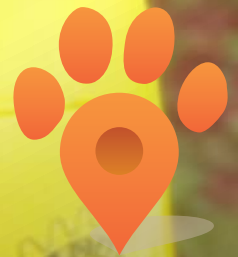


# 2021

## ANNUAL REPORT



**MISSION  
RABIES**



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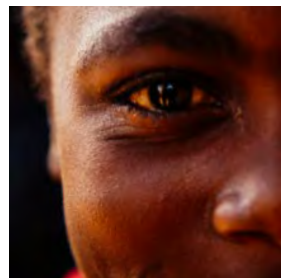
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Thank you

## OUR TRUSTEES

Dr Ian Battersby,  
*Specialist Medicine Consultant*

Phill Daubeny,  
*Dogs Trust*

Clarissa Baldwin CBE,  
*Dogs Trust*

Dr Rachel Foster,  
*Consultant in Acute Medicine and Infectious Diseases*

## OUR PATRONS

RT Hon Sir Desmond Swayne DT VR MP

Lord Cranborne Viscount Cranborne



**2021** was another challenging year – but together, we made it to the end and achieved so much along the way. In these short 12 months, your incredible support has helped to vaccinate over 270,000 dogs, educate over 950,000 children, and empower more than 27,000 teachers and 240,000 community members against rabies to prevent deadly outbreaks.

Around the world, we worked with governments, volunteers, and other charities to eliminate the disease at its source. In India, where we have worked since we launched in 2013, effective rabies control has been implemented across Goa, and in 2021 the state was declared the country's first Rabies Controlled Area. Whilst in Malawi, despite schools being closed periodically, our

education teams delivered prevention lessons to over 150,000 more primary school students than in 2020.

From the entire team and the communities in which we work, thank you for helping improve the lives of people and dogs alike, and getting us one step closer to our shared goal: Zero human rabies deaths by 2030.

Rock on!

Dr Luke Gamble BVSc DVM&S FRCVS  
*Founder & CEO Mission Rabies*



# THE PROBLEM

*Rabies is one of the world's oldest and deadliest diseases.*

A disease so deadly, that when symptoms show, it is already too late – death is certain.

Every ten minutes a child dies from rabies. The disease kills at least 59,000 of the poorest and most isolated people every single year – the majority of which are under 15.

99% of these cases are caused by an infected dog bite. Fear of the disease leads to the persecution and death of millions of healthy dogs every year.





# VACCINATE

**CREATING A RABIES-FREE WORLD**

By vaccinating 70% of any given canine population, we can build herd immunity, break the transmission cycle, and stop the disease in its tracks.



# EDUCATE

**DELIVERING KEY LIFE-SAVING LESSONS**

By teaching those most at risk about rabies, bite wound treatment, and bite prevention, we can give people the tools they need to protect themselves.



# ELIMINATE

**INVESTIGATING THREATS CASE BY CASE**

Through rabies surveillance, tracing human bite cases back to their animal sources, and quarantining and testing suspected rabies cases, we can reduce the threat.

# THE SOLUTION

*Science shows that the most effective long-term rabies control strategy is through vaccinating dogs.*

That is why since 2013, Mission Rabies, in collaboration with local governments and NGOs, has been delivering large-scale action to eliminate the disease in global hotspots.



**958,332**  
CHILDREN  
EDUCATED IN 2021

**277,022**  
DOGS  
VACCINATED IN 2021

**2.2**  
THOUSAND

**PRIMARY  
SCHOOLS  
VISITED**

in at-risk areas to teach  
children key lessons in  
rabies prevention.



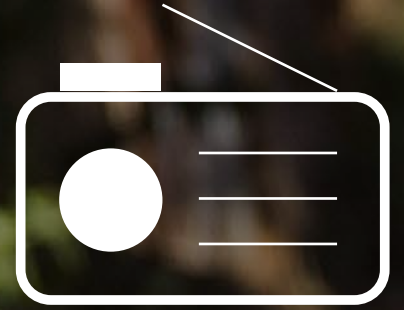
**27,561**  
**TEACHERS  
TRAINED**

in delivering prevention  
lessons to reach more children with  
life-saving knowledge year on year.



**1,115**  
**WORKSHOPS**

held for community leaders  
and members to empower them  
to act for rabies control.



**4.2**  
**MILLION  
LISTENERS**

reached nationally in Malawi  
with a radio drama that highlighted the  
importance of canine vaccination for both  
animals and people.







# HEADLINE NEWS

## INDIA: GOA DECLARED A RABIES CONTROLLED AREA

In the Indian state of Goa, our eight-year effective state-wide public health initiative has successfully eliminated the virus from most parts of the state and led to Goa being the first Indian state declared a Rabies Controlled Area. The announcement was made in 2021 after zero human rabies deaths were reported since 2018.

[Read more on page 16](#)

## MALAWI: RECORD-BREAKING YEAR IN EDUCATION

A key part of our work is delivering rabies prevention to school children. In 2021 in Malawi, despite the interruption of school closures due to COVID-19, our education programme continued in 746 schools, reaching 635,553 children, and totalling more than 3 million since the programme began in 2015.

[Read more on page 18](#)

## INDIA: WAR AGAINST RABIES IN BENGALURU

Supported by the experience and technology developed by Mission Rabies, the densely populated city of Bengaluru is implementing effective rabies control. In 2021, over 99,000 dogs were vaccinated against rabies, in the first large-scale campaign of its kind in the city. The local hotline - India's second only dedicated rabies helpline - handled over 1,600 calls.

## INDIA: REBUILDING AFTER CYCLONE TAUKTAE

Cyclone Tauktae left a trail of devastating destruction in Goa in 2021. With the highest winds ever recorded across the state, lives were lost, people were injured, and homes and businesses were left in ruins. Many went without power for over 72 hours. Our teams assisted charities that had been affected by helping to rescue animals, clear fallen trees, replace roofs that had blown off, and build temporary animal shelters.





# THE APP

# VOLUNTEERS



Our large-scale projects would not be possible without the support of volunteers. Whether they're helping us with data collection, vaccinations, or marking of dogs, our volunteers provide vital support to our missions and help save lives. Meet some of these heroes who joined us in Tanzania in 2021.

Courtne, UK  
*Outreach project: Tanzania*

*"It was one of the most amazing experiences of my life. Being able to work with a charity where you see first-hand the difference you are making and the impact it has on local communities reminded me so much why I love being a veterinary nurse."*

Sherrie, USA  
*Outreach project: Tanzania*

*"I am so thankful to have been part of this massive vaccination campaign during the most challenging times. I am also honoured to have found such an amazing group of people. Everyone should do their part in something they're passionate about."*

Rob, UK  
*Outreach project: Tanzania*

*"Overall, it was a great experience, and I felt that we made a difference. The vaccination drives in Tanzania have been happening for six years now and the 2021 campaign has had the largest number injected so far."*



## RECORDED 1.6 MILLION VACCINATIONS SINCE 2013

In collaboration with our sister charity Worldwide Veterinary Service (WVS), we harness smartphone technology to deliver efficient and cost-effective One Health initiatives. The WVS Data Collection App was

developed in response to the challenges encountered during large-scale canine vaccination campaigns, allowing our teams and other organisations to monitor and manage field teams, capture data, and report

the impact of interventions. Since its launch in 2013, the system has recorded over 1.6 million dog vaccination events and thousands of rabies case investigations and transformed the mass vaccination landscape.



# FLAGSHIP PROJECTS

Across India and Malawi lie our flagship projects. Located in rabies endemic areas, headed by permanent teams, and supported by local governments, these

One Health initiatives are implementing effective and sustainable rabies control for the communities in which we work.





**ZERO**  
**HUMAN RABIES DEATHS IN GOA SINCE 2018**

*Mission Rabies launched in India - the world's hotspot for rabies.*

Since 2013, we have worked in the state of Goa and the city of Ranchi, in collaboration with local government, to implement an effective rabies control strategy and eliminate canine-mediated rabies.



*Goa State:*

**Eliminating human deaths**

There have been no human deaths in Goa from rabies since October 2017, decreasing from a peak of 17 deaths in 2014, when our project began. An analysis by Mission Rabies and the US CDC performed in 2021 using the RabiesEcon model, estimated 153 deaths have been prevented between 2013 and 2021 at a mean estimated cost of £8,572 per death averted (as predicted by the model).

**The next critical phase**

In 2021, Goa was the first Indian state to be declared a Rabies Controlled Area, setting a precedent for other states to follow. We also transitioned from a focus of rabies elimination to long-term maintenance of freedom; a stage of rabies control never reached in India until now.



**75,917**  
**DOGS VACCINATED**

**214,379**  
**CHILDREN EDUCATED**

- **900 DOG RESCUES ATTENDED**
- **3,857 CALLS TO OUR RABIES HOTLINE**
- **210 DOGS TESTED FOR RABIES**

*Ranchi City:*

**Long-term protection**

In Ranchi, our focus has been stabilising and reinforcing the established herd immunity within the city's dog population, as well as increasing the public's awareness of rabies. In 2021, over 4,200 dogs were spayed and neutered, totalling more than 96,000 surgeries since 2013. Rabies prevention lessons were also delivered to over 4,100 primary school students and teachers, and 3,719 community members. These efforts have helped the city achieve zero human rabies deaths since 2017.

- **3,935 PEOPLE EDUCATED**
- **4,269 DOGS STERILISED**



**746**SCHOOLS  
VISITED**635,553**CHILDREN  
EDUCATED*Young pet owner at vaccination campaign in Malawi*

*Malawi remains one of the world's poorest countries and a hotspot for rabies,*

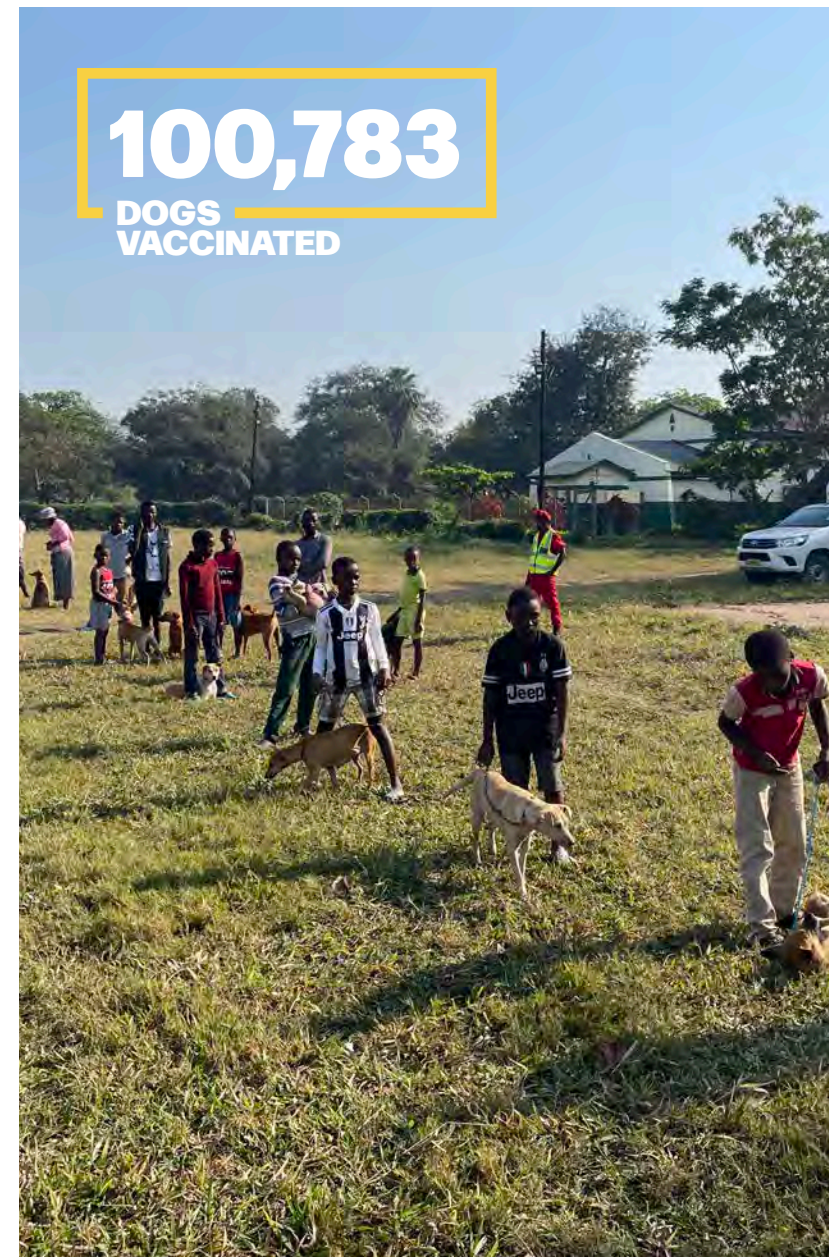
where the disease poses a heavy burden. Blantyre, the commercial capital in the south of Malawi, is the city where a single hospital reported the highest number of child rabies deaths anywhere in Africa. In 2015, in collaboration with the Department of Animal Health and Livestock Development (DAHLD), we started working in southern Malawi to eliminate human rabies deaths.

### Life-saving education

Through primary school visits, community workshops, direct interactions on the street, running SMS campaigns, airing an educational radio drama, and training representatives of Community Based Organisations, our education teams spread key messages in rabies prevention. In 2021, they reached over six million at-risk children and adults through these platforms.

### Conducting surveillance

In 2021, 2,234 dog bite cases were reported to hospitals in Malawi, all of which our IBCM Officers investigated to ensure treatment was sought immediately if required. They also went door-to-door in any area of concern, ensuring no dog bites had gone unreported, and the community knew exactly how to act in the event of a dog bite emergency.

**100,783**DOGS  
VACCINATED





**LOUIS**  
COLLEAGUE, FATHER, HERO

*"I take a very huge role in telling the owners the dangers of rabies. I always take time to tell them what happened to my son. I never fear about telling anyone about my story because I know, rabies is very dangerous, and here in Malawi, a lot of people have suffered because of rabies."*

## CASE STUDY

# A RABIES HERO

Louis, a father in Malawi, knew nothing about rabies until 2009. He didn't know of its existence, how it is transmitted, or the devastation it can cause, until it was too late. Mere weeks after his four-year-old son Devin was bitten by the family pet in Malawi, Devin was gone. Louis and his family were left to grieve over a shocking and entirely preventable death.

It wasn't until six years later that Louis came across a job advertisement for Mission Rabies. He was quick to respond with "Let me know about this rabies stuff. Maybe I can be someone of help."

Ever since Louis has worked with us as a data collector in Malawi. He not only contacts dog owners and asks them to participate in our free vaccination clinics, but he shares his story of Devin in the hope that other sons, daughters, and families can be saved from rabies.

Louis is one of many rabies heroes around the world helping to eliminate the deadly disease, for good, and for all.

*Read more about Louis at [finalrabiesgeneration.org](http://finalrabiesgeneration.org)*







# OUTREACH PROJECTS

Alongside our flagship projects, we run outreach programmes in global rabies hotspots. During 2021, we were able to run our annual campaign in Tanzania, whilst also running pilot projects in collaboration with local partners in Zambia, Bengaluru, and Mozambique. In Cambodia, we ran a city-wide education campaign and continued

critical surveillance in Phnom Penh. Unfortunately, due to ongoing COVID-19 restrictions, projects in Ghana, Uganda and Sri Lanka were postponed. However, in Sri Lanka, we were invited to be the lead rabies consultant for the country's National Strategic Plan for the elimination of rabies.



# TANZANIA



*"Thanks so much for this amazing and great lesson and we are all happy to have you in our school because we have many dog bites in our community but now, we know how to handle it."*

Aimbora Antoni, Headmaster of Makumira Primary School



Annual vaccination and sterilisation campaign

**251**  
DOGS  
STERILISED

**7,703**  
DOGS  
VACCINATED

**27,132**  
CHILDREN  
EDUCATED

**712 TEACHERS TRAINED**



Rabies is a disease of poverty, disproportionately impacting the world's most disadvantaged areas - with Sub-Saharan Africa having the most deaths per capita. In Tanzania, a country in which we have worked since 2016,

it is estimated that 1,500 people die every year from rabies. However, the disease is still greatly underreported. Research suggests the number of deaths is perhaps up to 100 times higher than official figures.

## A sustainable solution

In rabies-endemic countries, birth and death rates within the local animal populations may be high. Humely neutering and spaying dogs reduces overpopulation and helps alleviate the suffering that comes with it. With less dynamic populations, we can better manage the health and welfare of

these animals and reduce the risk of rabies to both animals and people. That's why alongside our mass vaccination and education programmes in Tanzania, we ran a spay-neuter campaign with the help of fellow animal welfare charities Worldwide Veterinary Service and Mbwa Wa Africa Animal Rescue.





# CAMBODIA



*Cambodia has one of the highest estimated rabies deaths per capita than any other country,*

and the Institut Pasteur du Cambodge (IPC) in Phnom Penh is the busiest human rabies vaccination unit in the country – seeing an average of 150 people with dog bite wounds every day. In 2019, we partnered with the IPC, local government, and NGOs to eliminate the risk of canine-mediated rabies and reduce human-dog conflicts.

**58,392**  
CHILDREN  
EDUCATED

**2,100**  
TEACHERS  
TRAINED

**7,419 DOG BITES INVESTIGATED**

## Rabies education

85% of dogs are owned in Cambodia. Therefore, education on how the virus is transmitted and the importance of vaccination is vital for the success of rabies prevention. In 2021, through training government staff and teachers, and visiting local primary schools, we reached 58,392 primary school students and 2,100 teachers with this life-saving knowledge.



## Investigating dog bites

Intensive rabies surveillance across Phnom Penh enables us to identify and investigate high-risk human bite cases, as well as locate and quarantine suspected rabid animals. In 2021, the three-person team investigated 7,419 cases of dogs biting humans, which averaged around 30 a day. Out of the total, 14, or 1.2% of cases, were deemed high risk for rabies and required post exposure treatment.





# MOZAMBIQUE

*Rabid dogs are commonly found in Mozambique,* and the infected bites lead to more than 1,300 human rabies deaths every year, although most outbreaks are underreported, and epidemiological data is scarce. In 2021, in partnership with the local government, universities including the Eduardo Mondlane University, and NGOs, we conducted a proof-of-concept vaccination campaign in the Massingir District.

## Conducting campaigns remotely

The project was the first of its kind for Mission Rabies, as it was managed remotely by staff located in Malawi and England. It involved guiding the field team through each crucial stage; surveying the local dog population, mapping out the vaccination routes, raising awareness in the communities, executing the vaccination campaign, and calculating the vaccination coverage. Even with the low population density of many villages and the distance between houses in the rural area, the team vaccinated almost 2,000 dogs in five days, successfully reaching 77% of the dog population.

# INTERNATIONAL RABIES TASKFORCE

## ZAMBIA



*Mission Rabies is part of the International Rabies Taskforce (IRT),*

a group of global experts dedicated to eliminating rabies. In 2021, the IRT provided practical expertise, resources, and guidance to the Zambian Government to support their national rabies elimination programme following an outbreak in an African wild dog population.

## Vaccinating pets against rabies to protect wild dogs

After an entire pack of African wild dogs was wiped out by rabies in Zambia's South Kafue National Park, the IRT came to the country's aid. In September, in collaboration with the Zambian Government and Game Rangers International, the two-phase project, involving an initial training exercise, education and awareness programme,

and a canine vaccination campaign, was completed. On the borders of the national park, the team administered almost 4,000 rabies vaccinations to domestic dogs to reduce the risk of transmission to vulnerable wildlife and surrounding communities, as well as visited 14 primary schools to deliver lessons in rabies prevention.





# THE ALL-TERRAIN CLINIC

Protecting dogs against rabies with a vaccine is just the first step. Alongside our mass vaccination programmes, we champion and deliver humane animal birth control, as well as run surgical training courses to improve the standard

of veterinary services in resource-limited communities. The All-Terrain Clinic, which we operate in collaboration with our sister charity Worldwide Veterinary Service, is an entirely self-sufficient mobile veterinary training hospital. Its

programmes are designed to provide hands-on training to veterinarians and veterinary assistants across India and sterilise a target of 2,500 local dogs every year.



**85**  
VETS AND  
VET ASSISTANTS  
TRAINED

**2,611**  
DOGS  
STERILISED

OVER  
**2.4K** KM  
TRAVELLED  
ACROSS INDIA

## Life in lockdown

In 2021, the All-Terrain Clinic and its expert team remained stationary in the state of Goa for the first half of the year, carrying out over 1,500 spay-neuter surgeries and supporting a study that aims to better understand the local free-roaming dog populations, as well as the health and welfare issues they face due to overpopulation.

## The summer programme

Over India's monsoon summer, we braved the extremely heavy rainfall to train veterinarians in harder-to-reach places. We travelled over 2,500 kilometres to train vets and vet assistants in best animal birth control practices. Through lectures, demonstrations, and hands-on learning, participants gained skills and confidence in surgery, and spayed or neutered hundreds of dogs.





# RESEARCH

## Backing the approach

Research underpins everything we do at Mission Rabies. Our proof-of-concept projects are testbeds, and our Data Collection App is a crucial tool, that pushes the frontiers of operational research – developing effective

and efficient approaches to mass dog vaccination, which can ultimately be implemented by governments on a large scale.

In 2021, we contributed to a research article in one of the world's top multidisciplinary science journals, PNAS (1),

as well as a study led by the Centers for Disease Control and Prevention in Haiti (2), which found vaccination teams using the app were significantly more effective than traditional vaccination methods.



■ *Using data-driven approaches to improve delivery of animal health care interventions for public health* <sup>(1)</sup>

Delivery of large-scale mass dog vaccination campaigns remains a challenge in many rabies-endemic countries. This article explores the efficiency and cost effectiveness of campaigns, and discusses a template for success and sustainability in the future.

**PNAS** February 2021  
[go.missionrabies.com/pnas2021](https://go.missionrabies.com/pnas2021)

■ *Every dog has its data: Evaluation of a technology-aided canine rabies vaccination campaign to implement a microplanning approach* <sup>(2)</sup>

Haiti conducts annual canine mass vaccination campaigns, but still has the most human deaths in the Latin American and Caribbean region. This article evaluates its current methods to determine if using smartphones for data reporting and geo-communication could increase vaccination coverage and success rate.

**frontiers** November 2021  
 in Public Health [go.missionrabies.com/frontiers2021](https://go.missionrabies.com/frontiers2021)



# FINANCES

During 2021, Mission Rabies spent £1,268,794 delivering life-saving projects in rabies hotspots around the world. This was a decrease of 6% on 2020 but demonstrates how our teams managed to still go above

and beyond, vaccinating 277,022 dogs and educating over 950,000 children. Our income for the year was £1,240,363, which is a slight fall of 5% from 2020. This was primarily due to the impact of the pandemic, meaning trips

could not go ahead as planned, but thanks to the generosity of all who supported our vital work, we were still able to power on in the fight against rabies.



# THANK YOU

*Thank you to everyone who enabled us to power forward through this challenging year.*

Your support fires us all and showcases a collective determination that will empower us to reach our shared goal: making this the Final Rabies Generation.





# 2021



## MISSION RABIES

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### STAY CONNECTED



Mission Rabies is a registered charity in England and Wales: 1162293

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