Session proposal form

Please fill in all the details below and return to ac2019@rgs.org by **Friday 15 February 2019**

Session Summary	
Session Title: Please enter session title as it should appear in the conference programme. If you have multiple timeslots with sub-titles, only enter the main title of the session here.	**Geographies of the Missing and Lost** (1): Amelia Earhart to Glenn Miller to Apollo to MH370
Session sponsor (if applicable) Please enter the name(s) of any Research Group(s) or other organisations sponsoring this session, to be recorded in the conference programme.	RGS Transportation Geography Research Group (TGRG)
Session Abstract: Please enter session abstract as it should appear in the online programme.	Finding lost or missing persons, vessels and aircraft is one of the most challenging and urgent problems in geographical analysis. Such cases involve numerous aspects of geography and other sciences, including GIS, search optimization at sea and across large and varied landscapes, human behavior while moving across terrains, field operations and expedition management, DNA analysis, canine detection procedures, aircraft systems analysis, forensic science, and many others. The first session will cover new substantive and technical-technological developments in aviation and space cases. These will include the famous case of Amelia Earhart and Fred Noonan, and the use of Bayesian search theory to optimize the search for and eventually find Air France 447 in the South Atlantic. Also discussed will be recent developments and problems with the unsuccessful search for Malaysia Airlines 370 in the southeast Indian Ocean; recent developments in the 1944 disappearance of famous band leader Glenn Miller over the English Channel; and the successful search for the engines used for the Apollo 11 first landing on the Moon, found and recovered from the Atlantic Ocean in 17,000 feet of seawater. The second session will discuss new substantive and technical developments in disappearances on land, including the use of statistical analyses, new mapping tools and databases to guide the search for lost hikers, campers, children and Alzheimer's patients. The session will cover the capabilities of one of the newest tools in search technology, namely historic/prehistoric human remains detection dogs, who have succeeded in finding graves and burials up to thousands of years old, in a wide variety of challenging terrains ranging from deserts to coral atolls – and even under water. The session will conclude with a presentation on new developments in what is probably the most famous missing person case on land in Asia, the disappearance of Jim Thompson, the "Silk King of Thailand," who vanished in the high jungles of Malaysia in 1967.
Keywords: Please enter keywords separated by a semi colon (;). Maximum of five keywords allowed	Missing; lost; search and rescue; search optimization; canine detection

Session Convenors		
Session Convenor Name [please CAPITALISE last name]	**Affiliation**	**Email address**
Llewellyn "Lew" TOULMIN, PhD, FRGS	Missing Aircraft Search Team; TIGHAR	lewtoulmin@aol.com

Session Requirements	
Number of timeslots required Session timeslots are 1hr 40minutes long. A session may not normally occupy more than two timeslots in the programme, unless by negotiation with conference organisers.	2
Type of session proposed e.g. papers, papers with discussant, posters, panel discussion, workshop… The session organisers welcome innovative session formats. If you would like to discuss a session format, please contact the organisers at ac2019@rgs.org.	Papers/PowerPoint briefings, with one using Internet access for mapping demonstrations and one needing video and sound presentation
Special audio visual requirements A laptop with audio speakers, data projector and screen will be provided in each room. Most rooms should also have internet access (either wired or wireless). Speakers should bring their own laser pointers etc. The 2019 conference can offer facilities for video-, audio-conferencing or Skype for a very limited number of sessions – please make your request, and case for requiring this element, here.	Internet access; video/audio presentation
Expected audience Please provide an estimate of audience size. This will help to allocate rooms.	100+ (perhaps more?)
Any other special requests to be considered e.g. mobility requirements, room request, timetabling request. We cannot guarantee to honour all requests.	

Session 1 title and chair	
Session 1 Title Please enter the title as it should appear in the conference programme. Sessions with multiple timeslots should be numbered.	Missing at Sea and in the Air: Amelia Earhart, Glenn Miller, Apollo Engines, AF447, and MH370
Session Chair name [please CAPITALISE last name]	**Affiliation**	**Email address**
Llewellyn TOULMIN, PhD, FRGS	Missing Aircraft Search Team; TIGHAR	lewtoulmin@aol.com

Session presentation details	
Presentation 1 Title:	Searching for Amelia Earhart: The Latest Substantive and Technical Developments
Presentation 1 Abstract	The search for Amelia Earhart and her navigator Fred Noonan, who disappeared in 1937, is now in its 81st year, but new technical and substantive developments offer hope that a resolution or at least an advancement of the case may soon be possible. Since the maximum search area for the 38-foot-long plane is over 500,000 square miles (15 times the size of the entire island of Ireland), this is a rather difficult problem in geography, search and recovery. There are three main theories regarding this mystery, one of the most famous missing person cases in the world, as follows. First is that the aviators simply ran out of gas and crashed in the ocean on the way to their target, Howland Island in the South Pacific. Over $40 million USD in numerous expeditions has been spent on this theory, carefully mapping an area around Howland the size of Cornwall, Devon and Somerset to one-meter resolution, in depths up to 17,000 feet of seawater. (Thus this is probably the most expensive private search effort in history.) Nothing has been found. Second is that the aviators were captured by the Japanese and died or were executed in the Marshall Islands. Numerous expeditions and interviews in this island chain have turned up indicative but no definitive proof for this theory. A recent TV documentary featuring a photo apparently proving this theory has unfortunately been withdrawn, when evidence quickly surfaced that the key photo was taken two years before the disappearance. Third is the theory that the aviators turned south, landed and briefly survived on uninhabited Nikumaroro island, in what is now the Republic of Kiribati. Eleven TIGHAR expeditions have tested this hypothesis and have found substantial evidence but no conclusive proof. The latest expedition was co-sponsored by the National Geographic Society and TIGHAR, and involved seven PhD archaeologists and 40 volunteers. This innovative effort used historic human remains detection dogs to locate the suspected site of Earhart's demise, and then attempted to extract human DNA from soil, coral and tree fragments at that site. Such DNA extraction from soil (not from bones or teeth) is extremely difficult and has only been done once before in scientific history. The expedition's DNA lab is still working on this extraction.

This briefing will present the life history of Earhart, the three main theories, and the latest substantive and technical developments in the case. Included in the latter will be the apparent resolution of the sextant box portion of the mystery, in which a numbered sextant box found on the island in 1940 has puzzled Earhart researchers, until just a few months ago. The briefing will also cover the DNA results (expected before August 2019), and outline on-going and planned search operations and expeditions in 2019 and 2020.

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Llewellyn "Lew" Toulmin, PhD, FRGS is a co-founder of the Missing Aircraft Search Team (MAST), a private team which searches for missing aircraft, either in cooperation with search and rescue organizations and law enforcement during the official search, or with the families after the official search is over. MAST was written up favorably by the BBC in December 2017 as "The A-Team that hunts missing planes," and by *Smithsonian Air and Space Magazine* in September 2010, and has conducted over 40 searches and other activities since its founding as part of the famous Steve Fossett disappearance in Nevada in 2007.

Lew participated in the 2017 expedition to Nikumaroro, co-sponsored by the National Geographic Society and The International Group for Historic Aircraft Recovery (TIGHAR), and has written a technical paper on the use of sextant box numbers to attempt to solve the Earhart-Noonan case. He is the author of the *Manual on Finding Lost Aircraft* and numerous popular, technical and academic articles on his expeditions in search of missing aircraft, persons, caves, battlefields, plantations and towns.

Formerly Lew was an assistant professor of public administration at American University in Washington, DC, and was the Chair of the Section on Emergency Management for the American Society for Public Administration. He is a Fellow of The Explorers Club and served on the NASA Search and Rescue Advisory Committee. He recently worked for three years as a senior advisor in the Prime Minister's Office for the Republic of Vanuatu, and made a presentation at the RGS 2017 Annual Conference on "The Female Chiefs of Vanuatu."

Author name [please CAPITALISE last name]	Author affiliation	Author email address	Presenter?
Llewellyn TOULMIN, PhD, FRGS	Missing Aircraft Search Team (MAST); The Institute for Historic Aircraft Recovery (TIGHAR)	lewtoulmin@aol.com	Y/N Yes
			Y/N
			Y/N

Presentation 2 Title:	Search and Recovery of the F-1 Engines for the Apollo 11 First Moon Landing
Presentation 2 Abstract	In 2010, Amazon.com founder Jeff Bezos asked David Concannon to organize and lead the Apollo F-1 Engine Search and Recovery Project. The objective was to find the Saturn V SI-C first stages and F-1 rocket engines that launched the first men to land on the moon, recover one or more engines from Apollo 11, conserve the engines, and put them on public display to inspire a new generation to invent and explore. The challenge was immense: NASA did not track the rockets' fall to

Earth, they landed in an unmapped part of the Atlantic Ocean 400 miles from shore, and then came to rest three miles below the surface, half a mile deeper than the *Titanic*. Over the course of three years and two expeditions, David and his team of 100 developed new synthetic aperture sonar, deep sea cameras and lights, and other cutting-edge technologies to aid in the search and recovery. They eventually found the remnants of eight Apollo missions, 4,300 meters deep in the Atlantic Ocean, and recovered the F-1 rocket engines that launched the first Moon landing. Based on this successful project, David and his team were awarded The Explorers Club Citation of Merit for "An outstanding feat of exploration."

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David Concannon has more than 25 years of experience organizing and leading expeditions to remote parts of the world, including three expeditions to explore the wreck of the R.M.S. *Titanic* using manned submersibles, an expedition that discovered the world's deepest wooden shipwreck in the heart of the Bermuda Triangle, and an expedition to explore the H.M.H.S. *Britannic,* sister ship of the *Titanic.* His company, Explorer Consulting, is based in Sun Valley, Idaho.

Author name [please CAPITALISE last name]	Author affiliation	Author email address	Presenter?
David CONCANNON	Explorer Consulting, Inc.		Y/N YES

Presentation 3 Title:	Using Bayesian Statistical Techniques to Optimize Search Operations for Air France 447 and Malaysia Airlines 370
Presentation 3 Abstract	Bayesian search theory provides a disciplined method for planning searches for lost and missing aircraft, vessels and persons. This approach was successfully applied in the 2009 disappearance of Air France flight 447, which was discovered at the bottom of the Atlantic Ocean in 2011 at a depth of 10,000 feet after a 21-month search effort. Subsequent recovery of the cockpit voice and flight data recorders allowed for a complete understanding of what led to the accident, and improvements in aircraft systems, training and operations to avoid similar disasters. This presentation will describe the Bayesian approach and its applications in land, air and sea searches, leading up to the analysis that solved the mystery of AF447. The presentation will also discuss the more recent search for Malaysia Airlines flight 370 in the southeast Indian Ocean, including the known facts, search activity, and how Bayesian search theory could be used to guide future search efforts. *** Colleen Keller is a Senior Analyst with Metron, Inc., a scientific consulting firm with expertise in algorithms, optimization, and software supporting search operations. She first became involved in search operations during the 2007 search for Steve Fossett, who disappeared during a recreational flight in the Western US. As a result of that work, she presented papers at various technical conferences, analyzing one of the largest overland air searches in US history. Leveraging lessons learned from the Fossett search, Ms. Keller subsequently led an effort

to develop a mobile app to improve SAR field operations data collection and documentation. "SARApp" has been operational since 2011, with over 1,000 organizations using the software worldwide.

Colleen played a major role in finding the wreckage of Air France 447, optimizing search efforts using a Bayesian approach, and working on site in Paris as a Metron consultant to the French Bureau of Inquiries and Analyses (BEA). The BEA Director credited the Metron team with providing an analysis that eventually led to the wreckage site.

In 2014 Ms. Keller represented Metron in more than 30 expert interviews on radio, television, and in print discussing search operations for Malaysia Airlines MH370. She appeared on the front page of *The Wall Street Journal* and on CNN, National Public Radio, Fox News, and in special documentaries filmed by the Discovery Channel and National Geographic. She was part of a Metron team that developed a quantitative analysis attempting to track wreckage from the missing plane recovered on the eastern coast of Africa back to the point of origin. This case has yet to be solved.

Ms. Keller has worked on Metron's Search and Rescue Optimal Planning System (SAROPS), the predictive software used by the US Coast Guard to guide searches for missing vessels and persons at sea. She is an active member of the San Diego Sheriff's Department Aero Squadron and a co-founder of the Missing Aircraft Search Team. Colleen is an avid commercially-rated pilot and aircraft owner-maintainer, with interests in aerobatics and pylon air racing. She holds a Masters in Applied Physics from The Johns Hopkins University.

Author name [please CAPITALISE last name]	Author affiliation	Author email address	Presenter?
Colleen KELLER	METRON, Inc.		Y/N Yes
			Y/N
			Y/N

Presentation 4 Title:	The 1944 Disappearance of Band Leader Glenn Miller – New Developments

Presentation 4 Abstract	Anton Glenn Miller was a famous trombonist, arranger, composer and band leader in the "swing" era before World War II. In just four years Glenn scored 17 number one records and 59 top ten hits – more than Elvis or the Beatles! Miller, a Major in the US Army Air Force, was due to fly as a passenger from Britain to Paris on 15 December 1944, to link up with his band. The plane, a UC-64 Norseman, took off in bad weather and with questionable authorization, and disappeared over the English Channel. The aircraft has never been found. Theories about the disappearance include engine icing, pilot error and the possibility that RAF bombers dumping their unused bombs in the Channel hit the Norseman. German intelligence (which saw Miller and his band as a substantial morale asset to the Allies) even floated the theory that Miller had made it to Paris, was murdered in a brothel, and the airplane accident story was a cover-up. This briefing will analyze the disappearance, the possible sightings of the Norseman, and the various theories and recent developments,

including the possible discovery of the Norseman in the southwest portion of the Channel, far from the expected flight path.

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Richard "Ric" Gillespie is the Executive Director and founder of The International Group for Historic Aircraft Recovery (TIGHAR – pronounced "tiger"). Before starting TIGHAR, Ric had a long career in aviation safety, risk management, accident investigation and insurance underwriting. A pilot himself, he got into the accident investigation and prevention field after watching several friends die in a horrific multi-plane air race accident in New Jersey in 1970.

Ric and TIGHAR have investigated numerous aircraft mysteries for over 25 years, including the important 1927 White Bird (l'Oiseau Blanc) case in northeast Canada, the 1937 Amelia Earhart/Fred Noonan case, the discovery of 12 rare aircraft in a barn in upstate New York, the analysis of a B-17 Flying Fortress found in a swamp in New Guinea, the excavation of a WW II P-47 in Delaware, the investigation of a Lockheed Electra crash in Alaska, the identification and analysis of a P-38 buried on a beach in northeast Wales, and many others. He has conducted dozens of educational seminars at air museums around the US and Canada, and has led over three dozen aviation archaeology expeditions to remote areas in the US, Canada, Micronesia, New Guinea and the Phoenix islands. He has published or been featured in *Naval History*, *The Naval Institute Proceedings*, and in *Life* magazine.

Ric recently led a reconnaissance and research effort in England to investigate the possibility that the Norseman was briefly found in the SW English Channel in 1987, but was not recognized as the Glenn Miller plane. This effort is part of a larger re-investigation by TIGHAR of the case, conducted in close consultation with the author of the recent, very detailed biography, *Glenn Miller Declassified*.

Author name [please CAPITALISE last name]	Author affiliation	Author email address	Presenter?
Richard GILLESPIE	The International Group for Historic Aircraft Recovery (TIGHAR)		Y/N Yes
			Y/N
			Y/N

Presentation 5 Title:			
Presentation 5 Abstract			

Author name [please CAPITALISE last name]	Author affiliation	Author email address	Presenter?
			Y/N
			Y/N

Session 2 title and chair	
Session 2 Title Please enter the title as it should appear in the conference programme. Sessions with multiple timeslots should be numbered.	**Geographies of the Missing** (2) on Land – Forensic "Sniffer" Dogs, Statistical Mapping, the "Lost Silk King"

Session Chair name [please CAPITALIZE last name]	Affiliation	Email address
Llewellyn "Lew" TOULMIN, PhD, FRGS	Missing Aircraft Search Team; TIGHAR	lewtoulmin@aol.com

Session presentation details	
Presentation 1 Title:	Predicting Lost Person Movements Across Geographies, Using an International Search and Rescue Database
Presentation 1 Abstract	Research in predicting lost person behavior in different terrains has focused on statistical analysis of numerous cases, primarily using the International Search and Rescue Incident Database (ISRID). The ISRID database was initially based on over 16,000 collected SAR cases, and has now expanded to over 145,000 cases from numerous countries, covering over 40 subject categories. This presentation will address the latest advances in integrating various spatial patterns to predict the movement of lost persons based upon the incidents found in the ISRID. The talk will address how to use statistics, models, probability, and scenario analysis and ISRID to find a missing person. The various spatial models have been compiled into a tactical design aid or SAR software, which will be briefly demonstrated using actual case histories from large, complex searches. *** Robert J. Koester, PhD, has participated in search and rescue for 38 years both as a field responder with over a hundred searches as Incident Commander, and as a researcher. He holds a PhD from the University of Portsmouth (UK) in search theory. His seminal contributions to search and rescue include the creation and development of the International Search and Rescue Incident Database (ISRID), and the publication of the path-breaking *Lost Person Behavior*, findings from which have been presented on all seven continents. He is also the author of *Lost Alzheimer's Disease Search Management*, *Field Operations Guide for SAR*, *Instructor's Manual: Incident Commander for Ground SAR*, and *Fatigue: Sleep Management During Disasters and Sustained Operations*, among others. He is the CEO of dbS Productions, which produces SAR research and publications, and a SAR software package called FIND. Robert served for 15 years as the President of the Virginia Search and Rescue Council, and has worked as an expert SAR consultant to the US Coast Guard, FEMA, NASA, and the National Park Service.

Author name [please CAPITALIZE last name]	Author affiliation	Author email address	Presenter?
Robert J. KOESTER, PhD	dbS Productions, LLC		YES
			Y/N
			Y/N

Presentation 2 Title:	Geographies of the Missing and Lost in Yosemite National Park: Improving Analytic Techniques
Presentation 2 Abstract	Previous analysis in predicting lost person behavior in different geographies and countries has focused on the statistical analysis of numerous cases, using the International Search and Rescue Incident Database (ISRID) and other datasets. Based on the principles of lost person behavior and search theory, a SAR research team from the National Alliance for Public Safety GIS Foundation conducted a spatial analysis of ten years of search and rescue incidents in Yosemite National Park in California, with findings that have implications for the concepts of statistical and theoretical probability of area (POA) for missing persons. The key research result is the importance of collecting spatially-explicit initial planning point and point found data -- in lieu of simple summary statistics. Since this study was completed, the Mountain Rescue Association and a number of US Government agencies have begun conducting mission data collection that allows for such spatial analysis, and the results reveal promising insights for the geography of the missing and subsequent response effort. Data and a new travel-cost model that accounts for the influence of anthropogenic and landscape features on subject mobility and travel time will be discussed. The briefing will describe the findings of the Yosemite study using interactive web mapping examples to show how this new technique can improve research and field operations. *** Paul J. Doherty, PhD is the Program Manager and Chair for the SAR Working Group of the National Alliance for Public Safety GIS Foundation. He previously served as a law enforcement/SAR Ranger in Yosemite National Park, and is now a SAR volunteer and an instructor in GIS and SAR at the emergency management program at Johns Hopkins University. Paul recently worked for two years in New Zealand, bringing together emergency management, SAR and GIS practitioners, to improve SAR research and field operations. He holds a PhD from the University of California, Merced, where he wrote his dissertation on the use of geospatial information in search and rescue. He has published in *Applied Geography*, *Professional Geographer* and *Transactions in GIS*, and contributed to two chapters in the *Fundamentals of Search and Rescue* manual. Backup speakers who co-authored the Yosemite study and this presentation are: Don Ferguson, PhD, a research engineer for the US Department of Energy. Don is an expert in Wilderness Search and Rescue (WSAR) and a member of the Appalachian Search and Rescue Conference. In 2006, Dr. Ferguson began developing geospatial tools for WSAR using ESRI's ArcGIS software application. He has collaborated on the MapSAR project, to create mapping tools and instructions to enhance SAR field operations, and was the developer of Integrated Geospatial Tools for Search and Rescue, (IGT4SAR) which integrates geospatial data with lost person behavioral models to assist with WSAR Incident

Management using GIS.

Jared Doke, a former firefighter with experience in SAR, wildland fires, technical land rescue and dive rescue. He holds an MA in Geography from the University of Kansas, with a focus on GIS. He works for the National Alliance for Public Safety GIS Foundation as a GIS specialist, has taught GPS and GIS courses for SAR teams, and is a member of a Federal Emergency Management Agency (FEMA) regional urban search and rescue team. Jared has published in *The International Journal of Geographical Information Science*, *Applied Geography*, *Transactions in GIS* and *The Avalanche Journal*, and contributed to the *Fundamentals of Search and Rescue* manual.

Author name [please CAPITALIZE last name]	Author affiliation	Author email address	Presenter?
Paul J. DOHERTY, PhD	SAR Working Group – National Alliance for Public Safety GIS Foundation		Y/N Yes
Don FERGUSON, PhD	Alliance for Public Safety GIS Foundation		Y/N No, backup only
Jared DOKE	Alliance for Public Safety GIS Foundation		Y/N No, backup only

Presentation 3 Title:	Using Dogs to Locate Recent, Historic and Prehistoric Human Remains in Challenging Geographies
Presentation 3 Abstract	For thousands of years, canines have been companions and helpmates to humans, and in a recent development they are now being used to solve geographical mysteries involving lost, missing or murdered persons. Historic Human Remains Detection (HHRD) dogs of the Institute for Canine Forensics (ICF) have been successful at locating numerous recent, historic and even prehistoric human burials. Different from bloodhounds or air-scenting search dogs, HHRD dogs are trained to distinguish tiny slivers of ancient human bone, teeth (or other remains) from identical-looking slivers of wood, or even from animal bone. The dogs have worked in tropical climates, blistering deserts, and in the Alaskan wilderness. They have protected the cultural environment by proving the presence of ancient American Indian burials at proposed building sites. They have assisted police departments in locating recent crime victims, on occasion, even under water! Currently they are being utilized to find previously cremated human remains in the aftermath of massive wildfires in California. This briefing will cover the dogs' training, capabilities, limitations, certifications, and typical and unusual cases. *** Lynne Engelbert has almost 30 years of detection dog training and handling experience, and has participated in hundreds of detection cases, working with law enforcement, emergency management agencies, site developers, families, cemetery managers, churches, archaeologists, and Native American Nations. She is a member of the Institute for Canine Forensics (ICF), one of the few such historic human remains detection canine teams in the world. Lynne Engelbert and Piper, her HHRD Border Collie, are certified as a Historical Human Remains Detection team by ICF, as a Type I Human

Remains Detection team by the California Office of Emergency Services (CalOES), and as a Human Remains Detection Disaster dog team by the US Federal Emergency Management Agency (FEMA). Lynne previously worked as a rescue specialist and training officer for the Disaster Assistance and Rescue Team at the NASA Ames Research Center.

	Author affiliation	Author email address	Presenter?
Lynne ENGELBERT	Institute for Canine Forensics		Y/N Yes
			Y/N
			Y/N

Presentation 4 Title:	Geographical and SAR Analysis of the Disappearance of Jim Thompson, the "Silk King of Thailand"
Presentation 4 Abstract	Jim Thompson was one of the most famous Americans in southeast Asia in the 1950s and '60s. He rose from private to Lt. Col. in the OSS (Office of Strategic Services, predecessor to the CIA) in World War II, was decorated five times, and served as OSS Chief of Station and later as a CIA asset in Bangkok. He resurrected the Thai silk industry, amassed a huge art collection, and entertained movie stars, political leaders and celebrities every night in his beautiful house-museum. (This is still one of the top tourist attractions in Bangkok.) In March 1967, while on vacation, Thompson went for a short stroll in the high jungles of Malaysia. He was never seen again. The resulting ground search was the largest in SE Asia and generated headlines around the world. Not a trace was found. Several months later Thompson's sister was murdered in Pennsylvania. This presentation will describe Jim's life, and analyze this famous case from a scientific, geographical and search and rescue (SAR) point of view – this has never been done before. The briefing will also outline a road map to a possible solution for this 50+ year-old mystery. *** Llewellyn "Lew" Toulmin, PhD, FRGS grew up in Thailand and has worked on e-government and emergency management projects for the Royal Thai government. Always fascinated by Jim Thompson, he undertook a multi-year investigation into the disappearance which involved interviewing personnel from the 1967 search, Freedom of Information Act requests to the CIA, FBI, US Department of State, National Archives, and the Pennsylvania State Police, and research in Thailand, Malaysia and the US. This effort resulted in a comprehensive report with 100 pages of analysis and 500 pages of annexes documenting every aspect of the case, and reducing the cited possible causes of the disappearance by half. Subsequently Lew served as an advisor to a major television series making a show on the case. In the area of missing persons, Dr. Toulmin has worked on numerous missing aircraft cases, and has worked on land cases including assisting a family searching for a lost botanist in the jungles of Malaysia, and participating with the Royal Canadian Mounted Police and two US state police agencies in a land search in the western US for two missing Canadian citizens. He is a co-founder of the Missing Aircraft Search Team (MAST), a private team which searches for

missing aircraft, either in cooperation with search and rescue organizations during the official search, or with the families after the official search is over. MAST was written up favorably by the BBC in December 2017 as "The A-Team that hunts missing planes," and by *Smithsonian Air and Space Magazine* in September 2010.

Formerly Lew was an assistant professor of public administration at American University in Washington, DC, and was the Chair of the Section on Emergency Management for the American Society for Public Administration. He is a Fellow of The Explorers Club and served on the NASA Search and Rescue Advisory Committee. He recently worked for three years as a senior advisor in the Prime Minister's Office of the Republic of Vanuatu, and made a presentation at the RGS 2017 Annual Conference on "The Female Chiefs of Vanuatu."

Author name [please CAPITALIZE last name]	Author affiliation	Author email address	Presenter?
Lew Toulmin, PhD, FRGS	Missing Aircraft Search Team; TIGHAR	LewToulmin@aol.com	Y/N Yes
			Y/N
			Y/N

Presentation 5 Title:	
Presentation 5 Abstract	

Author name [please CAPITALIZE last name]	Author affiliation	Author email address	Presenter?
			Y/N
			Y/N
			Y/N