influence of Criminal Behavior of H. sapiens on Location Probability
Distance	Probability generally increases in proximity to a road or pull-out.
Slope	Probability is generally higher on downhill side of a road or pull-out.
Vegetation Cover	Probability is generally higher in wooded areas (providing seclusion).
Structures	Probability generally decreases near inhabited buildings or houses.
Investigative	Detectives may suspect burn piles on a rural property.

Table 1: Examples of General Probability Concepts for Criminal Behavior.

Conceptual Model	Influence of Animal Activity on Location Probability
Distance	Probability may increase with proximity to other found remains.
Terrain	Probability may reflect movement along animal trails, along fence lines, along draws, on ridge lines, or around shorelines.
Vegetation Cover	Wooded areas have higher probability than open areas.
Structures	Probability generally decreases near inhabited buildings, houses, roads, or any human activity

Table 2: Examples of General Probability Concepts for Animal Behavior.

These general probability concepts can be translated into quantified probability models, a step that can be based on objective data or based on informed consensus[1] judgement. In our approach, quantified probability models are used in two ways: (1) They guide how areas of higher probability are represented on the map, and (2) they inform how Evidence Probability Factors are assigned relative values via a proportional consensus process. Two examples are illustrated in Table 3 below.

General Probability Concept	Mapped Evidence Probability Factor	Basis for Quantification
Criminal Behavior: Probability generally increases in proximity to a road.	100-yard "high probability buffer" mapped along roads in the search area.	Objective data showing that 89% of historical finds were located within 100 yards of a road (Koester, 2016).
Animal Behavior: Probability may reflect movement along game trails or fence lines.	20-yard "high probability buffer" mapped along game trails and fence lines in the search area.	Estimation based on field observations and forensic taphonomy studies (Sincerbox & DiGangi, 2018).

Table 3: Examples of Quantified Probability Models

Using Evidence Probability Factors to Derive Segment POA

Koester (Koester, 2025) describes four main approaches to determining POA: (1) algorithmic modelling of agent behavior (often used for maritime searches), (2) consensus input from subject matter experts, (3) statistical models (e.g., based on historical data incident data), and more recently, (4) use of artificial intelligence methods. As described below, our method combines the consensus-based and statistical modelling approaches.

[1] There are a number of consensus processes (e.g., Mattson Consensus, Scenario Weighting, Proportional Consensus) used during search planning. In this paper, we use the term "consensus" as a general reference to these processes, and we use "proportional consensus" to refer to the specific consensus method used in our approach.

For each incident, a curated list of Evidence Probability Factors (EPFs) is created, based on input from detectives, investigators, and search planners. This list may include factors based on historical criminal behavior, geographic profiling (Berezowski et al, 2022), patterns of animal behavior, incident-specific clues or information, and local terrain characteristics. A sample table of EPFs is shown in Table 4.

Evidence Probability Factor	Relative Score
Search grid contains a road pull-out area.	
Search grid contains a road pull-out above a downhill slope.	
Search grid contains an area where garbage has been discarded in the past.	
Search grid contains areas within 100 yards of road or trail.	
Search grid contains areas within 20 yards of a located animal/game trail.	
Search grid contains a secluded spur road.	
Search grid contains a logging path or trail that provides access into woods.	
Search grid contains a burn pile.	
Search grid contains a wooded area that can be easily accessed.	
Search grid is within 100 meters of IPP or found clues.	
Search grid is between 100-200 meters from IPP or found clues.	
Search grid contains an area or soils where it is easy to dig.	

Table 4: Example Table of Evidence Probability Factors

Evidence Probability Factor lists may start as generic, but then are customized for each incident depending upon:

- The nature of the incident. For example, in a wide area search for a clandestine grave, proximity to secluded roads and pull-outs would be important. For a narrow area search of a single rural property, factors such as proximity to burn piles, wooded areas, or swamps would be added to the list.

- The presence of clues or evidence. If the location of previously-found evidence (e.g., a partial human skull) is known, then proximity to this evidence would be an important factor. The Evidence Probability Factor list should also contain a factor for items found during the search. This would allow for prompt re-assessment of area probabilities.

- The search terrain. If a segment was partially wooded, (a feature that might provide seclusion), then that terrain characteristic would be a useful EPF. In contrast, if the entire search area is wooded, that would not be a useful discriminating factor and could be eliminated from an EPF list.

Once the list of evidence probability factors is compiled, the next step is to assign a relative value to each EPF. For this scoring, we use a Proportional Consensus process (Frost & Cooper, 2014). This has several advantages:

- The process combines the judgement of investigative experts and search analysts.
- The process derives EPF scores that reflect their relative importance for a specific incident.
- The process instructions are easy to follow (even for non-SAR personnel).
- The process allows for independent, non-biased ratings.

In our approach, all of the proportional consensus participant's scores for each EPF are simply summed to provide a value for each EPF.

After the Evidence Probability Factor list is finalized and scored, each factor is then represented as an object on the planning map. Examples of such objects are shown in Figure 2, and include:

- Distance radii (dotted yellow lines) from clues or important locations.
- 100-yard buffers (red lines) along roads.
- Polygons (orange lines) outlining high probability areas (e.g., denser brush).

Figure 2 can also be used to illustrate an important analytical technique, particularly for evidence searches related to crimes committed many years ago. The aerial image in Figure 2 is an historical image from Google Earth, dated as close as possible to the year when the crime occurred. This allowed mapping of wooded areas (orange polygons) based on the tree coverage of that past date, even though current-day tree coverage is much more uniform.

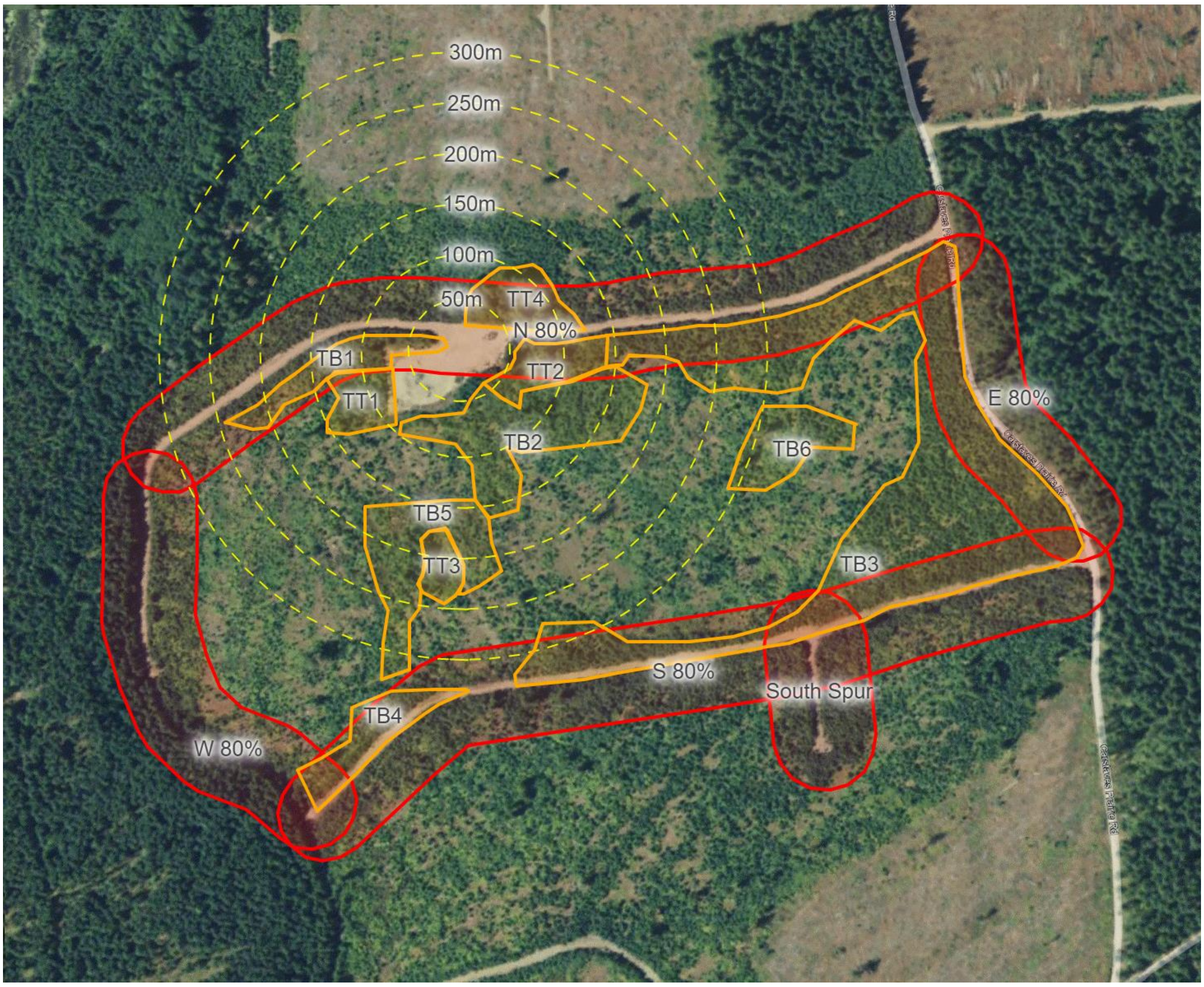

Figure 2: Example of Mapped High Probability Zones

Uniform Search Segments

Wilderness search terrain frequently includes drainages, ridges, and trails which can have significant effects on subject travel and on subject find locations (Jacobs, 2016). In contrast, most evidence searches focus on smaller areas with relatively low geospatial variability. The main factors influencing probability in evidence searches are criminal behavior, animal behavior, localized foliage differences, and previously found evidence.

Traditional search theory approach begins with mapping planning regions, which are assigned Probability of Area (POA) values via a consensus process (Hill, 2011). For land searches, planning regions are typically mapped with irregular shapes and sizes that reflect interaction between search scenarios and the search area terrain (Stoffel, 2006). Within planning regions, search segments are typically sized for feasible search coverage during a single operational period, and mapped with boundaries that correspond to features that teams on the ground can easily recognize (Stoffel, 2006).

For our methodology, we have adopted the practice of mapping a grid of uniform-size segments similar to that used for maritime searches. This approach is feasible for relatively small search areas (typical of evidence searches), and eliminates Pden artifacts due to wide variations in region or segment size.

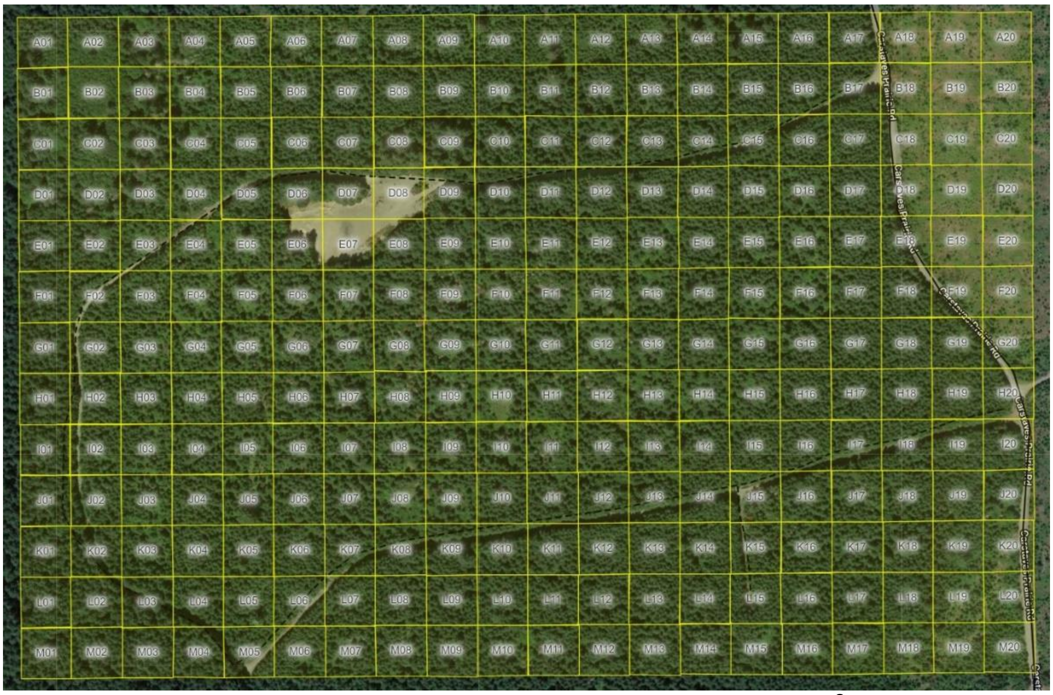

Figure 3: A 13 x 20 Grid of Uniform Segments[2].

Figure 3 shows a uniform grid of segments mapped over a 260-acre forested area that is to be searched for evidence in a homicide case. In the example shown, each grid segment is a 50-meter square, with an area of approximately 0.62 acres (about 0.25 hectares). While the size and number of grid segments can be varied depending upon the area and circumstances of each search incident, we have found 50-meter squares to be a suitable size for careful searching by both ground and K9 resources.

In traditional application of search theory to land searches, search segments inherit their POA and Pden from their parent planning regions. Segment POA is distributed in proportion to relative segment size, and segment Pden is uniform throughout a planning region (Hill, 2011). In the methodology that we describe, planning regions are not used, and segment POA is derived via a proportional consensus scoring process that takes into account criminal behavior and animal (scavenging) behavior. Because all search segments have the same size, Pden is simply POA divided by a constant segment area.

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[2] Note: For confidentiality reasons, none of the maps presented show actual evidence search areas.

Once Evidence Probability Factors are represented on the map, each segment in the grid can be scored. We use a spreadsheet for this scoring process. If an advanced GIS application is available, this can be done programmatically. However, even in the absence of a GIS, segment scoring is quite feasible, particularly if the task can be distributed to multiple planners.

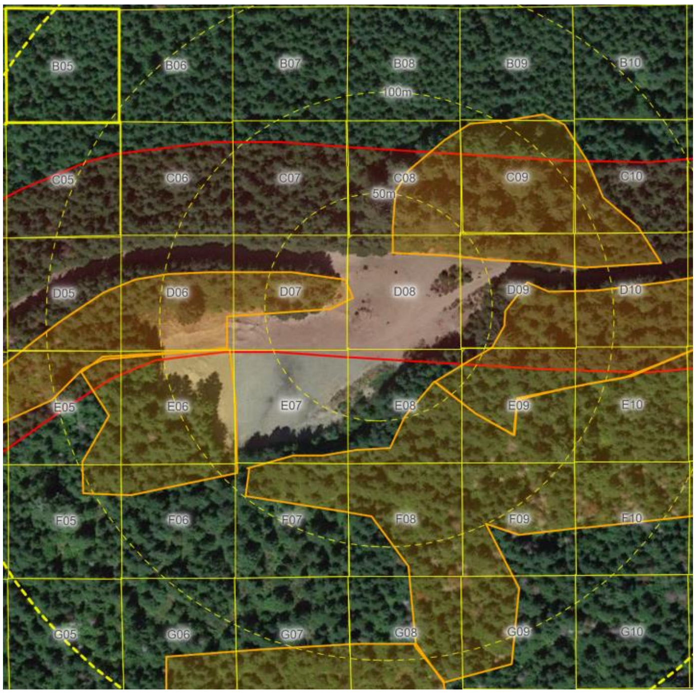


Figure 4: Uniform Grid with Underlying Mapped EPFs

Figure 4 can be used to illustrate how visual scoring of a search segment (in this example C08) is conducted by following simple rules: (a) Is C08 within the 50-meter range ring? Yes: Add appropriate score. (b) Is any portion of C08 within a road buffer (red polygon)? Yes: Add appropriate score. (c) Is any portion of C08 within a wooded area (orange polygon)? Yes, Add appropriate score.

As shown in Figure 5 (see Column B "SUM"), once every segment has been evaluated for every Evidence Probability Factor, each segment will have a cumulative score. This cumulative score is normalized (see Column C "POA") to yield a Probability of Area (POA) for each segment, thereby distributing 100% of probability across all of the search segments.

Figure 5 also illustrates two other features of the segment scoring process.

- Columns E through N show how segments accumulate scores for each applicable Evidence Probability Factor (indicated by blue shading). For example, the highest ranked segment (E09), was within 50 meters of primary evidence (designated as the IPP), was within 50 meters of a spur road, contained a wooded area, and was within 10 meters of a faint trail, and therefore accumulated points for each of these factors.

- Column C (POA) shows the cumulative score for Segment E09 normalized into a Probability of Area and color-coded for mapping.

The end-products of EPF-based scoring are:

1) Quantitative POA values as shown in Figure 5 Column C. These can be used to guide prioritization of search assignments, and in subsequent POD calculations.
2) A mapped thermal probability mosaic, as shown in Figure 6. Such “heat maps” or “choropleth maps” can be effective aids to visual interpretation of data sets (Tufte, 1990). In this context, our methodology shares some similarities with the RAG (Red Amber Green) approach (Donnelly, and Harrison, 2013; Ruffell and McKinley, 2017; Somma et al., 2018) in which multiple factors are systematically assessed to derive color-coded mapping of prioritization for locating clandestine graves.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	SUM	EPF Factor -->		0-50 m from IPP	50-100m from IPP	100-150m from IPP	150-200m from IPP	Dump Site	50m near minor road	10 m near stream or	Wooded Area	Depression or pit	Faint Trail
Grid Segment	102665	POA	Rank	451	296	225	138	301	381	207	257	241	252
E09	1340	1.31	2	451					381		257		252
D07	1340	1.31	2	451					381		257		252
D09	1340	1.31	2	451					381		257		252
E07	1340	1.31	2	451					381		257		252
C08	1340	1.31	2	451					381		257		252
C07	1185	1.15	7		296				381		257		252
C09	1185	1.15	7		296				381		257		252
D11	1114	1.08	9			225			381		257		252
E08	1114	1.08	9			225			381		257		252
E10	1088	1.06	11	451					381		257		
C10	1088	1.06	11	451					381		257		
E06	1084	1.06	13	451					381				252
D10	1084	1.06	13	451					381				252
D08	939	0.91	15					301	381		257		
D12	939	0.91	15					301	381		257		
C12	939	0.91	15					301	381		257		
D06	939	0.91	15					301	381		257		
E05	939	0.91	15					301	381		257		
D05	939	0.91	15					301	381		257		
C06	939	0.91	15					301	381		257		
C05	939	0.91	15					301	381		257		
F09	939	0.91	15					301	381		257		
F08	934	0.91	24		296				381		257		
E11	929	0.90	25		296				381				252
E04	929	0.90	25		296				381				252
D04	929	0.90	25		296				381				252

Figure 5: Example of Segment Scoring Spreadsheet (simplified for clarity)

Figure 6: Example of a Uniform Grid Thermal POA Mosaic
(Red = High, Orange = Med-High, Yellow = Medium, Green = Med-Low, Blue = Low, Violet = Very Low)

Discussion

The use of a uniform grid to array search area probability is not a novel approach; it is a standard component of maritime search methodology. As shown in Figure 7 below, our approach differs in that where maritime searches employ agent-based modelling to derive POA (Grewe & Griva, 2024), we combine multiple probability models based on Evidence Probability Factors.

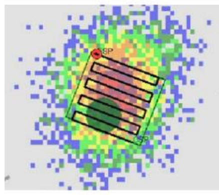
Type of Search	Probability Modeling	Quantification	Visualization
Maritime Search	Computed agent-based modeling incorporating LKP, wind, currents, etc.	• Probability of Containment • Probability Density • Probability of Detection • Residual Probability	Probability Mosaic 
Evidence Search	Evidence Probability Factors assigned values based on both objective data and expert consensus. Search segments scored based on cumulative EPFs.	• Probability of Area • Probability Density • Probability of Detection • Residual Probability	Probability Mosaic 

Figure 7: Contrasting Approaches to Quantification and Representation of POA.

Combining probability models to form an underlying probability mosaic is also not a novel approach. Koester and others (Sava, et al. 2015) have used GIS systems to develop probability mosaics for land SAR incidents. Koester has embedded this functionality (e.g., combining probability models for region POA consensus, distance from IPP, dispersion angle) into FIND software (www.findsar.com).

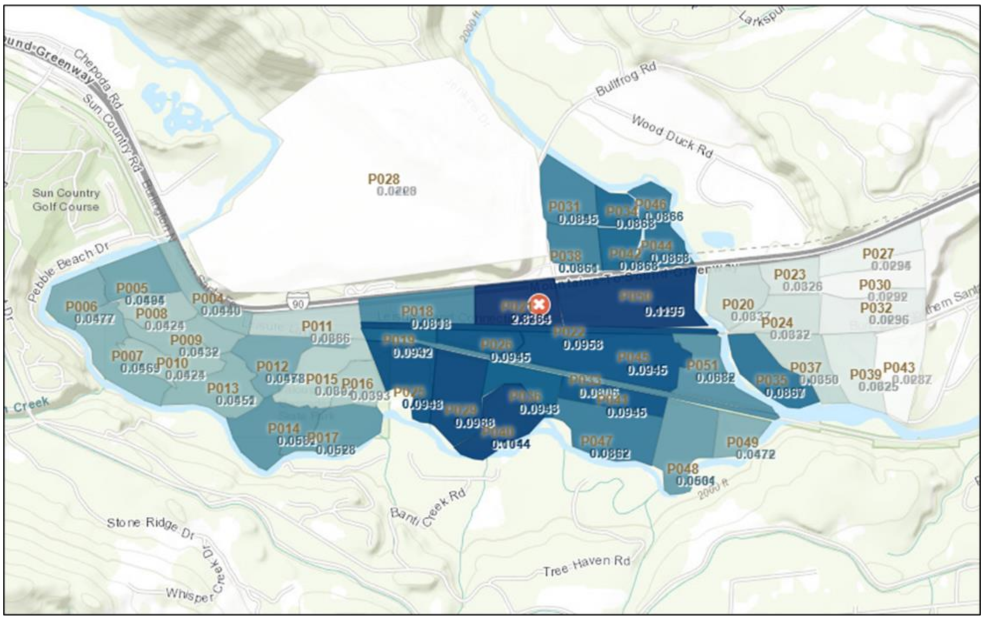


Figure 8: Pden Probability Model Produced by FIND Software.

Figure 8 above shows a Pden probability model produced by FIND software. The shading (darker colors indicate areas of higher Pden) are derived from combining probability models based on: (a) A proportional consensus of Planning Region POA; (b) Proximity to the IPP (location of an abandoned car indicated by the red “X” mark); and (c) Presumed direction of travel (based on found clues).

To date (and as our approach has evolved), we have applied components of our evidence search planning methodology to six searches of varying scale and nature, as summarized in Table 5.

Objective of the Search	Age of Evidence	Scale of the Search	Search Characteristics
Locate human remains or evidence from a child abduction/murder case.	9 years	Over 100 searchers	• Search area: 50 sq miles • Mixed forested terrain • Multiple operational periods
Locate human remains or evidence from a child abduction/murder case.	24 years	Over 60 searchers	• Search area: 32 acres • Forested terrain • Four operational periods
Locate clandestine burials or evidence from a murder case.	1-3 years	Over 50 searchers	• Search area: 150 acres • Wooded terrain • Five operational periods
Locate human remains or evidence from a child abduction/murder case.	14 years	Over 100 searchers	• Search area: 250 acres • Forested terrain • Three operational periods
Locate human remains or evidence in support of a criminal investigation.	1-3 years	Over 40 searchers	• Search area: 250 acres • Logged and wooded terrain • Two operational periods
Locate historical burial sites of American Indian children.	Over 150 years	4 K9 teams	• Search area: 50+ acres • Open grassy terrain • Two operational periods

Table 5: Our Methodology Has Been Applied to a Variety of Evidence Searches

While it would be highly desirable and valuable, a randomized control trial comparison of our EPF methodology (compared with a more standard method) would not be practical or feasible. In the future, a more formal evaluation may be possible using a methodology such as MapScore (Sava et al., 2016). While we must be circumspect with ongoing law enforcement investigations and due to cultural sensitivities, we can relate anecdotal examples of success with our approach.

An evidence search related to a child abduction and murder cold case

Mushroom hunters had located and reported a human skull found in a remote, heavily-forested area. The remains were identified as belonging to a child believed to have been abducted and murdered 15 years earlier. Terrain analysis, combined with assumptions about criminal behavior and animal behavior was used to distribute a POA model over the search area. After three operational periods, important evidence was located in a high-probability search segment.

A Human Remains Detection (HRD) K9 search for unmarked burial sites of American Indian Children

Against a background of growing national and international awareness (MMIWP Task Force 2023), and working directly with tribal representatives, we employed our EPF-based probability modelling to plan deployment of specially-trained HRD K9s in an effort to locate unmarked burials of Native American children at the site of the Fort Simcoe Indian Boarding School in Eastern Washington State. The K9s were initially deployed to high-probability areas, and in those areas, indicated with multiple "Trained Final Responses" signalling their detection of the faint odor of human remains.

Advantages

While our methodology provides no magic answers (e.g., "*Dig here and you'll find the body*,") it does offer a number of practical advantages.

(a) As shown in Table 5, this constellation of search theory concepts can be applied to incidents of different natures and scales, ranging from focused searches in small areas to wide-area searches involving a large number of searchers.

(b) Our method provides a way to incorporate the expertise of detectives, investigators, or other subject matter experts, while placing a low demand on their time. Once a list of Evidence Probability Factors is curated and valued, the downstream tasks of scoring segments and deriving segment POA are accomplished by planning staff.

(c) When criminal evidence is located and presented at trial, it can be important to provide an objective rationale for why one area was searched, and not another. Our approach provides a rationale that is objective and systematic, and moreover can be presented as based on standard search theory-based methods used for maritime searches.

(d) Planning in this approach blends input from subject matter experts with terrain analysis (via a systematic and transparent process) to yield objective values of initial POA and Pden for each search segment. When combined with capture of GPS tracks, (and estimates of sweep width) it is relatively straightforward to calculate Coverage, POD, and Residual POA after each operational period or search sortie.

(e) As shown in Figure 9 below, thermal color-coding based on our derivation of segment POA provides for easy-to-interpret visualization of initial POA/Pden (left panel) and residual POA/Pden (right panel) after searching.

(f) As alluded to above, the use of uniform search segment size allows for direct probability comparison based on POA -- although Pden can easily be calculated if prioritizing based on Probable Success Rate (Koester, Cooper, Frost, and Robe 2004) was desired.

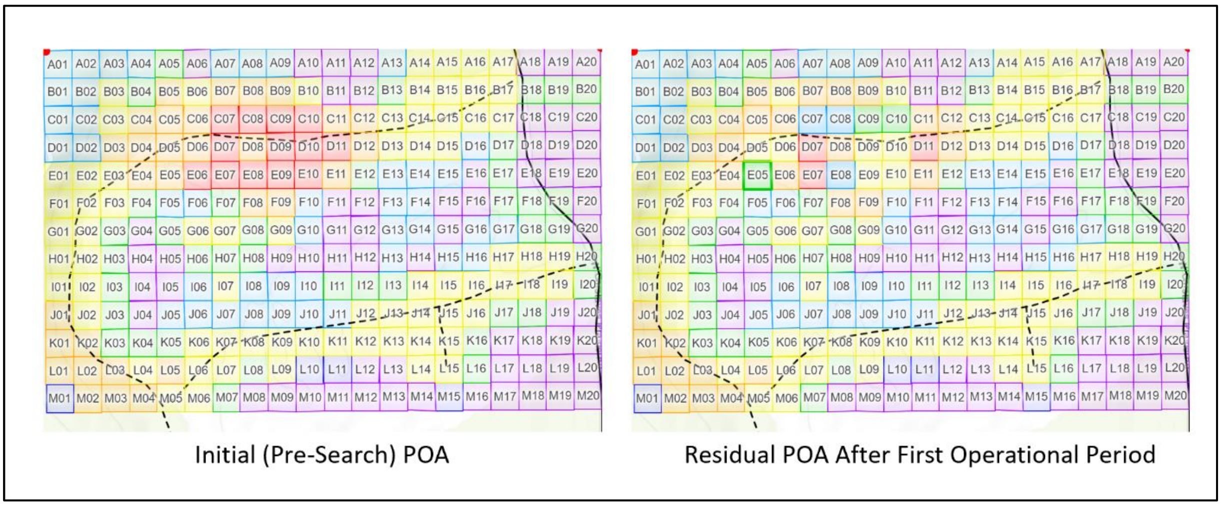


Figure 9: A Thermal Visualization of POA Before and After Searching

Limitations

(a) This method is practical with basic tools, and it is important to note that we found it feasible to develop and implement our approach with a well-designed SAR mapping program (SARTopo) and Excel spreadsheets. That being said, utilizing GIS tools would be likely to make it significantly more efficient.

Since our initial development, we have developed GIS-based tools that:

- Create a user-specified grid of uniform segments.
- Measure searcher track line length within each search segment.
- Calculate Coverage, POD, and Residual POA for each segment.
- Thermally color-code segments by Residual POA.

(b) When we first applied this approach to a search with a large number of segments, we were initially concerned when we noticed the low absolute values of POA, even for the high-ranking segments. This can be seen in Figure 5, where even the highest-ranked segments have a POA of only 1.3. Upon reflection, we realized that this was a natural result of distributing POA to a large number of segments. For comparison purposes, consider a normal wilderness search with 10 regions, each divided into 10 segments. For such a search, average region POA would be 10 and average segment POA would be 1.0.

It is the relative differences between segment POAs (not the absolute values) that are important. In Figure 5, for example, it can be seen that the average POA for Medium-High segments (orange) is about 65% of the average for the High POA (red) segments.

(c) General conceptual models of criminal and animal behavior may provide only coarse input for probability modelling. These can and should, when possible, be augmented with incident-specific information. Consider for example, modelling how far a criminal might move a body from a road in order to conceal it. While there are historical data from past cases (Koester, 2016) that can be used as a guide, if it would be important to also consider the stamina, motivation, available time, past behavior, (if that information is available) for a specific subject.

Similarly, while it is possible to model general animal scavenger behavior, if local scavengers can be identified (e.g., have there been coyotes in the area?) then modelling can be sharpened (Hagland & Sorg, 1997) to reflect the behavior of those animals (e.g., coyotes are known to move along fence lines).

Conclusions

In conclusion, we present a practical application of search theory methods for planning evidence searches. The method can be implemented using basic mapping and spreadsheet tools, and yields a systematic and objective derivation of search segment POA and Pden. The Evidence Probability Factor / Uniform Grid method is analogous to how search theory is currently applied in the maritime environment. Where the U.S. Coast Guard uses computers to model object drift and movement, we use a manual approach to blend subject matter expert input with terrain analysis to derive a probability mosaic. This uniform grid probability mosaic can be used to guide prioritization of search assignments and increase the efficiency and success of evidence searches.

About the Authors

Guy Mansfield, PhD is a Director of the Washington State SAR Planning Unit. He has been a SAR volunteer since 2008; is a member of the Mountain Rescue Association; and has served as Planning or Operations Section Chief on some of the largest wilderness searches and evidence searches in recent Washington State history.

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Abbreviations

EPF	Evidence Probability Factor
GIS	Geographic Information System
GPS	Global Positioning System (can also refer to a handheld GPS device)
HRD	Human Remains Detection
IPP	Initial Planning Point
MMIWP	Missing and Murdered Indigenous Women and Persons
Pden	Probability Density
POA	Probability of Area
POD	Probability of Detection

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