

The Journal of Search and Rescue (JSAR) is an open access peer-reviewed electronic journal for the collation and distribution of original scholarly material on search and rescue (SAR).

It is being supported by the in-kind work and contributions of the Editorial Board. There is still the need for a dedicated journal serving those with a direct interest in all disciplines of search and rescue including: rope rescue, water (flat, swift and marine), ice rescue, wilderness search and rescue, structural collapse rescue, trench collapse rescue, cave rescue, dive rescue, motor vehicle extrication, canine search, technical animal rescue, air rescue, search theory, search management, and mines rescue. JSAR exists to fulfil that need.

Article submissions from these and other SAR disciplines are welcome. Launching this journal on the internet offers a relatively cost-effective means of sharing this invaluable content. It affords the prompt publication of articles and the dissemination of information to those with an interest in SAR.

JSAR will provide a forum for the publication of original research, reviews and commentaries which will consolidate and expand the theoretical and professional basis of the area. The Journal is interested in theoretical, strategic, tactical, operational and technical matters.

Advertising within JSAR will be considered in the future to ensure sustainable funding is available to enhance and continue the work of the journal. The publication of an article in the Journal of Search and Rescue does not necessarily imply that JSAR or its Editorial Board accepts or endorses the views or opinions expressed in it.

Editors: Dr Elizabeth Cuevas, Dr Ian Greatbatch, Dr Scott Hammond & Dr Robert Koester

Editorial Team: Ian Allen, Robert Rovetto, Chris Thompson, Ben Weedon

Additional Materials Editor: Andy MacAuley

Cover Image: A Mountain Rescue Team, by Geoff Charles (1952). Llyfrgell Genedlaethol Cymru / National Library of Wales.

Editorial Board

Keith Gillespie ADFSc EMT-P
Steve Glassey MEmergMgt PGCPM GCTSS
FEPS CEM®
Daniel Graham LLB (Hons)
Kay Goss MA CEM®

Andrea Kleinsmith, BS, MSc, PhD
Ian Manock MEmergMgt
Mike Rose MA MEPS
Brett C. Stofel BS J

Contents

	Page
Editorial	
<i>Koester, R</i>	ii
History of the William G. Syrotuck Symposium on Search Theory and Practice <i>Long, C</i>	1
William Syrotuck Foreword <i>LaValla, R</i>	2
List of Syrotuck Symposium 2018 Presentation Abstracts	4
Lost Person Behavior - Statistics from Iceland <i>Eysteinnsson, E</i>	12
Constructive Deviance in Search and Rescue Teams: Getting Around Regulations <i>Rhea, I. Haws, J. & Hammond, SC</i>	22
Highly Reliable Teams in Search and Rescue: Seven Characteristics of Excellence <i>Hammond, SC & Taylor, JY</i>	29
Land Search and Rescue Probability of Detection: New sweep widths values, correction factors, models, and detection model validation. <i>Koester, RJ</i>	35
Enhancements to Statistical Probability of Area Models based upon updated ISRID data collection for Autistic Spectrum Disorders and Typically Developing Children <i>Koester, RJ</i>	65
A Pragmatic Approach to Applied Search Theory <i>Mansfield, G, Carlson, J., Merrifield, D., Rosenberg, E., Swanson, E. & Templin, P.</i>	84
The U.S. National Search and Rescue School – Inland <i>Rockwood, GC</i>	108
The SAR Planning 'P' Process <i>Wright, S & Smith, R</i>	111
The Search Intelligence Process <i>Young, CS</i>	136
William G. Syrotuck Symposium on Search Theory and Practice Participants	165

Editorial

The Journal of Search & Rescue (JSAR) partnered with the William G Syrotuck Symposium on Search Theory and Practice held in Reykjavik, Iceland to produce this special issue of JSAR. This is the first of a long future of presenting special joint issues. The William G Syrotuck Symposium on Search Theory and Practice is often more simply referred to as the Syrotuck Symposium. It has an impressive history of furthering search theory and advancing the field. Chris Long, the Washington State SAR coordinator, who organized all of Syrotuck Symposiums, provides an overall history in this issue, starting with the first formal Syrotuck Symposium held in 1996 in Denver, Colorado. However, Rick LaValla, in presenting the bio and history of William Syrotuck himself, makes an excellent case that the first formative Symposium took place with “Bill” in attendance back in 1975 as part of a search planning think tank organized by the National Park Service in the Grand Tetons. Much like those early days, Chris Long identified an important gap: how can the information, new knowledge, and experience shared by the Syrotuck Symposium participants have a greater impact than simply reaching those in the room? JSAR exists to disseminate quality information, meeting academic standards, and so a partnership was born. We hope that this is a long and fruitful partnership. We also look forward to putting out another special issue for the next Syrotuck Symposium. A call for papers has recently been made by Chris Long for the next Syrotuck Symposium to be held October 14-15, 2020 again in Reykjavik in conjunction with ICE-SAR Rescue 2020. JSAR is also looking to offer other organizations that are advancing SAR and are looking for a vehicle to disseminate high quality papers. JSAR remains a peer-reviewed, online/digital, open access journal to advance search and rescue.

In looking over all of the presentations made at the Syrotuck Symposium, I’m struck by the wide diversity in the background of the presenters. They represented air, land, and sea disciplines of SAR. They also ranged from full-time employees and volunteers of NGOs, government, military, academics, and industry. However, what everyone present had in common was being a SAR practitioner at some level. Therefore, it isn’t surprising that the papers tend to offer practical advice on how to be better. Not everyone who presented provided a paper. However, all of the abstracts of those who presented are provided and those that have an associated paper are marked with an asterisk.

Dagbjartur Brynjarsson of ICE-SAR who also helped organize some of the logistics of the Syrotuck Symposium opened with a presentation on the implementation of formal search theory and land search management in Iceland and how it has been applied. He clearly showed that using search theory is not abstract but can be put into practice. Einar Eysteinsson’s paper on Lost Person Behavior – Statistics from Iceland was not presented at the Syrotuck Symposium itself but a few days later at the ICE-SAR Rescue 2018 conference. It has a strong research basis and uses a novel methodology of comparing a more limited database to a larger database. The Washington State SAR Planning Unit with a paper from Mansfield, Carlson, Merrifield, Templin, and Rosenberg also describes a pragmatic approach to applying search theory in the land environment. It became evident from just combining a displacement or ring model and dispersion model that the math can become tedious quickly. Presentations from Frost (who unfortunately couldn’t be present so Matthews from the USCG SAR School stepped in) and another by Koester described how computer software can be used as tactical decision aids. They discussed the Search and Rescue Optimal Planning System (SAROPS) being a well-established tool for the maritime environment and FIND being a new tool for the land environment. Koester also discussed how updates in ISRID has improved the Autism Spectrum Disorder category and new spatial models. In a second presentation, Frost wisely pointed out how even with sophisticated tools humans can find novel ways of

making major errors (searching completely the wrong area) with minor mistakes (not entering a negative sign into the flight computer); an important warning and lesson for anyone designing automated systems. Several papers dealt with the management of information and process involved in a search. In fact, it could be argued that a search and rescue incident is one of the most complex information management incidents within public safety. Burke addressed Virtual search planning which involves integrating information from multiple sources and creating an actionable information package for the team actually on the ground managing the incident. Hammond looked at information and process from a SAR team perspective, looking at how they function in chaotic environments with high reliability. He also addressed the importance of team dynamics. Wright and Smith looked at the SAR Planning P process, with a particular emphasis on the transition from initial response to more extended operations. Young went into great depth on the types and need to collect search intelligence and how it should be organized. Two presentations also advanced our understanding of Probability of Detection. Roberts and Hamilton presented Exercise Northumberland which made a meaningful comparison of different resources all searching the same area for the same subjects. The Exercise involved fixed wing aircraft, rotary aircraft, sUAV, ground searchers, and canine. While the full paper is not included here, it can be found on the Centre for Search Research website and the link is provided along with the abstract. Koester described several Probability of Detection experiments involving: day versus night searching; impact of one, two, and three person teams on a linear task; use of FLIR sensors; and additional correction factors. In the end, it is all about instruction and passing on knowledge. To that end, Rockwood presented how the US National Search and Rescue School develops its curriculum, what it teaches and asked what could be improved.

Hopefully, all of us regularly ask ourselves: what can we do better, how can I be safer, how can I find the subject sooner? If you are reading this you are taking an important step. Next, how will you integrate this new knowledge on an actual incident?

Dr Robert Koester