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Working equids and their welfare status in disaster risk management: Invaluable support to resilience and recovery in Nicaragua

Background

Brooke is an international charity that protects and improves the lives of horses, donkeys, and mules and the communities that rely on them. We work with owners, communities and policymakers to bring about lasting improvements to the lives of working animals.

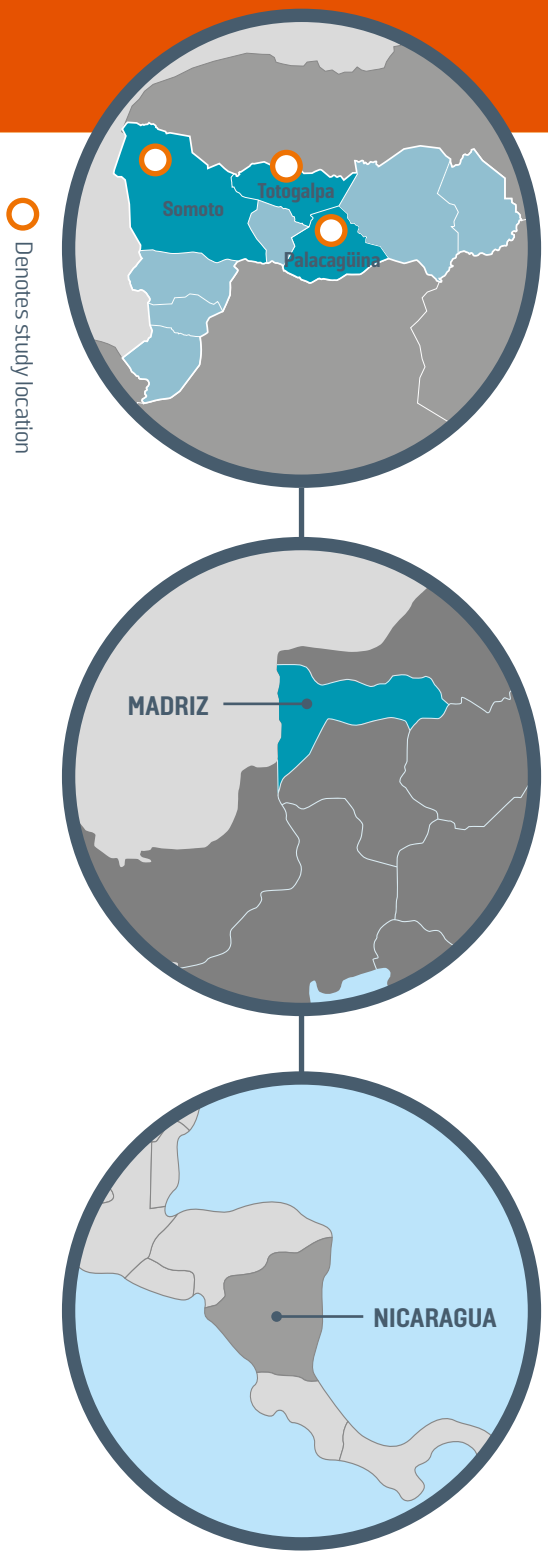
Figures show that 39 million people were affected by natural disasters in 2008.[1] The acceleration of global climate change is prompting an increase in extreme weather events and natural disasters. In recognition of this, the United Nations has set 'Climate Action: urgent action to combat climate change and its impacts' as number thirteen of its Sustainable Development Goals.[1] The increased frequency of extreme climate events such as droughts and flooding has been highlighted as a particular threat to livestock productivity, food production and food security.[2] The effects of climate change are predicted to have greater effects on particularly vulnerable communities. Agriculture, including subsistence farming, is seasonally dependent and livestock owners, reliant on ecosystem services, are likely to be heavily impacted.[3] Many of these vulnerable global communities, either directly or indirectly, rely on working animals for domestic and commercial purposes.

Nicaragua is extremely vulnerable to climate-related and other natural disasters, including earthquakes, floods, droughts and hurricanes.[1,4] In recent years, disasters have become more frequent and intense in Nicaragua's Dry Corridor, an area in the north and west of the country that is highly vulnerable to extreme climatic events. Long periods of drought, followed by intense rains, affect the livelihoods of vulnerable families who depend mostly on subsistence agriculture.

The consequences of disasters can be wide-reaching, causing loss of life to people and animals and damaging housing, infrastructure, livelihoods and the environment. Community resilience determines the degree to which people can recover from the effects of a disaster. Many factors contribute to community resilience, and working animals can play a role – they can provide invaluable support when disaster strikes and afterwards, allowing communities to rebuild their lives.[5] They can represent independence, income, access to essential supplies, transport and peace of mind.

Nicaragua has the largest population of equids in the region.[6] The role of working animals and, more specifically, working equids in the stages of disaster risk management and community resilience is hugely under-researched, and assessments of the impact of disasters on working animals' welfare in such research are non-existent. This study therefore aimed to address this research gap by exploring how working equids contribute to the stages of comprehensive disaster risk management in the event of sudden-onset and slow-onset disasters (with a focus on community resilience) and the welfare status of working equids in Nicaragua. Slow-onset disasters are those that emerge gradually over time, for example, droughts. Sudden onset disasters emerge quickly or unexpectedly, such as hurricanes.

Methods



The study took place between May and September 2022 in the Somoto, Totogalpa, and Palacagüina municipalities of the Madriz department, close to the border with Honduras. The communities involved had been affected by hurricanes Eta and IOTA in 2020.

Semi-structured interviews took place with 201 working equid (horse, donkey and mule) owners or family members who use and care for them (male=69%, female=31%). Most households visited (95%) were in rural locations. To gain additional in-depth viewpoints on the contribution of working equids and their welfare, six focus group discussions were held with 38 people from six communities. Key informant interviews were also conducted with 31 members of Municipal Disaster Prevention Committees, which include representatives from City Hall, the ministries of health, education, and economy, firefighters, police, community leaders, political secretaries, and the Agricultural Technology Institute.

The welfare of 249 working equids was assessed using Brooke Latin America and Caribbean's Animal Welfare Behaviour and Observation Tool (AWBOT). By using a structured questionnaire and practical elements of scientific observation, based on the Five Domains model of animal welfare (nutrition, health, behavioural interactions, physical environment and mental state),[7] AWBOT provides a subjective overview of an individual's welfare state. Each indicator is comprised of three fields of analysis centred on direct observations of the animal's physical and biological condition, the management practices of their owners and the technical verification of the resources available to achieve the situation described by the owners. Equid welfare data was collected at the time of the study. It was beyond the scope of this study to collect equid welfare data before, during and after a disaster.

All data was collected using KoboToolbox, a digital application. The project was reviewed by Brooke's Animal Welfare Ethical Review Body.

Key results:

- **94% of households acknowledged that working equids and their needs are not considered in emergency plans at a community level.**
- **90% of the households acknowledged that equids generally suffer some kind of physical risk while helping families in the response and recovery stages of a disaster. Equids are exposed to injuries, fractures, and burns during forest fires and are swept away during floods. Also, health issues such as colic and respiratory problems in equids are frequently observed after a disaster.**

Nicaragua equid population (FAOSTAT 2022)

Contribution of working equids before, during and after slow-onset disasters

PRE-DISASTER	RESPONSE	POST-DISASTER
Preparation of the land for sowing (ploughing), transfer and purchase of agricultural goods.	Facilitate solidarity between families and communities by taking food or water reserves where they have drastically decreased.	Assist in rehabilitating crops by transporting new seedlings and water for the new production cycles.
Soil fumigation before planting crops such as beans, corn, and vegetables.	Support the movement of cattle when there is a food shortage and they must temporarily look for other areas for grazing.	Equids may be sold, with the extra income used to meet families' needs in terms of health and food or invested in improving their productive capacity.
Transport water and goods such as construction materials and tools and transport families to markets.	Transport the head of the family to the local market or other communities to buy food and medicines.	Support the economic reactivation of families by facilitating the transport of produce to local markets or outside the municipality.

Contribution of working equids before, during and after sudden-onset disasters

PRE-DISASTER	RESPONSE	POST-DISASTER
Transfer of reserves of food, water, and other animals to safe areas.	Transportation of people and goods. Support the evacuation of sick and injured adults and children to safe areas or shelters.	Use horse and/or donkey carts to transport materials to repair damage to buildings such as roofs.
In early warning phases, they are used for reconnaissance work in new areas with high-risk potential.	Support search and rescue operations.	Used to clean up debris and relocate families when the damage is very severe.
Support soil conservation work such as live barriers, uneven ditches to drain excess rainwater and transfer of stones to control erosion.	Transport water, food, harvest products and firewood.	

Quotes from key informant interviews

"We have used horses to move pregnant women from the communities [in] Jocomico that is bordering Honduras, so they can be attended in health centres, especially during heavy rains."

Community leader

"In 2015, a year of severe drought, donkeys were used to transport water from community to community."

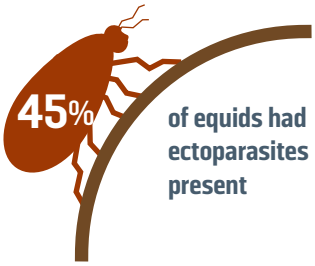
Somoto Mayor's Office

"On one occasion, due to heavy rains in the municipality, it [heavy rains] caused the flooding of a stream, leaving the inhabitants of the community without communication. A horse was used to deliver food and other supplies to the families on the other side of the stream."

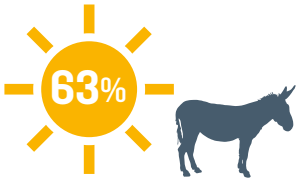
Somoto firefighter

Key equid welfare issues

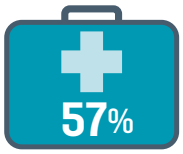
of the equids presented a body condition below what is considered an acceptable range.



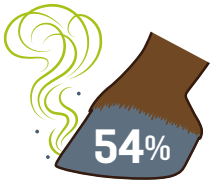
of equids had ectoparasites present



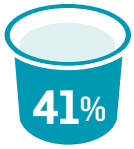
of equine resting areas had few trees or buildings where the animals could take shelter from high temperatures, and more frequent cleaning practices of those areas that do exist were needed.



of equids had healed body lesions. Among the most common wound care practices, the use of healing agents, soap or ointments is mentioned. However, 43% of households still report not carrying out cleaning practices on exposed areas if they consider that the degree of severity is not critical.



of equids presented solid compaction in parts of their hooves and a bad odour when removing sediments, which could indicate the presence of hoof infections. Only 2% of those surveyed mentioned that they carry out daily hoof cleaning, with many stating they do not have safe tools to do so.



of equids displayed tiredness and thirst when offered water. Households report that their water-offering practices are restricted due to the availability of water sources and that water is offered once or twice a day.

Conclusions and recommendations

- We encourage national and international development organisations that work with climate-vulnerable communities to acknowledge and incorporate the role of working equids into their plans, programmes and projects as part of their strategy to sustain their human and environmental welfare initiatives.
- There is a lack of studies that directly examine or link the role of working animals and disaster resilience. On a global level, research that specifically explores the contribution of working equids to community disaster resilience would be valuable to provide an evidence base for their inclusion in policies and guidelines. Brooke does not endorse advocating for equids to work more. However in order to advocate for the inclusion of working animals in policy, evidence of their contribution is required.
- No published studies exist that explicitly investigate the impact of disasters on the welfare of working animals. Understanding this will help communities, animal health practitioners, international non-governmental organisations and policy makers identify animal welfare challenges and work towards improving their welfare.
- The National System for the Prevention, Mitigation and Attention to Disasters (SINAPRED) has declared Nicaragua a multi-threat nation. Earthquakes, storms, droughts, and floods, among other phenomena, are constantly affecting the country. Brooke is working with SINAPRED, and first steps are being taken at national level on the inclusion of working animals in policy.

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