LIFE LASER FENCE FINAL CONFERENCE

3-4 March 2020, Liverpool John Moores University

Research Project Life Laser Fence: Laser systems for the prevention of food chain poisoning and minimization of chemical exposure to the environment, is funded by the EU Life programme from September 2016 to June 2020.

The Project Manager is Dr. Martin Sharp (General Engineering Research Institute, Faculty of Engineering and Technology), Co-Investigators are Dr. Jenny Sneddon (School of Biological and Environmental Sciences, Faculty of Science) and Dr. Rebecca Bartlett (Department of Electronics and Electrical Engineering, Faculty of Engineering and Technology). The project is co-ordinated here at LJMU, in partnership with industrial, agricultural and charitable organisations in Scotland, the Netherlands, and Spain.

CONFERENCE THEMES

- The challenges of wildlife and pest control
- Innovations in Agri-Tech
- The LIFE Laser Fence project: trials and outcomes
- The LIFE Funding Programme and future opportunities

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EXTERNAL SPEAKERS

STEINAR HENSKES

Bird Control Group (BCG)

At 20 years old Steinar Henskes (1991) had already sold two companies. He is an inquisitive traveller of the world, ambitious entrepreneur and Dutch judo champion. Steinar is part of the Forbes 30 under 30 class 2017, Student Entrepreneur of the World 2015 and Deloitte Technology Fast50 Rising Star. In December 2015 the King and Queen of the Netherlands invited Steinar for a lunch to acknowledge his achievements.

His company, Bird Control Group, keeps birds at a safe distance from commercial activities in more than 90 countries around the world. Customers include large multinationals, airports and governments in the following sectors: aviation, oil & gas, agriculture, fishing and industrial sites & factories. The animal friendly solutions are recognized by the World Wildlife Fund and discussed in national parliaments. Bird Control Group is recognized as the second most innovative SME in the Netherlands.

Presentation title: *The future of bird control in connected farming*

STEVE WHEELER

Bird Control Group (BCG)

Aged 24 years old Steve Wheeler (1993) joined Rentokil PLC as a service consultant and following a successful career left as an Area Manager running two branches and managing a £10m budget. In 2001 he joined the Corporate Division of Vodafone UK managing their largest UK customers before moving into the global services division to represent their largest global customers. Having purchased several properties in early 2000 Steve left Vodafone PLC to pursue his interest in property development within the rental market before moving back into the environmental services industry in 2009 and to which he has remained until present day.

Bird Control Group, the company Steve is working for, manages conflict between pest birds and commercial activities in more than 90 countries around the world. Customers include large multinationals, airports and governments in the following sectors: aviation, oil & gas, agriculture, fishing and industrial sites & factories. The animal friendly solutions are recognized by the World Wildlife Fund and discussed in national parliaments. Bird Control Group is recognized as the second most innovative SME in the Netherlands.

Presentation title: *The benefits of laser bird deterrence to UK commercial operations*

JESSICA MAGNUS

Joint Nature Conservation Committee (JNCC)

Jessica Magnus is a trained barrister with 14+ experience in working within UK Government. Since 2016 she has been the National Contact Point for EU LIFE funding in the UK (UK NCP) helping organisations to apply for LIFE funding. The NCP is based at the Joint Nature Conservation Committee (JNCC).

Presentation title: *EU LIFE Programme applying for funding in the 2020 Call*

RUTH COX

National Wildlife Management Centre,
Animal and Plant Health Agency (APHA)

Dr Ruth Cox is a Wildlife Biologist at the National Wildlife Management Centre of the Animal and Plant Health Agency. Her research interests span ecology and epidemiology in terrestrial and aquatic environments. Her current work involves research on badger ecology and wildlife disease management, as well as providing scientific advice to the Department of Environment, Food and Rural Affairs and to the Welsh Government. Recent research has included using surveillance footage to quantify badger visits to farm buildings; assessing the impact of badger predation on bumblebee nests; collaborating with the University of Sheffield in developing automated methods of wildlife surveillance.

Wildlife conservation and management require cost effective methods of monitoring wild animal behavior. The use of remote still and video surveillance cameras in wildlife research and management has grown rapidly in recent years, however there are a number of challenges associated with using such methods. In particular, still and video surveillance can generate enormous quantities of data, which is laborious and expensive to screen for the species of interest. Recently research was begun to develop a novel deep-learning approach which aims to automatically identify and isolate species-specific activity in still images and video data. The recent publication demonstrates proof of principle, and discusses future research and applications.

Presentation title: *Wildlife Surveillance Using Deep Learning Methods*

FELIPE PIZARRO RUIZ

Angel Camacho Alimentacion

Felipe Pizarro Ruiz is Chief of Integration and Development of Farmers at Angel Camacho Alimentacion, a major food company based in Spain. Three Angel Camacho farms have been trial sites for the Laser Fence Project. At the conference, Felipe will be presenting the CAMACHO INTEGRA Pesticide Reduction Programme; a project focused on reducing and controlling agrochemicals used growing olive trees. The overall aim is to ensure zero chemicals in the final production during the harvest.

Presentation title: *CAMACHO INTEGRA Pesticide Reduction Programme*

DR. CLAIRE BURKE

Liverpool John Moores University

Dr. Claire Burke started life in astrophysics and has recently been working to bring astronomical image analysis and data processing techniques to environmental applications. Using drones and machine learning we can detect, analyse, classify and gain knowledge about animals and landscapes in detail never seen before. Claire will talk about how this technology can be applied in agriculture.

Presentation title: *Agricultural monitoring with drones*

PRESENTERS
FROM THE LIFE LASER FENCE PROJECT TEAM

DR. MARTIN SHARP

Liverpool John Moores University – LIFE Laser Fence Project Manager

Martin Sharp is manager of the Laser Fence project. Martin has been working with Industrial Lasers since completing his PhD at Imperial College, London, in 1982. With both industrial and academic experience of developing laser applications and managing multi-partner R&D projects, Laser Fence has proven an exciting Agri-tech based project.

ALEX MOORE

Liverpool John Moores University

Alex joined the Life Laserfence programme in 2019, after completing a degree in Mechanical Engineering and while finishing a PhD in remote sensing. Working as a research assistant, he undertook laser trials with colleagues at the farm test sites before moving to a more hands-on role as a research fellow.

DR. JENNIFER SNEDDON

Liverpool John Moores University

Jenny Sneddon is a vertebrate ecologist and although teaching has dominated her academic life at Liverpool John Moores University, she has managed to retain interests in a virtual fencing programme for sheep using acoustic cues, and of course, in the Laser Fence programme. Her interest has always focused on how environments impinge on animals.

DR. DAVE PARISH

Game and Wildlife Conservation Trust

Dave has always had an interest in ecology and conservation. After his zoology degree at Bangor University he studied the breeding biology of wading birds at Durham and quickly thereafter joined The Game & Wildlife Conservation Trust where he has remained for the last 23 years. Dave is now head of lowland research for the Trust in Scotland, which includes the Scottish Demonstration Farm at Auchnerran. The main theme currently being investigated across multiple projects, in addition to applications for laser scaring devices, is understanding the problems faced by farmland wildlife and developing new management techniques to alleviate them.

DR. SANTIAGO MARTINEZ RODRIGUEZ

IRIS UAV Services S.L.

Dr. Santiago Martinez Rodriguez has a degree in Forestry Engineering from the University of Vigo (Spain) and a PhD in Forestry Engineering from the University of Santiago de Compostela (Spain). His doctoral thesis, consisting of 4 publications in scientific journals, is based on the use of near-range photogrammetry for 3D digital documentation of heritage elements. Among other places, he has worked in emblematic locations such as the Catedra de Santiago de Compostela, in Spain.

He has a Drone Pilot license and is a founding partner of IRIS: an air service company with drones. Currently Santiago combines his work at IRIS with a position as an operator of onboard sensors in airplanes and helicopters, in emergencies, for the multinational company Babcock, whose headquarters are in the UK.

RAFAEL COVEÑAS PÉREZ

Cudema

Rafael Coveñas Pérez holds an undergraduate degree in Agronomic Engineering from Seville University and a Masters degree in Agronomic Engineering (including one year in Perugia University, Italy), focused on food safety. He has worked at CUDEMA SL since 2016. Initially he worked on a Zero Residual olive project, and then started working in Globalgap, IFS, BRC audits/consulting and technical advice to farmers. Alongside this he has worked on LIFE Laser Fence for two years, delivering trials and analyzing results, together with Angel Camacho Alimentación at their farms.

MARTA MÚGICA

VOLTERRA

Marta Múgica studied Forestry Engineering at the Polytechnic University in Madrid. After finishing her Bachelors degree, she realised the importance of the forest to fight the climate crisis, and decided to go to Copenhagen to study the MSc in Climate Change at Copenhagen University. After two years, she moved back to Spain and started working at Volterra. At Volterra, she works in different Life projects providing technical support and working on the dissemination and communication of project results.

JAN KARSSIES

Bird Control Group

During his Master Studies in Aerospace Engineering at Delft University of Technology, Jan Karssies (1992) joined Bird Control Group for a student job as Certified Installer. Soon, he was sent all over the world to do site assessments, automated laser installations and provide product trainings to international clients. After his studies, Jan continues to work fulltime for Bird Control Group as a Field Engineer.

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