PRESENTATION ABSTRACTS

SESSION 1A – HAZARD IDENTIFICATION

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This panel has been asked to respond to seven questions regarding wild suid disease hazard identification, from a global rather than local perspective. The first three questions address suid ecology, distribution and trend or management. There are 19 suid species belonging to six genera. Suid diversity hotspots include SE Asia and SS Africa. These regions deserve attention since different host species might harbor a diversity of new disease agents, while direct or an indirect contact to domestic pigs exists. However, the most successful suid is *Sus scrofa*, both the wild ancestor (Eusarian wild boar) and its domestic relative, the pig. Current knowledge on wild boar and pig distribution, trends and management will be summarized.

The aims of questions 4 and 5 are identifying the main pig-related diseases. An incomplete list would include viral diseases such as ASF, CSF, Aujesky's disease and others; bacterial diseases such as animal tuberculosis and brucellosis; and several parasitic diseases. Knowledge on the key diseases is progressing rapidly and is providing more insight into disease monitoring and disease control options.

Finally, questions 6 and 7 address risk assessment and knowledge gaps. Pathogen-related gaps include insufficient knowledge on pathogenesis and pathogen circulation in wild suids, particularly regarding endemic disease, and insufficient knowledge on strain variability in pathogenicity and transmissibility. Host-related knowledge gaps include pig/wild suid demographics (census, spatial ecology, etc.), husbandry and farming practices; variability in host susceptibility depending on species and other factors (e.g. co-infections); and contact patterns and means of transmission, both within and between compartments. Furthermore, there is a need for effective control tools to manage feral pig populations in the event of an epidemic; to address the risk of peri-urban feral pigs and to keep on improving modelling capacities in order to predict what will happen if an emergency disease infects feral pigs or wild boar.

SESSION 1B – CONSEQUENCES ASSESSMENT

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France

Like in many other wildlife diseases the consequences of diseases in free-ranging pigs are manifold and may range from quite mild to very severe, Those effects can be best described by dividing them

into three groups: socio-economic effects, zoonotic potential and, in the case of free-ranging swine with some reservation, conservation concerns.

With respect to swine diseases adverse effects will in general most likely focus on socio-economic losses to stakeholders in the agriculture and food business. Not surprisingly this sector will have a strong voice whenever any disease related scenario jeopardizes their sectoral interests. Free-ranging pigs can certainly carry zoonotic infectious agents which are a public health issue and as such may influence public opinion on free-ranging swine. Conservation concerns for wild or feral pigs due to infectious diseases have not been observed in available literature and are not considered to be significant.

SESSION 2A – EXPOSURE ASSESSMENT

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Australia

This presentation considers how free ranging pigs (particularly Sus scrofa) can expose other species to disease. Key areas to understand the issue include an understanding of free ranging pig distribution, how disease is maintained in populations and how disease transmits to other species.

Our knowledge of local distributions of pigs is considerably less certain and surveys of local knowledge and habitat modelling (e.g. with regression based aproaches) can assist.

A key knowledge area required to assess exposure risk is a comprehensive understanding of disease ecology. Simulation/process modelling approaches and field studies can be pursued and can yield valuable data at a reasonable cost. Field studies are predominantly cross sectional surveys (observational studies). These traditional study designs can be combined with newer and innovative molecular approaches to enhance the level of detail possible from such studies. A recent case study of Salmonella spp. transmisison in a large and remote feral swine population is presented.

Disease surveillance in wild pigs can be difficult due to their cryptic nature and because they are simply difficult to sample, with capture or lethal sampling techniques frequently required. Passive surveillance will remain a mainstay of wild pig disease surveillance. Despite this, active surveillance using both random and targeted methods does occur.

Little definitive research has thoroughly explored disease transmission between wild pigs and other species although many examples exist. A case study of field data collection and modelling of disease transmission between pigs and domestic cattle is presented. There is increasing evidence that pigs pose a risk to human health through diseases such as Brucellosis and Leptospira.

SESSION 2B – RISK MITIGATION

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France

Key words: one health, hunting; barriers; sustainable management, large scale practicability, social acceptance, native versus non-native species.

The surveillance and study of wildlife diseases are necessary steps aiming at understanding the driving forces of diseases emergence and persistence in wildlife and at clarifying the potential threat to domestic animals or humans. When wildlife populations play an effective role of reservoir or spillover host, it raises the crucial question of managing the risk of transmission to target species. The management of diseases in free ranging swine population has been particularly explored during the last 30 years given their potential role in maintaining and/or transmitting diseases having an important impact on livestock or human health. In the present talk we first consider the objectives of managing pathogen transmission at the interface of wild, domestic and human populations. We more particularly discuss in which occasions the management of the wild reservoir is an interesting option. We then examine the different management strategies either aiming at manipulating the pathogen or the host dynamics. Diseases emergence and persistence are often considered directly related to swine abundance. At first sight, depopulation through hunting (or poisoning) thus appears as a simple and direct way for controlling wildlife reservoir. Nevertheless, disease control through wildlife depopulation is seldom satisfactory. First, even though quite high in swine species, the hunting pressure is generally considered as not enough to reach the theoretical thresholds for diseases eradication within one hunting/reproductive season. The high turnover maintained by intensive hunting is even expected to aggravate the persistence of some diseases. Second, additional problems rise for optimal management in the field since tools for estimating abundance or density of wild boar are missing. And finally social acceptance, safety (e.g. regarding poisoning or contraception) and cost-efficacy consideration are also important components of the equation. Movements and contacts between infected and susceptible individuals are driving the spread and persistence of many diseases. Given the spatial behaviour of the species, these contacts are mainly occurring at a local scale and rely on the presence of forest and population continuums. Disease spread is poorly stopped by secondary roads and small rivers, only fenced motorways and large rivers or lake have a relative efficacy, especially if combined with low density. In that respect fences have also a very relative efficacy, especially when considered at a large scale (ex: fence at the border between Poland and Belarus for ASF) and in large forested continuums. Disturbance associated with collective hunting may aggravate disease spread by modifying animal behaviour, i.e., causing exceptional animal movement on long distances or increasing the mixing between infected and susceptible animals. The role played by artificial feeding on disease dynamics is a complex issue. Feeding grounds represent a risk of pathogens introduction and spread through swill feeding and animal aggregation or mixing. Especially enclosed hunting areas, encouraging intensive feeding high density and aggregation, are associated with the highest risk of disease prevalence, persistence and spill over to livestock. On

the other hand, feeding sites are used for vaccine baits delivery against CSF and the ban of feeding grounds within or around infected area is not necessarily efficient for preventing disease spread. When available, vaccination may be a powerful tool for preventing disease spread or persistence in wildlife or decreasing the risk of transmission for target species. Nevertheless, this option depends on long term development and registration process and on the capacity to deploy oral mass vaccination at la large scale. To assess the efficacy of such strategy is also crucial for adapting the design of vaccine delivery to the local conditions (habitat, non-target species, density…etc). The management of viscera is important to consider for avoiding disease transmission through the contamination of the environment and scavenging. Carcass and live animal translocations between countries are also extremely risky practices that should be controlled with caution by sanitary authorities. Since managing wildlife diseases is challenging, we also should examine alternatives/complementary strategies to the management of the reservoir. Managing the interface between wild and domestic animals is certainly the biggest challenge, especially when dealing with extensive farming sharing the same habitat with wild swine and pathogens surviving in the environment. The information to the public, hunters and farmer is lastly a key point for improving public awareness and biosecurity process. We finally summarize the current gaps of knowledge and research needs regarding this issue.

SESSION 3A – INTEGRATING SCIENCE & MANAGEMENT OF FREE-RANGING SWINE DISEASES

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Australia

This presentation will consider how science is being utilised to inform policy for managing diseases in free ranging swine. Wild pigs pose a significant concern in terms of their role as hosts, vectors and reservoirs of diseases of livestock (e.g. foot and mouth disease, classical swine fever, African swine fever, bovine tuberculosis); zoonoses (e.g. trichinellosis, brucellosis, Japanese encephalitis, Q fever, leptospirosis) and to other wildlife (e.g. trichinellosis, tuberculosis). In addition, to their role in disease epidemiology, wild pigs also cause significant agricultural damage and environmental impacts. On the other hand wild pigs may also be valued as a resource for recreational hunting and commercial harvesting. These differing perspectives mean that managing wild pigs poses significant challenges for policy makers.

Scientific research can, and is, making a strong contribution to wild pig control policies and programs. Key drivers and current areas of research on wild pigs will be briefly reviewed. Several case studies will be presented. The importance of economic and sociological research will also be considered. Community engagement is increasingly being recognised as a key element of effective pest animal control. This involves ensuring availability and adoption of new products and capacity to manage pest animals like wild pigs; understanding and influencing policies and social drivers in control; encouraging cooperation; and overcoming economic and social barriers.