

Mini-feature

Humans and animals in refugee camps

The seven articles in this FMR mini-feature explore the roles that animals play in the lives of people who have been displaced. Evidence from animal–human interactions in refugee camps across the world demonstrates the challenges that face both human and animal populations. Better understanding of their needs and greater cooperation between humanitarian and animal welfare organisations can inform how space is organised, risks are mitigated and relations with host communities are managed.

This **16-page mini-feature** is available online in English, Arabic and Spanish at www.fmreview.org/economies.

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It is available in print in English only. Email the Editors fmr@qeh.ox.ac.uk for print copies or print your own: www.fmreview.org/economies/humans-animals-camps.pdf.

All articles in the mini-feature are also available individually online in all three languages in HTML, PDF and (English only) audio format.

This mini-feature has been published as part of FMR issue 58 which is available in English, Arabic, Spanish and French free of charge. (Note that the French edition does not include the mini-feature.) If you would like print copies of the full issue in any language, please email the Editors at fmr@qeh.ox.ac.uk.

Understanding risk in human–animal interactions

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Humans and animals in refugee camps

Benjamin Thomas White

More research is needed, across disciplines, to better understand the important and varied roles that animals play in the lives of people in refugee camps.

Animals play an important role in human experiences of forced displacement and this is particularly visible in settings of encampment. Camps are often shaped by the need to accommodate animals as well as humans: 'goat barns' and animal markets are a distinctive architectural feature of Sahrawi camps in Algeria, for example.¹ Domesticated animals can play a range of economic and cultural roles in the life of a camp, as camels do in Dadaab, Kenya.² Displaced people's interactions with wild animals can create dangers for both – for example, the semi-formal settlements of Rohingya refugees in Bangladesh have literally put refugees in the path of elephants.³ Animals may figure in representations of camps, as when journalists mention rats as a shorthand for squalid conditions, and refugees themselves may say they are being treated 'like animals'. Research in this area remains limited, however. In the *Oxford Handbook of Refugee and Forced Migration Studies* there are only a few passing references to animals, while in *Forced Migration Review* only one short article has specifically focused on the human–animal relationship.⁴ Practitioner literature highlights the importance of animals to refugees' well-being but focuses mostly on livestock.⁵

This special FMR feature has two aims. First, to highlight for practitioners and policymakers the variety and importance of human–animal interactions in camps, drawing on the experiences of an international team of contributors. Second, to spur further research on the topic, and suggest some of the directions it might take. The feature emerges from a series of meetings, funded by the Wellcome Trust,⁶ between practitioners from organisations including UNHCR (the UN Refugee Agency), Vets Without Borders, Art Refuge and researchers from disciplines including architecture, history and geography, as well as the

veterinary and medical sciences. A second strand of meetings, with a refugee reference group, is taking place in collaboration with the Scottish Refugee Council.

The project has grown out of my own research on a historical case study: a camp at Baquba, near Baghdad, where occupying British forces at the end of the First World War accommodated nearly 50,000 refugees from Anatolia.⁷ The refugees were accompanied by thousands of animals: large (horses, mules, cattle), smaller (sheep and goats) and tiny (lice). The camp's medical regime for humans started, as they arrived, with the elimination of lice; like the veterinary regime for animals, it also involved close observation, with isolation and treatment of the sick. The animals that arrived with the refugees affected the siting and shape of the camp. British attempts to promote economic activity among the refugees were built around animals, from commercial dairy production with the refugees' own flocks to hiring out teams of human and animal labour – numbering as many as 2,500 men and 1,000 oxen – for waged work outside the camp. Competition over grazing became a key source of friction between refugees and the host population. British plans to close the camp, meanwhile, involved assembling and caring for still more pack and draught animals, both for transporting its human inhabitants and for resettling them more durably elsewhere.

Many of these issues recur in more contemporary cases, as the pieces here show. But they are only a starting point. For a fuller understanding of the roles animals play in the lives of people in refugee camps, research is needed at different scales (from micro to macro) and across many different themes. Veterinary and medical approaches are an obvious place to begin as human health and animal health are intertwined, for example through zoonotic disease (disease which can

be transmitted from animals to humans). But those connections are not simply biomedical. The art therapy work done in camps in Calais and Nepal by a clinical psychotherapist in our network illustrates how much animals matter in the psychological and emotional health of humans. Precisely **how** they matter will vary: in some places people believe that 'a home without a dog is just a house', while in others a dog in the home would be not just unwelcome but an outrage. The cultural significance of different animals will influence the psychological impact they have – and it will also affect, and be affected by, their role in refugees' social and economic lives. This in turn will inform the ways in which refugees organise (or reorganise) spaces around the needs of their animals, from their own shelters or nearby enclosures to the camp itself and its surrounding landscape. And camps, even urban ones, are always dynamically situated within larger natural environments. As the article by Derek Robertson shows, the environmental factors that contribute to human and animal migration, and shape the experience of migration, are closely connected. This piece, by an artist who has also taken part in scientific studies of migration, indicates the range of different disciplines that can

contribute to our understanding of the subject. We would welcome responses to this initial stage of our own project from practitioners and researchers in any of the many and diverse fields which are of relevance.

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The role of livestock in refugee–host community relations

Charles Hoots

In South Sudan, tensions arose when refugees arrived with their livestock, disrupting the existing relationships between the local population and nomadic peoples. Understanding the relations between all three groups of people and their livestock was key to finding solutions.

The Republic of South Sudan became the world's newest country in July 2011, separating from Sudan after decades of civil war. However, the status of border regions in Sudan's Blue Nile and South Kordofan states was not fully clarified in the peace agreement that opened the way for South Sudan's independence, and both regions saw hostilities rekindled in September

2011. Aerial bombardment and ground offensives drove nearly 125,000 people, along with tens of thousands of cattle, sheep and goats, from Blue Nile state to seek refuge across the border in South Sudan.

Living in four camps in Maban County in Upper Nile state, the refugees' relations with the heavily outnumbered local community have sometimes been difficult,



UNHCR / O. Pouilly

Gendrassa refugee camp, South Sudan.

with livestock playing an important role in the conflicts. Through efforts involving State and local government and both refugee and local communities, however, United Nations (UN) agencies and non-governmental organisations (NGOs) were able to forge agreements between the various groups to reduce tensions.

The people and their animals

The Maban people – the host community in this area – number approximately 45,000.¹ They live in small groups of mud and thatch homesteads, with each group connected loosely to a number of others, forming what are often referred to as villages. Nearly all Maban families keep some livestock, typically one to four cattle, up to six pigs, up to eight sheep and goats, and up to ten chickens, while about two thirds of Maban households own at least one cow. All these animals are free to graze and scavenge during the day. Although livestock and their products are consumed only minimally by the Maban people, their animals play other important roles. They can be sold for cash or bartered in an emergency, and are an important component in the payment by the groom's family to the family of his prospective wife. Livestock, in addition to cash, may also be given as compensation in the event of injury, murder or accidental death of a community member. The Maban people also grow a variety of crops on small plots

which are located half a kilometre or more from their dwellings in order to prevent damage by the livestock living in and around the villages.

By mid-2012, refugees from Sudan's Blue Nile state were estimated to have brought around 100,000 cattle and 150,000 sheep and goats to Maban County, although by the

end of that year up to half of the refugee livestock is thought to have perished, stressed from the long trek and unused to the wetter conditions of Maban. While the refugees in Maban County come from numerous linguistic groups from Sudan's Blue Nile state, the largest single group – and the only people to bring large numbers of livestock with them – is the Ingessana. At home, the Ingessana depend on their animals for use in agriculture and transport, for milk and for meat on special occasions, and as a source of cash in emergencies, a means of securing a wife, compensation for damages, injury or death inflicted on third parties, and a symbol of social prestige.

The Mbororo nomads – a subset of Sudan's Fulfulde-speaking population – follow an entirely nomadic lifestyle, moving between Blue Nile state, South Sudan and neighbouring Ethiopia in search of grazing. The Mbororo arrive in Maban County with their cattle, sheep and goats at the onset of the dry season in November, returning north in May as their cattle do not tolerate the heavy rains that begin then. The Mbororo use their livestock in similar ways to those of the Maban and Ingessana people but depend almost exclusively on their livestock for survival. With the uncertain political situation following South Sudan's independence in 2011, perhaps only a few hundred Mbororo entered South Sudan between November and

December 2013, many fewer than normal, but their cattle still far outnumbered those of the local Maban and were comparable in number to those owned by the refugees.

In March 2014, Vétérinaires sans Frontières (VSF) Germany estimated livestock numbers owned by local Maban people at 20,000 cattle, 40,000 sheep and goats and 20,000 pigs; by Blue Nile refugees at 50,000 cattle and 80,000 sheep and goats; and by Mbororo nomads at 50,000 cattle and 50,000 sheep and goats.

Sources of solidarity

The indigenous peoples of Blue Nile state in Sudan and Maban County in South Sudan, although linguistically and culturally diverse, have a cultural affinity, and the solidarity between these communities has been reinforced by their mutual suffering during the long Sudanese civil war. The general attitude of the Maban people towards the Mbororo nomads is best described as 'cautious'. The Mbororo keep to themselves, often speak no other local languages and move about freely, exciting admiration but also rumours about their lifestyles.²

The Mbororo are an important source of milk for the Maban population, however, whose own cattle produce little or none during the dry months. The Mbororo sell the milk in local markets and use the cash to purchase those few necessities their animals cannot provide, as well as additional cattle. The nomads also pay local government and communities for grazing rights in the areas they traverse.³

Sources of conflict

Maban host community and the Mbororo: Grazing arrangements between the Mbororo and local Maban communities are well regulated by long-standing arrangements. The animals of the highly mobile nomads are robust but, like all animals, are capable of spreading infectious diseases between the communities through which they pass. However, the local Maban population recognises that the Mbororo generally are more proactive in the care of their livestock – notably by keeping them up to date on vaccinations – than are the local

Maban and the refugee communities, and the local people are therefore relatively unconcerned about the risk of disease.⁴ More ominous for the Mbororo are the political implications of South Sudan's independence. South Sudanese officials have occasionally spoken of forbidding the crossing of Mbororo from Sudan into South Sudan, questioning their political loyalty and citing them as a security risk. Up to at least late 2014, however, the grazing rights paid by the Mbororo in South Sudan were considered too important to lose and so their movement continued relatively unhindered.

Maban host community and the refugees:

Despite the general empathy felt by the Maban population towards the Blue Nile refugees, the latter's large human and animal populations inevitably created tensions. The most serious and immediate problem proved to be the damage caused by the refugees' livestock to the crops of the Maban communities. The subsistence nature of farming in the area meant that the loss of these crops posed a serious risk of food shortages. The degradation of common livestock grazing areas and water sources in Maban was another source of discontent, which increased in step with the number of refugee animals. The lopping of branches from trees to use as feed and the cutting down of trees for fuel further aggravated the problem. Theft of local livestock also increased and the refugees were invariably blamed for it.

My own project, funded by VSF Canada and implemented by VSF Germany, focused on refugees' livestock in acknowledgement of the fact that the loss of these animals to disease would make it impossible for the refugees to resume their way of life once the war was over.⁵ However, resentment by the local population, much of it legitimate, motivated us – and most other agencies – to include the much smaller local population as beneficiaries alongside the refugees. This was done in various ways, for example by establishing village-level boreholes, medical clinics and animal vaccination and treatment programmes. VSF also purchased and slaughtered sheep and goats to decrease the

population pressure from these and then distributed the meat, focusing on the most vulnerable among the local population.

Nevertheless, tensions flared and local communities began imposing hefty fines on refugees whose animals damaged crops.⁶ As many as 20 human deaths were attributed to fighting related to crop damage. As a result, by mid-2013 by mutual agreement the refugees moved their herds to a few sparsely populated grazing areas located as far as 60km from the refugee camps. The system worked well overall. The animals were giving very little, if any, milk so the refugee families did not miss this, and having the animals away from the camps, in an area designated for them by agreement with the local Maban communities, significantly reduced tensions. Conflict resolution protocols were put in place in these areas. In the village of New Guffa, for example, when crops were damaged, a fine was imposed on the animal owner. Specific times were set aside for local animals and then refugee animals to water at the few watering points. The positive outcomes suggest that negotiating such an arrangement in other refugee/livestock situations should be given higher priority in the early stages of a crisis.

Refugees and the Mbororo: Relations between the refugees and the Mbororo nomads are characterised by mistrust. Khartoum's use of local militia to quell rebellions in various parts of Sudan has led the refugees to suspect Mbororo irregular military units of fighting in Blue Nile state. To avoid problems, in 2013 the South Sudanese authorities instructed the Mbororo to pass well west of the refugee camps when moving into South Sudan. The Mbororo thus maintained their access, while the government and local communities still benefited from payments for grazing rights and trade with the nomads but occasions for conflict with the refugees were minimised.

Conclusion

Unfortunately, such relations are highly vulnerable to shifts in the political and military environment. When civil war

broke out in South Sudan in December 2013, renewed rivalries and uncertainties soon drew refugees and host communities in Maban County into unlooked-for conflict. Food aid to the camps was suspended for weeks at a time, triggering increased theft of food and animals by refugees, subsequent retaliation by locals, and the deaths of several livestock herders. Soldiers fighting in Blue Nile state returned to the refugee camps to protect their families, while local communities formed a militia to protect theirs.

Refugee interactions with host communities are complex, and adding livestock to the equation makes them doubly so. While tensions and conflict are inevitable, and finding a new equilibrium under very difficult conditions is fraught with challenge, well-considered arrangements and compromises can be found to mitigate them. The rapidity with which solutions were found and effectively implemented in South Sudan in 2013–14 offers hope that this could be achieved again in Maban County, and could also be possible in similar situations elsewhere. Knowledge of the cultures involved, including an informed awareness of the relationship between the people and their animals, will always be key to understanding the potential for conflict and the appropriateness of possible solutions.

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1. According to South Sudan's 2008 census.
2. For example, the Mbororo are widely reputed to be skilled sorcerers.
3. This reportedly totalled the equivalent of US\$5,000 across Maban County in the 2012–13 dry season.
4. The nomads purchase vaccines mostly in Sudan and vaccinate their own animals; being so dependent on their cattle, this is a good insurance policy for them. Local Maban populations in normal times are cut off from supplies for half of the year and have little to no refrigeration capacity to store vaccines; as a result, they are not in the habit of vaccinating.
5. The author worked in Maban County from June 2013 until May 2014; the programme ended in August 2014. For more information about the Maban refugee situation, see author's blog at <http://bit.ly/animalspeoplepathogens02082016>
6. Fines amounted to the equivalent of over US\$1,000 per offence around Yusif Batil camp.

Working equids in refugee camps

Patrick J Pollock

Refugee camps offer good opportunities for cooperation between humanitarian and animal welfare organisations for the benefit of displaced people and their working animals.

It is estimated that there are over 100 million working equids – horses, donkeys and mules – in parts of the world that are underserved by veterinary care: 55 million horses (84% of the world population), 41 million donkeys (98%) and 13 million mules (96%). These working horses, donkeys and mules provide transport and agricultural energy and in many cases are the sole means of generating income for their owners, many of whom live in poverty. It is estimated that a remarkable 50% of the world's population is reliant on animal power as its main source of energy for agriculture and transport. There are many groups, non-governmental organisations and individuals working to improve the health and welfare of working equids across the globe. This work includes the provision of veterinary care and training for local veterinary surgeons and equid owners. However, to date little is known about the numbers of working equids associated with displaced people and in refugee camps. The 'Humans and animals in refugee camps' project is seeking, among other things, to determine the numbers of working equids travelling with displaced people and to quantify the needs of these animals and the challenges they face.

While healthy, well-managed equids are assets, many owners are too poor to access information about animal care and often live far from any form of veterinary care. This may be particularly the case where people have been displaced, whether to refugee camps, informal settlements or other locations, where their access to veterinary care may be poor or non-existent.

In 2003, approximately 14,000 donkeys carried families displaced by war and natural disaster into the Abu Shouk refugee camp in Darfur, Sudan. Eighteen months later, only around 2,300 were reported to have survived. The Society for the Protection of Animals

Abroad (SPANA) estimated that 84% had died through lack of access to feed. To date few, if any, specific guidelines or protocols have been published to better manage situations such as that reported in Sudan.

In resource-limited settings, animals take second place to humans, which is perhaps how it ought to be. But at Abu Shouk, as veterinarian Tess Sprayson noted, "For want of better collaboration between humanitarian aid and animal welfare agencies, the donkeys died an unnecessary and miserable death, while their owners lost what, in many cases, was their sole means of transport or of earning a living"¹ – a critical lifeline to a future outside the camp. In Darfur, SPANA intervened to provide fodder and basic veterinary care, and the remaining animals in the Abu Shouk camp survived. However, very little data exist on the numbers of working equids used either to travel to or from refugee camps anywhere in the world. Furthermore, little is known about the fate of working equids after their owners have reached a camp.

Since it is recognised that once refugees lose their livestock they are less likely to return home,² it is time to undertake work to determine the scale of animal displacement in order to understand the fate of these animals and to develop frameworks for responding to the presence of working equids. Humanitarian and animal welfare organisations are well suited to working together; they have similar needs, often use similar equipment and have a common interest in 'one health'³ (the collaborative effort of multiple disciplines – working locally, nationally and globally – to attain optimal health for people, animals and the environment). To date there are very few examples of this;^{4,5} however, refugee camps represent a great opportunity for veterinary and animal welfare agencies

to make a difference for the long-term benefit of displaced people and their animals. Co-operation might extend to the development, integration and evaluation of screening tools, shared diagnostic methods, medicines, vaccines, surveillance systems and policies for the prevention, management and control of zoonotic diseases.

With an unprecedented number of displaced people in the world today, it seems logical to assume that the number of affected animals has also increased. The Field Information and Coordination Support Section of the UN Refugee Agency, UNHCR, tracks the number of people forced to flee each year and since equids are readily identifiable, recording their presence and number should be relatively simple. The development of simple screening tools that would allow non-veterinary personnel to flag the presence of equids and other animals in need of

veterinary intervention has the potential to offer considerable welfare benefits for this forgotten population of animals, and for the people that rely so heavily upon them.

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Sheltering animals in refugee camps

Lara Alshawawreh

Animals play an important role in many people's lives in displacement. Camp planners and managers need to take animals' needs into greater account in order for displaced people to continue to benefit from this interaction.

One of the key challenges in emergency response is planning long-term support. Animals in refugee camps, however, suffer not only from a lack of long-term support but in most cases are also neglected during the initial response. The welfare of humans is of course the priority – but animals contribute to that welfare.

In most emergencies, refugees will bring their animals with them to the camps or will start buying and trading animals soon after settling into their new shelters.¹ In the initial stages of emergencies, refugees may have to rely heavily on support organisations but in time people start searching for ways of making a living. Animals provide a significant contribution to human livelihoods, whether for pastoralists, those who sell animals or animal products or provide feed and other services, people who use animals for transportation, security and

cultural activities, or simply families who are dependent on animals for food or income. Animals are even used as a way of storing financial capital in the absence of access to banks. Cooperation between refugees, the host community, the host government and support organisations is very important to provide the care that animals need. A number of aspects relating to the camp or settlement need to be considered to ensure its appropriateness for sheltering animals – aspects such as access to water points and grazing land, and the veterinary support that is essential for both their health and human health.

Key considerations

Refugees understand the importance of animals in establishing their new life in camps. Examples of refugees sacrificing the materials they are given for their

June 2018

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own shelters to build animal shelters – to provide protection from extreme weather, predators and theft – include refugees in Kenya's Dadaab camp, Afghan returnees in 2009, and Bangladeshis displaced in 2009 by Cyclone Aila.

Land rights are a frequent concern. Refugees and internally displaced people no longer have control over the land they and their animals occupy. Pre-planning, good management and establishing avenues for good cooperation with all stakeholders are important elements in securing practical solutions.

Another aspect to consider is refugees' cultural norms regarding their interaction with their animals. Some prefer to keep their animals inside their household plots, while others do not; some communities have specific rules and taboos in dealing with certain animal species. This information is crucial for creating successful settlements, taking into consideration owners' preferences regarding the location of their animals.

It is also important to consider the gender, age and health status of those family members who are responsible for taking care of the animals. If these family members are individuals usually considered more 'vulnerable', then the animal shelters should be close to the human shelters for the sake of secure and easy access. This should be balanced against the potential risks to human health of the close proximity of animals to human shelters – risks such as transmission of disease from animal to human.

Climate conditions affect the design decisions for sheltering the animals. In hot climates, good ventilation and shade are essential, while well-sealed structures should be used in areas with cold climates. The safety of the animals is also affected by their structures' location; lockable shelter doors may be necessary in areas where animal safety is a concern.

One of the few examples of livestock shelters provided by an external organisation comes from the Pakistan emergency response following the 2005 earthquake. The surviving livestock were put in communal shelters after being vaccinated to prevent spread of disease.



Donkey shelter built by Za'atari camp residents.

and a new programme was established to introduce 'cob' – a mixture of clay, sand and straw – as an earthquake-resistant construction technique for livestock shelters.

Za'atari camp in Jordan provides a recent example of how refugees bring different species of animal into their living space. For many residents, caged birds bought at the camp's market provide a sense of home, as many of the residents used to keep birds back in Syria. Chickens are kept for food and income, and perhaps companionship. Donkeys and horses are used for transporting people and goods. Residents have built animal shelters adjacent or close to their own shelters using corrugated sheets and/or canvas – two of the few available and affordable materials.

Za'atari camp, whose structure and layout have altered over time as the camp has grown, allows residents to have animals and to build shelters for them. In purpose-built Azraq camp, the next largest camp for Syrian refugees in Jordan, residents are not allowed to build additional constructions; there, birds are the only animals allowed in the camp, since they do not require additional spaces within shelters.

Recommendations

The Livestock Emergency Guidelines and Standards (LEGS) project has published standards and guidelines for designing, implementing and evaluating livestock interventions.² Unfortunately, these are not used widely in emergencies, whether from lack of awareness of their existence, shortage of funding and/or time, or a combination of factors. There needs to be

a more concerted effort to introduce the guidelines and standards to organisations, aid workers and stakeholders, at the same time consulting the end users on how to enhance the practical application of LEGS.

The best way to provide appropriate aid to humans and animals after disasters is to consult the people themselves – they are the users of the space and the owners of the animals. They know the materials needed to build appropriate shelters for their own animals, as well as the preferred design, and many will already have the necessary construction skills.

Constructing appropriate animal shelters will reduce the possibility of health problems within settlements. The level of pre-planning that can be done for animals'

shelter requirements in displacement will depend on the nature of the emergency and cooperation with the host community. However, raising owners' awareness of all issues relating to their animals' health and shelter needs will help displaced people in refugee camps to co-exist with their animals in safety while continuing to benefit from interacting with them.

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1. The author's research focuses primarily on human shelters but evidence about the need for animal shelters has tended to emerge alongside the human needs.

2. www.livestock-emergency.net

Understanding risk in human–animal interactions

Sara Owczarczak-Garstecka

There needs to be better understanding not only of the importance of animals in the lives of displaced people but also of the potential risks incurred by human–animal interactions and how best to mitigate these risks.

Animals in refugee camps can improve people's health and well-being. They are a source of food and a commodity which can be sold or exchanged or kept as an investment. Animals can also be a source of psychological comfort,¹ can potentially help refugees to preserve cultural identity and can serve as a marker of normal life. For example, Syrian refugees in camps in Jordan are prepared to spend a substantial part of their monthly income on a singing bird because such a bird – in Syrian culture – is what turns a house into a home. However, close proximity of animals and humans can be a source of risk, and understanding of the risks posed by animals within refugee camps is generally poor.

A public health model published in 1991 by Dahlgren and Whitehead offers one approach to mapping the potential sources of hazards associated with animals in refugee camps.² The model shows how health inequities are shaped by a combination of cultural, political, environmental and social factors as well as by individuals'

attributes. These factors influence both the risks to an individual who is in contact with animals and also how they experience an illness and their ability to access the resources needed for recovery.

Political/organisational environment:

At the widest level in this scenario is the international and national political climate – the wars and fighting that dictate the global movement of people and their animals (including who is displaced and where the camps are built) – and the policies of the organisations that run and support camps. All these aspects will have an impact on human and animal health, and the effectiveness of the management of human–animal interactions will depend on which agencies are on the ground and the degree of expertise that they have in this area. For example, vaccination alone may not suffice in entirely preventing outbreaks of diseases within herds (as the success of a vaccination programme depends also on aspects such as

the coverage and timing of the vaccination programme) but it can reduce risk.

Physical environment: The environment through which people travel and the setting of the camp itself can contribute to the burden of risk. For instance, Afghan refugee camps established in early 1990 on the western boarder of Pakistan were situated on marginal waterlogged terrain, which encourages malaria. As Afghanistan had run a successful malaria control programme prior to the Soviet-Afghan war, the refugees arriving in Pakistan had no immunity to the disease. Families who arrived with animals, and camps with more livestock, experienced greater prevalence of malaria as the livestock provided mosquitos with an easy source of blood, which boosted the mosquito population.³ More broadly speaking, animals that flee with their owners may be exposed to new diseases to which they have no immunity or may themselves carry diseases to which local animal populations are susceptible.

The built environment can also have an impact on the level of risk in human–animal interactions. The presence of animals is seldom factored into the design of refugee camps. In Za'atari refugee camp in Jordan, for example, people developed their own ways of keeping poultry, often by transforming human accommodation. Lack of suitable, designated spaces for animals may result in poor sanitation, increasing the risk of diseases to the animal population and transmission of certain diseases to people.

Social environment: Social factors shape a person's exposure to risk. For example, culture, tradition and religion influence how animals are killed and by whom, and how their meat is prepared and consumed. This in turn could alter the risk of a range of infectious diseases and the risk of physical injury linked to handling animals.

Attitudes and beliefs about practices around animals, such as perception of efficacy of vaccinations, are also influenced by the immediate community and family, and could shape how likely a person is to engage in behaviours which could reduce

risk. In addition, a person may need to rely on their social networks (for finance, information, contacts and so on) in order to access resources – such as veterinary care – which could help to reduce risk. Individuals living in a camp with an extended family may therefore be able to access help more readily than someone who is isolated or who only arrived recently. Social support could also reduce the impact of the loss of an animal and improve recovery from an injury or illness caused by animals.

Individual attributes: Stress linked with evacuation and the camp environment is likely to compromise the immunity of animals and people. Under prolonged periods of stress, humans and animals may be more susceptible to certain diseases carried by cattle (like brucellosis or tuberculosis) which in normal circumstances may not pose the same risk. The profile of risk is dependent on the range of animals kept in the camp; where dogs and livestock are kept in close proximity to each other and to humans, for example, certain types of tapeworm may become a risk for humans. Presence of cows adds to the risk of injury due to crushing or being kicked, and dogs may bite. An individual animal's temperament, species/breed and habituation to handling will also contribute to the risk that this animal poses. Meanwhile, a person's gender, age, personality, health and so on are likely to modify their risk. For instance, in many cultures, women and girls are more likely to be responsible for small ruminants (such as sheep and goats) and poultry whereas men tend to care for livestock.

The model outlined above could be used to systematically map risks (and benefits) of human–animal interactions in the context of forced migration and to determine how these risks could be mitigated, whether at the level of decision making about location of camps, at the camp design, construction and management level, or at the individual level. Although there are existing policies on how to assess such risk, Livestock Emergency Guidelines and Standards (LEGS) provides comprehensive guidelines, checklists and

'decision trees' related to protecting livestock during different stages of an emergency response.⁴ The UN Refugee Agency, UNHCR, has also developed a handbook on livestock keeping and animal husbandry which covers similar areas, again focusing primarily on livestock and poultry.⁵ UNHCR's Camp Planning Standards do not offer explicit guidelines for provision of space for animals but suggest that planned sites should a) avoid areas where the environment may increase the risk of animal-borne diseases like malaria and b) provide space for small-scale cultivation.⁶

Surveillance of animals that live in and near refugee camps is the first step in risk management. Counting and health assessments for animals could include local veterinarian professionals, international veterinary non-governmental organisations and local animal-keeping communities trained in disease detection. While assessing risk in keeping livestock is crucial, the models need to include identifying risks in interactions with other animals that live in camps as well (such as dogs, cats or birds which may live nearby). More broadly, the involvement of veterinary

professionals in planning, setting up and running refugee settlements could help with assessing basic needs and coordinating local responses, which may include education and the provision of food, water, shelter and basic medical care for the animals.

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Animal and human health in the Sahrawi refugee camps

Giorgia Angeloni and Jennifer Carr

Health challenges in the Sahrawi refugee camps in the Algerian desert are faced by both human and animal populations, and therefore responses must benefit both.

The Sahrawi refugee camps are situated close to the Algerian settlement of Tindouf and have grown from camps to de facto cities since mass displacement of the Sahrawis in 1975. Following conflict in the former Spanish Western Sahara, thousands of people crossed the border into Algeria, settling in refugee camps. Forty years later, the UN Refugee Agency (UNHCR) estimates the camp population at approximately 173,600 refugees.¹

Each case of mass forced displacement has a unique set of circumstances and

resulting health challenges. However, from the perspective of the international humanitarian community, at the time of crisis the humanitarian concerns are namely that – human concerns. The needs of people in acute distress shape the form of the response; food, water, shelter, protection, sanitation and medical care are provided – for humans. The presence of animals is not ignored; indeed it is often noted in official reports and needs assessments conducted by humanitarian agencies. A League of Red Cross Societies mission in June 1977, for

June 2018

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example, reported an increase in the numbers of animals in the Sahrawi camps over the previous year – an increase that enabled the occasional addition of meat to diets.

Alice Wilson's research suggests that most Sahrawi refugees in exile were familiar (from childhood or more recent experience) with life in a nomadic encampment, with sedentarisation being a fairly new process in the mid-1970s and early 1980s.² However, during the initial mass displacement, few animals were transported by the refugees and by the 2000s opportunities for mobile pastoralist practices remained constrained, not least by the inhospitable environment.

Life in a refugee camp in the middle of the desert deprives the population of the hope of food self-sufficiency, leaving them largely dependent on international aid. In fact, non-supported survival in the desert is guaranteed only by nomadic practices and any enforced sedentarism of the refugee camp disrupts and constrains these practices. However, it also provides opportunities for the creation of new responses led by the refugees themselves.

The role of animals in human nutrition

Recent studies of the Sahrawi population have suggested that the chronic emergency status in the camps, reflected in a food basket based mainly on calories than on a diversification of diet, is struggling to counter widespread nutritional problems. The camps were intended to be temporary by the refugees and international agencies alike, so mechanisms to produce higher quality food systems were not established. One of the main problems present in the camps

today is the increasing prevalence of anaemia in women of childbearing age. UNHCR is leading interventions to reduce numbers of children with severe acute malnutrition, and the World Food Programme (WFP) is working to improve prevention and treatment of anaemia, and to reduce stunting and moderate acute malnutrition among children under five years of age and pregnant and nursing women. With anaemia rates in the camps as high as 39% among children and 45% among women of reproductive age, these are pressing challenges, not helped by

insecure funding which can lead to diminished rations and inadequate supplies of interventions such as High Energy Biscuits.³ Furthermore, the results of UNHCR's March 2018 assessment, which found there to be a population of over 170,000 – far higher than the 90,000 given in official statistics – also suggests that

the population has been long underserved.

Despite the Sahrawis' overall dependence on food aid, their livestock has for centuries enabled their survival in the Western Sahara and continues to be a hallmark of their cultural identity. Animal breeding by refugees increases the availability of animal proteins and can help address the nutritional problems of the camps. About 80,000 goats and sheep and 80,000 camels are present in the camps. Goats and sheep are fed almost exclusively with domestic organic waste, while camels spend part of their life in pasturelands close to the refugee camps. A lack of suitable pasture means there are limited opportunities to raise large numbers of camels for sale, so the importance of livestock (camels, but also goats and sheep) in refugee camps lies



A veterinary clinical visit, Saharawi refugee camp.

predominantly in its potential contribution to increase opportunities for self-sufficiency.

Attempts to establish projects for improved animal feeding to support livestock production (which is currently insufficient) and livestock-derived diets in the camps should require little or low technology, and refugees can take the skills they learn with them if they leave the camps. The creation of plantations of the tree *Moringa oleifera* is one such project. More high-tech projects such as hydroponics may provide a provisional increase in food production but they require higher levels of investment and non-sustainable energy sources from outside the camps. These systems are not easily transportable, are susceptible to deterioration and need maintenance which is difficult in the local context since the systems are not part of local culture.

The Sahrawi refugees are renowned for their resilience, religious tolerance and organisational skills, and the refugee population is far from passive. Several refugee-initiated projects take place. The above-mentioned *Moringa oleifera* plantations in the Hammada desert is one example, supported by several non-governmental organisations (NGOs) including Vétérinaires Sans Frontières (VSF) Italy and Africa '70. This leguminous source, able to grow in extremely dry conditions, has wide-ranging benefits for both human and animal nutrition, being very rich in proteins, vitamin C, iron and other macro and micronutrients, and offers a sustainable solution for diet diversification and enrichment.

The presence of a large number of animals needs a local veterinary system to ensure the best possible animal and human health. Since 1996, a Veterinary Directorate, now composed of 24 Saharawi operators in the camps, has been supervising slaughter procedures, surveying the dominant zoonoses,⁴ giving clinical assistance to smallholders, raising awareness of good animal management practices and working on the prevention of infectious diseases. Resources may be limited but the desire among NGOs and refugees alike to stretch capacities and maximise resources is strong. Brucellosis, tuberculosis, Rift Valley fever, echinococcosis, rabies and

toxoplasmosis are some of the major zoonoses, which must be addressed in a collaborative effort by veterinarians and medical NGOs providing health care. Alongside the veterinary infrastructure, a hospital and dispensary infrastructure with six health centres supports the human population of the refugee camps. Disease associated with animals is not limited to livestock; pets can also be a source of infection, although these animals are mainly free-roaming cats and dogs rather than fully domesticated animals. Recent studies conducted with Sahrawi people and cats have shown high incidences of antibodies specific to the parasite that causes toxoplasmosis, in both people and cats.

Approaches such as *Moringa* production benefit both human and animal populations and offer a holistic response to exceptional circumstances such as those of the Sahrawi refugee camps. A review of the food basket needs to take livestock challenges into consideration, and the camp health systems need to accommodate both human and animal health, in order to maximise limited resources and stimulate effective collaboration between different NGOs, as well as between the NGOs and refugees themselves. The Sahrawi refugee camps are an exceptional case, and the roles of humans and animals within refugee camps as a broader topic merits further research.

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The authors thank Sara Di Lello and Alessandro Broglia for their input into this article.

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A field study of migration and adversity

Derek Robertson

The migratory journeys of birds can reflect the same complexity of issues that trigger and affect human displacement.

I am privileged to spend my days in wild and beautiful places painting birds. I am fascinated by them: by their abstract shapes, their song, their behaviour, their migrations. I have sketched them and helped in scientific studies of their migratory journeys from the Arctic right down into Africa. In 2015 I watched reports from beaches on Mediterranean islands as desperate people came ashore, and I recognised these islands as the same places where I had watched and sketched migratory birds. Here now were people seeking refuge in order to survive, taking the same lines of flight as the birds that I had drawn.

Subsequently, over the course of a year, I travelled through the UK and Europe, through the Mediterranean to the Middle East. On my travels I spoke to refugees, to locals and to volunteers and I sketched what I saw: the people, the places and the birds. One of the interests that ecologists have in birds is that they are important environmental indicators. If the populations or migration of the birds change, this points to changes in the environment that could be of grave concern. The issues are complex but academic studies draw a link between climate change, conflict and large movements of refugees – all of which in turn cause further social and environmental stress. In these complex systems, ecologists look to the birds to indicate what might be happening to our world. How we address the intertwined issues of climate change and displacement will define who we are and what societies we will live in for generations to come.

During my travels, I taught art classes in refugee schools in Jordan [see image overleaf], organised art activities for families at refugee-welcoming events in the UK and held art engagement events for unaccompanied children in ‘the Jungle’ camp in Calais. Each had a different character and focus. In Jordan,

I tried to show the possibilities for personal development and identity, especially for women and girls in a very patriarchal society; in the UK, I wanted to help provide a sense of engagement and welcome where paintings on a wall could indicate a sense of ‘home’ and belonging; and in Calais I held events that helped engage very distrustful youngsters in conversation with the charity volunteers to see what clothes, help or services they needed.

There is a degree to which birdwatchers (and bird artists) are always birdwatching so when I sat down to draw in and around the camps, I looked out for birds – and drew them. It was poignant to see migrating birds flying over the fences that constrained their human, migratory counterparts but in their crossing of seas and borders, there were other comparisons, including the ensnarement of unfortunate individuals and the predation by birds of prey of smaller, exhausted birds. Both birds and people often travelled according to geography: the shortest crossing, skirting the edge of mountains, travelling through cover or from established provisioning points. Both found that a tended and man-made landscape offered little room for them and when I was sitting in unofficial camps pitched on waste ground, park edges or marginal ground between roads, I found people and birds brought together in scrubby edgelands where they could shelter and from which try to move onwards.

In a world where we are challenged by topics that can be hard to think about, people often close their minds. Art can bring together ideas in a way that makes people look at the ordinary afresh. And it can appeal directly to people’s emotions, helping to provoke an appreciation of a shared humanity and of the shared challenges that we need to address.

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Derek Robertson

What Colour Are The Wheatears?

Wildlife artist Derek Robertson visited and interviewed Syrian, Palestinian and Iraqi refugee families who had settled in Jordan. He held a series of art classes for Syrian schoolchildren at a refugee school where he talked about his artwork and the links between artwork, environment, animals and the people who live and work in the landscape. “The children called out the names of the colours for me in Arabic – which are scribbled into the sketches. Later that day, we drove through the desert and I sketched migratory and resident species of wheatears.”

The population of Jordan has doubled in recent years and over-extraction of water has led to oasis towns reverting to desert. The effect has been measured immediately in a dramatic change in breeding bird populations and the consequences on migrating birds which now have to try to cross larger areas of arid ground.

Inviting responses

This mini-feature emerges from the ‘Humans and animals in refugee camps’ project, which is supported by a Wellcome Trust Seed Award in Humanities and Social Science 2016 [award reference 205708/Z/16/Z]. The mini-feature aims to highlight for practitioners and policymakers the variety and importance of human-animal interactions in camps, drawing on the experiences of an international team of contributors, and to spur further research on the topic.

The authors welcome responses to this initial stage of the project from practitioners and researchers engaged in any of the many relevant fields. An email address, at which authors may be contacted, is included with each article.

For more general queries about the project, please email the project coordinator, Benjamin Thomas White, at BenjaminThomas.White@glasgow.ac.uk



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