

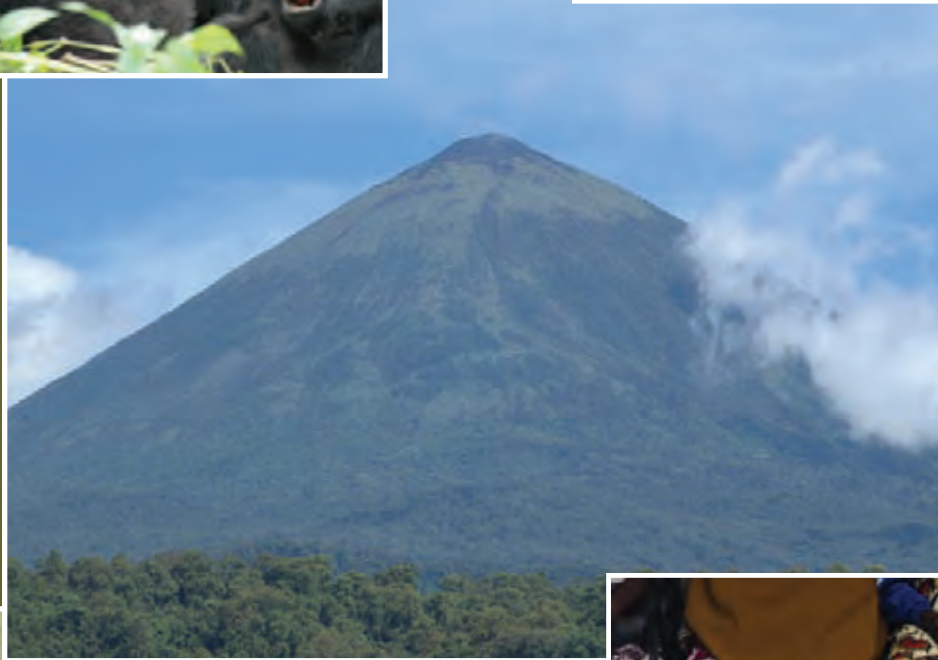
2009 annual report

Connections IV



MOUNTAIN GORILLA
VETERINARY PROJECT

ESTABLISHED 1986



The story of the mountain gorillas begins like many other conservation stories: only 700 left in the wild, threatened by poachers, habitat destruction, and disease transmission from domestic animals and humans. But unlike so many other stories of threatened species, this one has taken an optimistic turn: the numbers of mountain gorillas are increasing. In fact, mountain gorillas are the only great ape population that is growing, despite the challenges. What explains this success? A focused effort by governments and conservationists working together to overcome the odds. Key to this effort is the work of the Mountain Gorilla Veterinary Project, which not only provides veterinary care to the mountain gorillas in their wild habitat, but also champions the “One Health” approach to conservation. The One Health approach recognizes that to sustain the wild mountain gorillas, the health of their environment, including their habitat and the human and domestic animals with which they interact, must be maintained. This approach, explained in more detail in this report, is the key to the hopeful future for this species, and may provide the most promising prototype for conservation projects elsewhere.

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PHOTOGRAPHIC CREDITS:
MGVP Staff and Scott Barnhill

Designed by Misty Hackett





Dear Friends

This was the exciting first year of the partnership between the Mountain Gorilla Veterinary Project (MGVP) and the Wildlife Health Center at the University of California, Davis School of Veterinary Medicine. The new combined program is called the Mountain Gorilla One Health Program. Although MGVP has been practicing one health medicine for years, the collaboration is a tremendous growth opportunity for MGVP, promising to build better capacity in all facets of the one health program. While our goals and strategy remain intact, we now have an extended Advisory Board to which we welcome new members Richard Cunningham, Annie Graham, Jonna Mazet and Drew Nichol. To help guide and advise the program and its Advisory Board, we have established two advisory groups. The Scientific Advisory Committee will provide leadership in making science-based decisions on critical issues facing the project; the Conservation Advisory Committee, comprised of representatives of the governments of Rwanda, Uganda and the Democratic Republic of the Congo as well as our partner nongovernmental organizations, will ensure close coordination on priorities of our program and the three countries in which the world's remaining 700 mountain gorillas live.

This year saw an increase in the number of respiratory outbreaks within gorillas groups, particularly in the Virunga Mountains. These outbreaks in gorillas followed an unusually high number of human respiratory cases seen in the local communities, underlining the need to improve the health of people, livestock and other wildlife that come into contact with the gorillas. This will be the central theme and purpose of the Mountain Gorilla One Health Program. Meanwhile, we continued to provide the highest achievable level of veterinary care for gorillas, with many potentially fatal cases of illness and injury treated successfully. The mountain gorilla continues to be the only great ape whose numbers in the wild are growing.

As always, we could not have achieved so many successes, or contemplate such exciting growth opportunities, without the people who have helped this year, by supporting our efforts with funding and volunteer time. I would like to thank each and every one of you who is helping to save this magnificent species.

Yours sincerely,

Mike Cranfield, DVM
Executive Director
MGVP, Inc.

Kirsten Gilardi DVM
Director
Mountain Gorilla One Health Program



From the President and the Board Chair

This year has been an exciting one for the Mountain Gorilla Veterinary Project. We completed the Project's move to the University of California, Davis, affiliating with the University's well known and respected Wildlife Health Center. MGVP is now the cornerstone of the Mountain Gorilla One Health Program, which seeks to ensure the long-term survival of mountain gorillas through application of the "one health" approach to ecosystem protection. Many years ago, Dian Fossey asked Ruth Keesling of the Morris Animal Foundation to put veterinarians on the side of the mountain; it is gratifying to reflect on how much has been accomplished in fulfillment of that request. Dian attended The University of California, Davis as an undergraduate; we like to think she would have been very pleased to see that The University of California, Davis is now a key MGVP partner.

The new affiliation has already produced tangible results. Several new donors have made important gifts to the Mountain Gorilla One Health Program. In particular, two private donors have made a generous challenge grant, agreeing to match new donations dollar-for-dollar. This endorsement of our mission and our future gives the Program important added momentum. At the same time, a new Advisory Board has been established, and the Scientific Advisory Board has been strengthened. A new Conservation Advisory Board has been added, which includes representatives of governments of the three countries where mountain gorillas live: Rwanda, Uganda, and the Democratic Republic of the Congo.

The strengthening of the Program comes at a time of increasing challenges in the field. The past fiscal year saw increasing numbers of respiratory disease outbreaks among the wild gorillas; snare injuries have increased after several years of decline; and the number of orphaned gorillas needing care continues to rise. In addition, the recent natural age-related deaths of Puck, Pablo and Shinda, all famous individuals, remind us that each new infant is critical to the future of the species.

Our work has never been more timely or important, and our opportunity to make a difference has never been greater. Thank you to all who have joined with us to ensure the survival of the magnificent mountain gorillas!

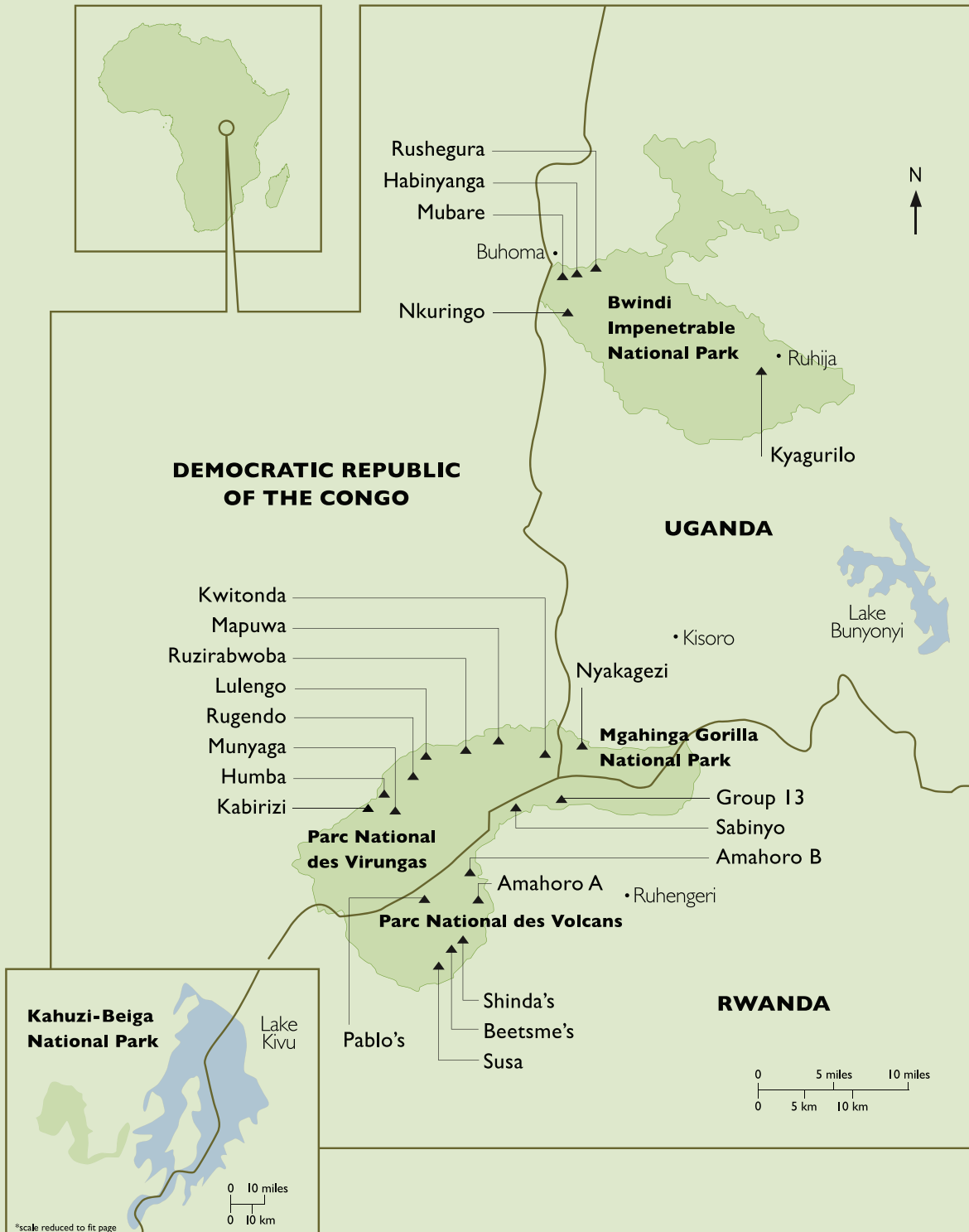
Yours sincerely,

President
MGVP, Inc.
Billie Grieb

Chair
MGVP, Inc.
Roger G. Powell

THEIR SMALL CORNER OF THE GLOBE

The Mountain gorillas live in small groups, each led by a silverback. About 380 Mountain Gorillas reside in the Virunga Mountains spanning the border of Rwanda, Uganda, and the Democratic Republic of the Congo, and 320 live in the Bwindi Impenetrable National Park in Uganda. The ▲ symbols show the habituated groups of each country.



The Mountain Gorilla One Health Program

The conservation of mountain gorillas depends not only on the health of the gorilla populations in Rwanda, Uganda and the Democratic Republic of the Congo, but also on the health of the other wildlife species, domestic animals and the humans with which they co-exist.

The reality of the gorillas' environment is that they live in close proximity to other animals, both wild and domestic, as well as humans. Park workers and tourists can bring into the parks foreign germs that threaten gorillas. Conversely, mountain gorillas venture near and into the surrounding populated areas, where they come into close contact with domestic animals and their infectious diseases, and where they can introduce their own germs to humans and other animals.

Since 1986, MGVP has strived to maintain and ensure the long-term health of mountain gorillas through veterinary intervention; indeed, MGVP has administered treatment and care that has saved the lives of dozens of mountain gorillas since its inception. But MGVP has also taken the initiative to work on problems facing the health and well-being of the other wildlife and domestic animal species with which the mountain gorillas interact.

This commitment took a major leap forward in April 2009 when, thanks to a leadership gift establishing this unique partnership, MGVP joined forces with The University of California, Davis, School of Veterinary Medicine's Wildlife Health Center (WHC). Together, the MGVP and WHC have established the Mountain Gorilla One Health Program, which assumes all responsibilities of the existing organization while also growing its reach and scope dramatically.

Based at The University of California, Davis, the One Health Program aims to significantly advance the One Health initiatives already started by MGVP, accomplish new research and program development, increase capacity-building in the areas of mountain gorilla, domestic animal, and human health and well-being, and strengthen the scientific foundation upon which mountain gorilla health is promoted and ensured. This program has already taken strides in 2009 in the following key areas:

Human Health

Prior to the establishment of the One Health Program, since 2001 MGVP has aimed to reduce the risk of disease exchange between mountain gorillas and MGVP and park employees by providing basic health screenings, blood pressure evaluation, disease testing, and vision assessments to conservation workers and their wives in Rwanda and the DRC. This Employee Health Program is administered with the support and involvement of local health officials, park authorities and other non-governmental organizations. To date, more than 900 workers and spouses have received health exams, providing them with a level of care otherwise unavailable and thereby enhancing the quality and productivity of their lives.

In 2009, the One Health Program began the process of reviewing several years of the employee health program, with an eye towards revising the program to maximize its efficiency so that it can be applied to more conservation workers and family members year-round in a cost-effective manner. To make this happen, the One Health program will draw upon the considerable intellectual capital for human medicine available at the University of California.

As well, in 2009 the One Health Program began to explore opportunities for establishing an exchange program between The University of California, Davis, School of Medicine and the District Hospital in Musanze, Rwanda. This endeavor will supplement MGVP's involvement to date in fostering the rehabilitation of community clinics surrounding Volcanoes National Park in Rwanda by Wyman Worldwide Health Partners (WWHPS), which completed refurbishment of the Shingero Clinic in 2008 and is poised to complete improvements in several more clinics next year.

As well, in 2009 the One Health Program began to explore opportunities for establishing an exchange program between the UC Davis School of Medicine and the District Hospital in Musanze, Rwanda. This endeavor will supplement MGVP's involvement in fostering the rehabilitation of community clinics by Wyman World Health Partners.

Occupational Health and Gorilla Conservation in Rwanda

In October, 2008, MGVP conducted its sixth employee health program in Rwanda for people who work with mountain gorillas. This program aims to improve workers' health and to reduce human-to-gorilla transmission of infectious disease. The program covered approximately 388 participants: 102 spouses ranging in age from 20 to 75, and essentially all the conservation workers who have regular contact with gorillas. The program started with an education health session (HIV prevention, family planning and hygiene), then an initial assessment including a questionnaire, medical examination, and laboratory tests processed at Ruhengeri Hospital. Excess samples (including plasma, serum, blood smear, feces and urine) were banked for further testing.

A local physician continues to provide health services, including follow-up testing and treatment. This year we diagnosed more cases of parasites, but all participants were given appropriate drugs. Four people (1.03%) were HIV positive, and were placed in the national program. In prior years, the employee health program has often identified up to 20% of the participants as needing eye glasses, which are provided as part of the follow up services. MGVP assists in planning and implementing this continuing program in collaboration with local health authorities and other nongovernmental employers.



Clinic Rehabilitation through Partnership with WWHPS

WWHPS collaborates with the Ministry of Health (MoH) in Rwanda to establish and support its pilot project, Comprehensive Community Health Initiatives & Programs (CCHIPS), on a grassroots primary healthcare delivery system for 11 remote, rural health centers in the Northern Province encompassing the Parc National des Volcans.

The rural health centers in Rwanda are really mini-hospitals with staffs of 15 to 25, 20 to 30 inpatient beds, and 1,000-1,500 patient visits each month. The health centre directors and staff are untrained in the most basic management techniques. WWHPS analyzes the current management processes in three areas: medical, administrative and financial; identifying and standardizing key routines; developing reporting and monitoring systems and then training staff in their effective use and measurement of outcomes.

The health centers in Rwanda are staffed primarily with nurses with high school educations. WWHPS is developing a highly simplified set of diagnostic protocols to help the nurses to correctly diagnose the most prevalent medical conditions presenting at these rural health centers.

The villages WWHPS serves in Rwanda often are several hours walking distance from the health centers. WWHPS is re-energizing, engaging and training the existing network of community health workers. “Animators” (individuals elected by their villages to represent them on health issues), midwives, and traditional “healers” are engaged in WWHPS activities. WWHPS educates Animators through monthly simple medical trainings to become “first responders” in their villages. Animators activities include 1) communications link between the health centers and the villagers to increase utilization of the health centre, 2) to refer and follow-up on health centre patients as needed, and to educate villagers on basic health and hygiene; and engaging Animators also promote and increase enrollment of villagers in the government health insurance program.

Finally, most of the health centers in Rwanda are desperately lacking in essential structures and equipment: water, power and proper sanitation. WWHPS has developed effective and very low cost solutions to these infrastructure issues. Quality medical supplies and reliable sources are still a challenge.

Program Development

The establishment of the Mountain Gorilla One Health Program not only brings the administrative and related services of MGVP to California, but presents tremendous opportunities for initiating and coordinating new research and collaborations, developing and implementing a comprehensive fundraising strategy, and raising the visibility of the program so that other universities and integrative health programs around the world can look to it as a model for conservation. In 2009, the One Health Program began to lay the groundwork for this strategic planning process by growing its Advisory Board and establishing a new Conservation Advisory Committee.

Livestock Health

This year our agricultural project coordinator became a full-time collaborator for the MGVP. Although still well in the development phase this year, initial efforts for the creation of partner farms are underway. The MGVP is currently working with three individual family farms and an orphanage to serve as model farms for their respective communities.

One of the major goals of the Model Farm program is to promote improved animal husbandry practices that will minimize disease transmission, improve animal health and production, and increase the sustainability of agriculture in the region. Activities to meet this objective also serve to protect people from the zoonotic diseases (diseases transmissible from animals to humans) that exist at the community level—diseases that pose a legitimate threat to the health and well being of the endangered mountain gorilla as well.

Another goal of the Model Farm program is to demonstrate alternative fuel sources for farmers in the region. The limited availability of electricity means that rural communities depend upon an open flame for heat, cooking and boiling water to make it potable. The fuel source is most often firewood or charcoal. Unfortunately, this directly contributes to deforestation and illegal entries into the parks, which threaten the mountain gorilla population through habitat loss, encroachment and the potential for disease exposure from people. We actively assist our Model Farm partners to utilize bio-gas generators, which compost animal manure to produce methane for use as fuel within the home. We are also working to transfer “bio-brick” technology to the region where recyclable materials and crop production byproducts are combined, pressed into bricks and utilized as a fuel source.

Our next step will be to assist our Model Farm partners with rainwater catchment systems. Community water sources are typically 3-5km from the home, which requires a family member (often a child) to spend a significant amount of time and energy to carrying water each day. Furthermore, because water transport is so difficult, often it is the farm animals that get watered last, which means many of them are partially dehydrated, especially during the dry season, and therefore producing less milk.

Through our partnerships with the local agricultural college ISAE-Busogo, we have access to the best and brightest students in the area. We work with these students to enhance their education and expand our presence within the rural communities. This opportunity for capacity building will help generate leaders of tomorrow with a conservation focus and an understanding of and outreach programs available to them.

Also this year, in October and November, Dr. Jean-Felix Kinani led the MGVP’s annual rabies clinic, vaccinating 800 pet dogs and cats in the greater Musanze area.





The Orphans' New Home

History repeated itself when in May and June of 2009, two Eastern lowland gorillas were confiscated and added to the orphan gorilla population. Their names are Amani and Kighoma. This brings the number of orphans to 13, including six eastern lowland gorillas and two mountain gorillas in our facility in Kinigi, Rwanda, as well as three eastern lowland gorillas and two mountain gorillas in temporary situations in Goma, DRC. The Dian Fossey Gorilla Fund International (DFGFI) partners with MGVP to maintain these orphans. MGVP is responsible for the health and nutrition of the orphans while DFGFI looks after the behavioral aspects of raising these young gorillas.

This year as in previous years, the orphan gorillas got their usual bouts of diarrhea and respiratory problems which were handled successfully by MGVP veterinarians. However, there were three more serious medical cases in 2009. The first involved Amani, who had a serious, non-healing bullet wound that had fractured her leg and left bone fragments. Surgery was performed to remove the bullet fragments and the animal was taken to a local hospital to be radiographed.

The second case was a reaction to the tuberculin skin test in Mapendo, the eastern lowland gorilla that had been living alone for approximately a year.

The third case was Maisha, the oldest mountain gorilla at the Kinigi facility. Shortly after being placed on birth control pills she appeared to be having headaches, exhibiting the clinical signs of grinding her teeth and holding her head with both hands. The birth control pills were stopped, but the clinical signs remained. A swelling on the left side of her face just under her ear developed.

MGVP decided to call in consulting veterinary radiologist Chris Leslunes, who brought highly-specialized imaging equipment from Sound Technology to help examine these cases with the MGVP veterinary team. Amani's leg was healing well, and Mapendo's chest was clear of tuberculosis, which meant that all three Eastern lowland gorilla orphans in Goma could finally be housed together. Maisha's painful facial swelling was from a routine abscess, probably from a puncture wound, and did not involve teeth or other delicate tissues in the region. She was placed on antibiotics and recovered quickly.

Further research has been done on the human herpes virus outbreak at the Kinigi facility reported in last year's Connections III Annual Report, but final decisions about the release of these animals to the wild will need further molecular information. The herpes virus outbreak has caused increased concern about introducing other new diseases into the wild with orphan releases. The Mountain Gorilla One Health program is exploring new technologies that will reduce these worries to a minimum, but it is impossible to eliminate all risk. Ultimately, it will be ICCN's decision, after considering the recommendations of the scientific technical steering committee, whether the animals will be released back into the wild.

New and improved facilities are being built in two locations. Mountain gorilla orphans will be moved to Rumangabo, the Virunga National Park headquarters of the ICCN, the Congolese government's conservation department. This facility will be called Senkekwe after the silverback of the group that was slaughtered needlessly two years ago. It is a two-part facility comprising one large yard where animals can be held long term, and a smaller facility where new animals will be quarantined and other animals held short-term.

The smaller facility will be built by donations from the Canadian Friends of MGVP, led by Raemonde Bezenar. Two mountain gorillas were moved from Goma to this facility in the fall of 2009. A second facility called GRACE is being constructed much farther west in Eastern lowland gorilla habitat by DFGFI, The Pan Africa Sanctuary Alliance (PASA) and Disney's Animal Kingdom. This facility will house the nine Eastern lowland gorillas, hopefully by spring of 2010.

Capacity Building in Africa

Notwithstanding MGVP's accomplishments to date, we recognize that to ensure sustained success, veterinarians in mountain gorilla range countries need to assume the responsibility of monitoring and running MGVP programs. To do so will require the highest-achievable level of training in veterinary medicine and business.

MGVP continues to foster self-sufficiency. First, we are committed to selecting and hiring strong talent in Africa. The African veterinarians must be trained not only in solid clinical medicine, but also in advanced techniques. A barrier to this important clinical training is the relatively low case load they see locally in Africa.

To overcome this barrier, for several years MGVP Advisory Board member Dr. Kim Hammond has been sponsoring African veterinarians to come to the United States. There, they train at Falls Road Animal Hospital in Baltimore, MD, work with pathologists at Johns Hopkins Medical School, and attend Safe Capture™ courses, where they learn the most effective methods in darting and sedating animals in the wild. In addition, the MGVP and Dr. Hammond have provided funding to support selected student projects and post graduate education at Makerere University's veterinary school in Uganda under the mentorship of MGVP's Dr. John Bosco Nizeyi, and at ISAE in Rwanda under the mentorship of Dr. John Huston. Dr. Hammond has also supported veterinarians in attending Envirovet Summer Institute, and for courses in Germany.

In 2009, MGVP overhauled this program, shifting the paradigm from training one or two veterinarians at a time in the United States, to training everyone together in Africa. Local training is more effective than training abroad, because the African veterinarians are learning in their own environment, exposed to all the conditions they will encounter in the field. So this year, Dr. Hammond sponsored the loan of portable digital x-ray, ultrasound, and digital retina imaging equipment to Rwanda and the DRC, and brought a veterinary radiologist from Chicago, Chris Leslunes, to operate it. Access to such state-of-the-art equipment is not available in Africa, and so this exposure and on-the-ground training truly helped advance our African veterinarian colleagues' capabilities.





Other Wildlife Species

KINIGI MONKEYS

Our most important work this year on a species other than mountain gorillas was the successful transfer of five confiscated monkeys from Kinigi to the Johannesburg Zoo in South Africa. All animals had been kept in the orphan gorilla facility at Kinigi for years after being rescued by the Rwandan government from the bushmeat trade; finally this year, thanks to the joint efforts of the MGVP, ORTPN and the Johannesburg Zoo, an excellent home for these animals was secured for the rest of their lives.

It was not an easy operation. A long list of duties, such as multiple clinical exams, blood testing for diseases, vaccinations, and securing all necessary permits kept the MGVP vets busy for weeks. But finally on March 2, 2009, the monkeys were delivered to a South African quarantine facility, arriving in excellent condition and happy to eat their first meal in South Africa, according to Althea Guinsberg, primate manager at the Johannesburg Zoo.

FOREST GOLDEN MONKEYS

We saw fewer ill and injured golden monkeys than in previous years. The only case was an adult female found unconscious at the edge of the forest in the Cundura area of Rwanda. When the MGVP vet arrived at the scene in the late afternoon, the animal was extremely hypothermic and unresponsive. All attempts to warm and revive her failed, and a few hours later she had to be euthanized. A post mortem examination ruled out an infection; that finding was important, because golden monkeys inhabit the forest with gorillas and there is always the possibility of disease transmission among primate species.

ELEPHANT

At the end of February a young forest elephant was reported to be trapped on a very steep slope in the forest. On March 1, the animal was found dead at the bottom of the ravine below. The location of the animal was challenging: MGVP veterinarians wanted to examine the carcass to rule out tuberculosis (TB) as a cause for illness, because mountain gorillas are susceptible to TB. MGVP veterinarians successfully performed a post mortem examination, and discovered that the elephant had an extensive infection in its sinus cavity above its one remaining tusk. This finding was worrisome, as the TB organism can cause bone infections. Fortunately, the laboratory samples taken during autopsy proved negative for TB.

Biological Resource Center

With the use of facilities at The Maryland Zoo in Baltimore, MGVP is able to store biological specimens consisting of hair, feces, urine, tissues and blood products in a variety of different preservatives and storage situations. In keeping with the “one health” approach, samples are collected from humans, domestic animals and other wildlife that are in close proximity to the gorillas’ natural habitat and could negatively impact the health of the gorilla population. These samples are vital to the research and conservation of the mountain gorillas. With samples cataloged upon arrival, they can be sent to researchers and conservationists to test for a variety of diseases and for genetic research. All samples are sent for viral screening and a chemistry panel upon arrival into the United States. Tissues are cataloged and sent to Dr. Linda Lowenstine at The University of California, Davis for pathology, and brain tissue is sent to Dr. Patrick Hof at Mount Sinai School of Medicine in New York for an MRI study.

In 2009, samples were also sent out for *Helicobacter* testing. Swab and blood products were sent to Julie Rushmore at The University of Georgia for her work on close-contact pathogens, sexually-transmitted diseases, and African ape conservation. Swabs were also sent to Dr. Rebecca Stumpf at The University of Illinois, Urbana-Champaign for her work on comparative primate microbial ecology.

The biological resource center is an extremely important facility and contains tens of thousands of samples, mostly at the main center in Baltimore but also at the satellite locations in Entebbe (Uganda), Kigali (Rwanda), and Goma (DRC)

Back to work in the Democratic Republic of the Congo

This year was a busy one for the MGVP in the Democratic Republic of the Congo, where the civil unrest settled down enough for the ICCN to re-open Virunga National Park to tourists, researchers, and MGVP veterinarians. We continued to work closely with the ICCN on the Gorilla Identification Program, which uses computer imaging software to highlight the contours and fissures of each habituated gorilla’s face, making each animal’s ‘nose print’ even more accurate. A confirmed identification of each gorilla enables MGVP veterinarians to perform regular, consecutive health checks on known individuals. With the trackers’ unparalleled knowledge of the gorilla groups, we hope to have a comprehensive identification chart completed in the very near future.

Unfortunately, in August and continuing into September, rebel attacks increased in the Masisi and Rutshuru territories which led to serious insecurity problems around Rumangabo Station, where Emmanuel de Merode (chief park warden of the Virungas) plans to re-establish ICCN headquarters for the Virungas. Then fighting broke out in Goma



on September 22 as well. Unfortunately, fighting intensified around Rumangabo and the station was taken over by rebels on October 27; Goma was soon occupied by the same rebel (Nkunda) forces on October 29.

Mountain Gorilla Field Visits

The Mountain Gorilla Veterinary Project was the first program of its kind to treat individual wildlife in its natural habitat. The MGVP was and is essential; the total number of mountain gorillas left in the wild became desperately low, and studies showed that the each individual's genetic makeup was important to the long-term sustainability of the population. However, because the mountain gorillas are wild animals, treatment is logistically difficult and reserved only for animals that have a human-induced or life-threatening condition.

The MGVP has been treating gorillas since 1986. During this time, we have learned that one of the most important clinical practices is routine health monitoring to detect diseases early (so that treatment is more successful), and to stop the spread of diseases to other members of the group or population. We therefore routinely check gorilla groups on a monthly basis, and respond to any observation of abnormalities from trackers and guides. As shown in the following table, the MGVP and park workers in all three range countries made almost 350 trips to check on the health of gorilla groups during the past year. This number would have been higher had not unrest and danger prevented us from making routine observations of mountain gorillas in the Democratic Republic of Congo for much of the year.

Over the years, two major clinical problems have required veterinary treatment. The first is snares, which are typically set not for gorillas but for other wildlife in the parks. Unfortunately, all too often the mountain gorillas get caught in the snares, which can cut off the circulation to their extremities, causing pain, infection, and often the loss of the digit or limb. Fortunately, when our veterinarians can remove these snares in time, the gorillas have an excellent chance for full recovery. The second and possibly more troubling situation is the increasing number of outbreaks of respiratory disease in mountain gorillas. Currently, respiratory disease is the highest cause of mortality due to infectious disease (vs. non-infectious causes, like trauma).

The last step in monitoring the health of mountain gorillas is to perform an extensive autopsy on animals that die. These autopsies often give us insight not only into the cause of death, but also into other unapparent or “subclinical” problems that may have contributed to the animal's demise. This year, the MGVP was particularly saddened by the death of Shinda, the world-renowned and much-beloved silverback of the group by the same name.

The following stories highlight the clinical work of the MGVP in 2009. They are only a glimpse into the many hours of monitoring, clinical work and autopsies conducted by the dedicated veterinarians and park workers in the field.

	Routine health check	Monitoring visit for reported problem	Therapeutic intervention for delivery of medicine	Diagnostic intervention w/ anesthesia for exam, therapy	Post mortem exam
RW	125	114	1	6	2
UG	52	17	1	2	2
DRC	0	3	1	2	4
TOTAL	177	134	3	10	8

RW= Rwanda; UG= Uganda; DRC= Democratic Republic of the Congo

This year, the MGVP took care of an unusually large number of mountain gorillas that unfortunately became entangled in snares set by poachers for other wildlife. For example, in late February, Inkumbuza (Shinda Group) was observed by trackers to have a rope snare around his right arm. Though the rope was not tight and the infant was trying to loosen it with his teeth, the other family members proceeded to pull repeatedly on the long free end, tightening it back up. Given time, it may have come off, but the team decided not to take the chance and to remove it if possible. Drs. Spelman, Kinani, Braum and Ms. Nyirakaragire (ORPTN) darted Inkumbuza and removed the snare on March 1. In late May, trackers found Nyandwi (Pablo Group) caught by her right arm in a rope snare. The trackers cut her free, but part of the snare remained around her arm, snug but not tight. Unfortunately, neither she nor any of the other gorillas were making any attempt to remove the snare. Drs. Spelman, Kinani, and Braum made a first attempt to dart Nyandwi but were not successful, likely because the veterinarians were accompanied by a larger than usual number of park personnel and a film crew. On their next attempt, MGVP veterinarians were able to anesthetize Nyandwi and remove the snare from her arm. Yet another snare case involved Urumuli (Group 13), who was caught in a rope snare, but fortunately her mother or the silverback Agashya was able to remove it for her.

As well this year, MGVP veterinarians monitored and treated more cases of respiratory disease than ever before. Starting in the spring of 2008, both Group 13 and the Susa Group showed evidence of a respiratory disease sweeping through their groups. In summer, all members of the Hirwa Group were affected by a respiratory disease outbreak. Sick gorillas, including the group's only silverback, Muninya, were lethargic, hanging back in their night nests, showing increased breathing rates and making audible respiratory sounds, including coughing. After thorough discussion, MGVP veterinarians decided to intervene in order to collect diagnostic samples from sick animals, because this was the third outbreak of respiratory disease in the Virungas in 2008. Our veterinarians also wanted to try to shorten the course of the Muninya's illness, given his role as protector of this group of females and their infants. Our veterinarians conducted a thorough examination of Muninya and treated him with a single dose of ceftriaxime and subcutaneous fluids. The next day, he appeared to feel considerably better, sitting up and eating. In the following weeks, MGVP veterinarians monitored the Hirwa Group closely. Signs of illness began to show up in several of the infants: Urwunguko was the sickest. The veterinary team considered intervening to treat him, but at fifteen-months old he was too small to dart reliably. Fortunately, the infant's condition began to improve and he regained his full appetite the next day.

Soon thereafter, Group 13 experienced an outbreak of upper respiratory tract disease characterized by dry cough, runny nose, and sneezing. But in contrast to the outbreaks in Susa and Hirwa Groups, the outbreak in Group 13 seemed milder. Hirwa and Group 13 often share the same range, and the trackers reported that the two groups had used the same area earlier in the summer. Also, trackers and guides had potentially moved among these two groups, and even with Susa Group. Later in the summer, all individuals in Kwitonda Group experienced mild and rapidly spreading upper respiratory disease that appeared suddenly in several individuals and had run its course within a week.



Eastern Lowland Gorilla Health and Monitoring

DEMOCRATIC REPUBLIC OF THE CONGO

MGVP has been working on a program of health monitoring for free-ranging eastern lowland, or Grauer's, gorillas similar to the current program for mountain gorillas. However, relatively few individual gorillas are known, so the field veterinarians have begun at the first level, assisting the trackers with identification and nose print documentation. The efforts began in connection with a routine health check visit in July 2007, but subsequent visits have frequently been impossible because of continued political unrest.

During FY2009, routine health monitoring of the Kahuzi Biega National Park gorillas continued, despite renewed insecurity in North Kivu, with visits to PNKB by Dr. Kambale in September and October, 2008, and again in January 2009. In March, 2009, Dr. Cranfield visited with Dr. Iyanya for discussions with ICCN. Further monitoring visits were made in April, May and June of 2009.

MOUNT TSHIABERIMU

On July 12, 2008, Drs. Iyanya and Kambale visited the Mount Tshiaberimu (MTSH) gorillas as part of MGVP's ongoing efforts to provide health care for this group of gorillas. They made routine health visits to the three groups of gorillas. Most were observed and all appeared healthy; there was no sign of chronic parasitism. They began training the rangers in IMPACT and plan to return monthly. Dr. Ssebide will join future visits.

Six weeks later, MGVP was called urgently to respond to the death of a gorilla, Musangia. Musangia was a juvenile in Lusenge Group who was found dead on August 29 apparently from injuries sustained after falling from a tall tree. Drs. Kambale and Iyanya travelled immediately to MTSH given that this was the third death in six months among a rapidly dwindling population of gorillas. MGVP veterinarians performed two other post mortems, in March and June. On March 25, 2009, the silverback Mufanzala of the group by the same name was found dead; per direction of ICCN, the carcass was moved to Lwiro/COOPERA and necropsied on March 28 by Dr. Kambale as well as vet staff at Lwiro. The rangers had reported the silverback alert on March 24. The main finding was an abscessed liver. Histopathology is pending at University of California, Davis.

On June 1, the silverback Birindwa of the group by the same name was found dead and decomposing. The estimated date of death was at least 4 days earlier. Again per direction of ICCN, the carcass was moved to Lwiro/COOPERA and necropsied on June 2 by Dr. Kambale as well as vet staff at Lwiro. The rangers had not been able to check Birindwa Group for several days due to political instability. There were no conclusive findings on necropsy. Histopathology is pending at University of California, Davis.



Research and Publications

POSTGRADUATE PROGRAMS: 2008-2009

Three Masters Student's Programs supported by MGVP came to fruition in 2009:

1. Benard Ssebide: Daily ranger-based symptom observations and health monitoring of habituated mountain gorillas in Bwindi Impenetrable National Park.
2. Benard Sibwomwe: Potential tuberculosis and brucellosis risks posed by livestock to mountain gorillas in the areas adjacent to Mgahinga National Park.
3. Dennis Muhangi: Pathological lesions of the gastrointestinal tract in free-ranging mountain gorillas.

Student Projects at Wildlife and Animal Resource Management Department (WARM), Makerere University, supported by MGVP

- Caroline Asimwe: Antibiotic resistance of enteric bacteria in the surface water in and around Bwindi Impenetrable National Park.
- Sharon Kamuganga: Evaluation of Uganda Wildlife Authority Gorilla Permit sales strategy.
- Philip Imbusi: Community-National Park Conflict Management: Case Study of Lake Nakuru National Park, Kenya.
- Lina E. Kiwelu: Status of Community-Based Ecotourism in Ngorongoro Conservation Area, Tanzania.
- Kamanyire **Wilson**: Milk production around Bwindi Impenetrable Forest.
- Slome Namirimu: Salivary cortisol levels in gorillas as a management tool.

Student Projects in Rwanda:

- Fidele Kamana and Octavien Ndirabakunzi: Comparison of fecal parasites of tourist and research groups by family survey.
- Jean Paul Hirwa: Survey of fecal parasites in habituated gorillas.

2008-2009 PUBLICATIONS & PRESENTATIONS

- Mountain gorilla research: the risk of disease transmission relative to the benefit from the perspective of ecosystem health. Cranfield M.R. Am J Primatol. 2008 Aug;70(8):751-4.
- Chimpanzee respiratory disease and visitation rules at Mahale and Gombe National Parks in Tanzania. Lukasik-Braum M., Spelman L. Am J Primatol. 2008 Aug;70(8):734-739
- Orphaned Mountain Gorillas: Now There Are Four. Lucy H. Spelman, DVM and Michael R. Cranfield, DVM. Proceedings, AAZV Annual Conference, Los Angeles, CA October, 2008.

PRESENTATIONS

Mike Cranfield:
Saving The Gorillas
Elaine Johnson Central Library,
Howard County Maryland
June 18th, 2009

Mike Cranfield
Endangered Mountain Gorillas and
Our Shrinking Planet
Balticon, Baltimore, Maryland
May 25, 2009

Mike Cranfield
One Health Medicine
Envirovet Conference,
White Oak Conservation Center, Yulee Florida
June, 2009

Magdalena Lukasik-Braum
Lecture to Warsaw Veterinary University
Warsaw, Poland
May 24, 2009

Magdalena Lukasik-Braum
Lecture to Warsaw Zoo
Warsaw, Poland
June 5, 2009



Gorilla care providers

Dr. Mike Cranfield **Executive Director**

Dr. Cranfield received his veterinary degree and completed a residency in zoo animal medicine and pathology at the University of Guelph in Ontario, Canada. He joined MGVP as project director in 1998. Dr. Cranfield holds appointments at Johns Hopkins School of Medicine Department of Molecular and Pathobiology, the University of Maryland, the University of Mississippi and is a consultant at the Maryland Zoo in Baltimore. He was the 2006 recipient of the Emil P. Dolensek Award for exceptional contributions to the conservation, care and understanding of zoo and free-ranging wildlife.

Dr. Kirsten Gilardi **Mountain Gorilla One Health Program Director**

Dr. Gilardi received her veterinary degree at UC Davis (1993) and completed a 3-yr residency in primate medicine at the California National Primate Research Center (1996). She joined the UC Davis Wildlife Health Center as a staff veterinarian in 1998, where she now serves as Assistant Director, and is also Executive Director of the WHC's SeaDoc Society, and a Director of Envirovet Summer Institute. She is an adjunct Associate Professor of Clinical Wildlife Medicine in the Department of Medicine and Epidemiology, and board-certified by the American College of Zoological Medicine (2001).

RWANDA

Dr. Jean-Felix Kinani **Field Veterinarian**

Dr. Kinani received his veterinary degree from Cheik Anta University in Dakar, Senegal. He joined the MGVP team in 2004.

Dr. Lucy Spelman **Regional Field Veterinary Manager**

Dr. Lucy Spelman graduated from Brown University and veterinary school at the University of California Davis. She completed an internship in small animal private practice, and zoological residency training at North Carolina State University, then worked for the National Zoo in Washington, DC, for nearly ten years, first as a clinician and then as director. Dr. Spelman started with MGVP in October, 2006.

Dr. Magdalena Lukasik-Braum **Regional Field Veterinarian**

Dr. Magdalena Lukasik-Braum joined MGVP in early December 2007 as regional field veterinarian. Originally from Warsaw, Poland, where she received her veterinary degree, Dr. Lukasik-Braum has been involved in chimpanzee health,

ecotourism, and research in East Africa since 1998, working initially for Jane Goodall in Gombe National Park, Tanzania, and then in Mahale National Park. She has also served as head veterinarian for CROW, a busy wildlife rehabilitation clinic located in Durbin, South Africa.

John Huston **Agricultural Project Coordinator**

John graduated with a Bachelor of Science degree in Animal Science (1993) and earned a Master's in Genetics and Animal Husbandry (1995) from Mississippi State University. He is completing his PhD in Veterinary Science, and is currently Lecturer and Organizer of International Coordination at the Institute for Higher Learning of Agriculture and Animal Husbandry (ISAE) in Busogo, Rwanda.

UGANDA

Dr. John Bosco Nizeyi **Field Veterinarian**

Dr. Nizeyi earned his veterinary degree at Makerere University in Uganda and his MS in recreational resources from Colorado State University. He completed his PhD in veterinary medicine with a dissertation on fecal cortisol levels in gorillas at Makerere University. Dr. Nizeyi has been on the veterinary staff of the MGVP since 1993.

Dr. Benard Ssebide **Field Veterinarian**

Dr. Ssebide received his veterinary degree and his MS in wildlife health and management from Makerere University. He also completed extensive course work in terrestrial and aquatic ecosystem health and conservation medicine in the United States. He joined the MGVP in March 2007 and will soon begin work on his PhD.

DEMOCRATIC REPUBLIC OF THE CONGO

Dr. Jacques Iyanya **Field Veterinarian**

Dr. Iyanya received his veterinary degree from the University of Lubumbashi in the Democratic Republic of the Congo. He worked for the Department of Agriculture and Development in eastern Democratic Republic of the Congo before joining MGVP in 2004.

Dr. Eddy Kambale **Field Veterinarian**

Dr. Kambale earned his veterinary degree at the Catholic University of Graben, Butembo, in the Democratic Republic of the Congo. Before

joining MGVP in 2004, he was a scholar at the Technical Institute for Agriculture and Veterinary Science in Butembo, Democratic Republic of the Congo.

PROJECT CENTER STAFF

Jean-Paul Lukusa, Laboratory Manager
Jospin Mbonekuba, Administrative Assistant
Leon Ntahobavukira, House Manager

ADDITIONAL STAFF

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Partners

ORTPN (Office Rwandais du Tourisme et des Parcs Nationaux)

The purpose of the Government of Rwanda's ORTPN is to conserve the rich biodiversity and values of Rwanda's protected areas and to promote sustainable tourism. The MGVP works closely with and under the authority of the ORTPN, providing veterinary care and assisting with other health-related issues for the gorillas and other species in and around their habitat in the Parc National des Volcans.

ICCN (Institut Congolais pour la Conservation de la Nature)

The Government of the Democratic Republic of the Congo's ICCN manages and conserves biodiversity in protected areas, supports and promotes scientific research in ecologically sustainable development, develops ecotourism that respects the fundamental principles of conservation, and integrates conservation into local development processes for the populations surrounding protected areas. The MGVP assists the ICCN with veterinary care for the mountain gorillas in Parc National des Volcans and eastern lowland gorillas in Kahuzi Biega National Park and Mt. Tshiaberimu National Park. Since 2004 the MGVP has also helped provide care and management for confiscated and orphaned eastern lowland gorillas.

UWA (Uganda Wildlife Authority)

The Ugandan Wildlife Authority was established in 1996, with the merging of the Ugandan National Parks and the Game Departments, to manage Uganda's protected wildlife areas. The MGVP works closely with UWA's veterinary unit to provide health care, monitoring and other health-related expertise to the gorillas in Mgahinga Gorilla National Park and Bwindi Impenetrable National Park.

Additional Partners

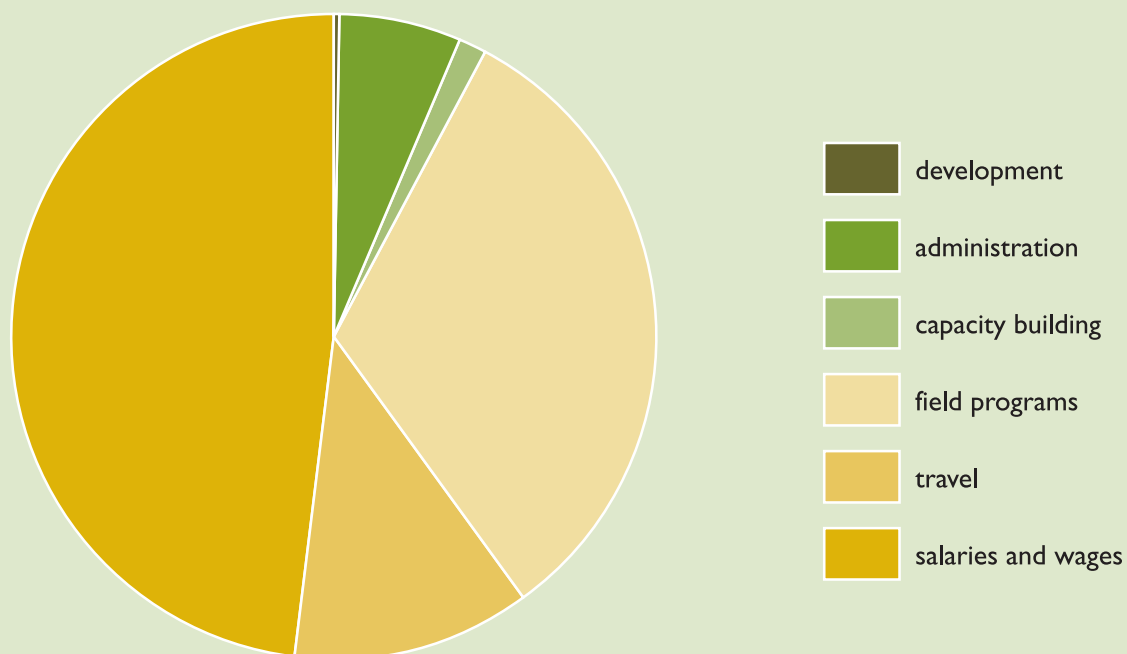
MGVP also collaborates with the Dian Fossey Gorilla Fund International (DFGFI), International Gorilla Conservation Program (IGCP), Institute for Tropical Forest Conservation, the Jane Goodall Institute, Conservation Through Public Health (CTPH) and other nongovernmental organizations dedicated to conserving African apes and their habitats in central Africa.

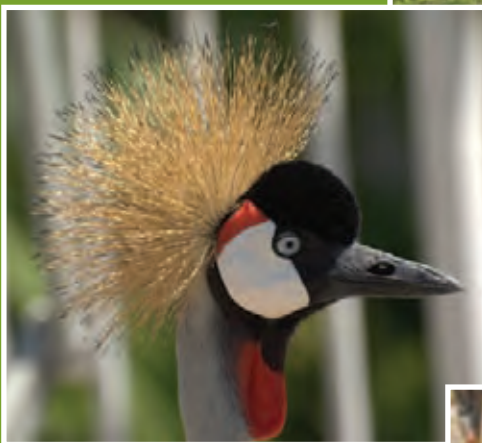
July 1, 2008–June 30, 2009 Fiscal Spending

A total of \$848,310 in funding was spent through MGVP toward Mountain Gorilla health.

The chart below breaks down the expenditures.

Total expenditures \$848,310



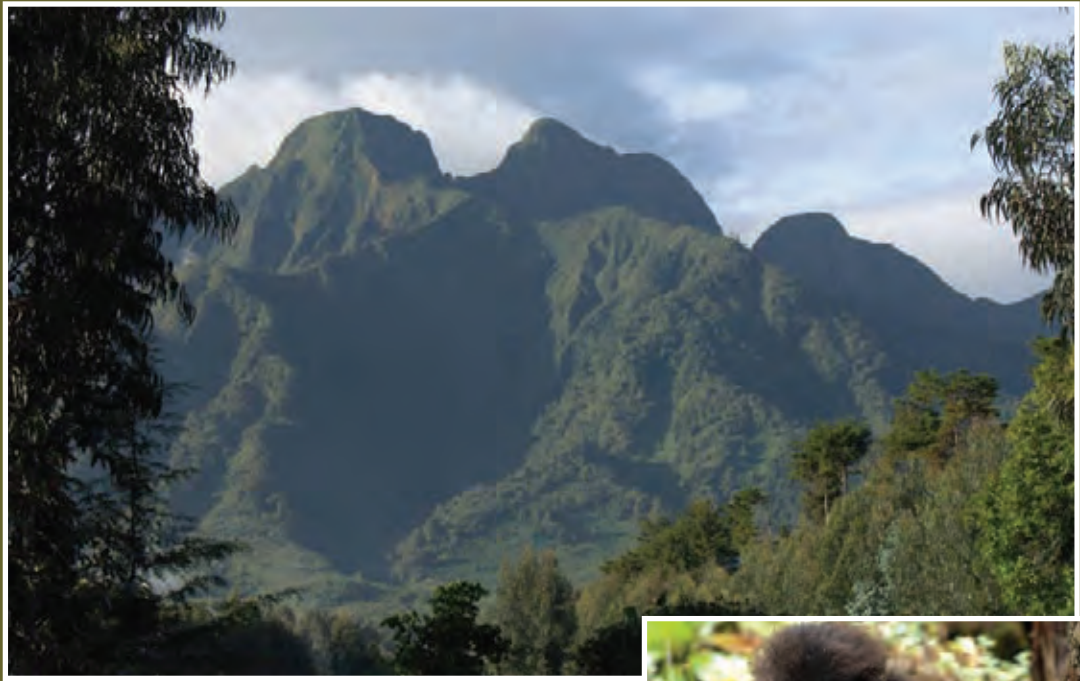


About the Mountain Gorilla One Health Program

The joint MGVP-UC Davis Mountain Gorilla One Health Program improves the sustainability of mountain gorilla populations by monitoring the gorillas' health, providing veterinary care, conducting relevant health studies and disseminating information. Monitoring the health of the population includes observing and accumulating data, as well as collecting and analyzing biological samples. Providing health care involves interventions for treatment when afflictions are severe, and/or preventative measures when health threats are present. Conducting relevant health studies includes all research conducted in an effort to gain knowledge regarding the health and sustainability of the mountain gorillas and their ecosystem, which includes the other animals, habitats and humans with which they come into contact. We make every effort to disseminate information to increase public awareness of our efforts and the plight of the mountain gorilla. In addition, we publish and/or present results of our scientific studies and share data with other agencies. Recognizing the continual need to provide these services, we engage in programs to build scientific capacity within the host countries to carry out this mission. We approach all aspects of our work so that outcomes of either data or technologies can be utilized by other conservation efforts.

To this end we hope not just to accomplish our task, but to be a model for other conservation work by sharing our developments so others do not utilize scarce dollars to “reinvent the wheel.”

Please visit our public web site (www.gorilladoctors.org) or visit us in-country through Ged Caddick at Terra Incognita (www.ecotours.com).



Every individual mountain gorilla matters. The loss of even a few individuals impacts their kin, social groups and genetic diversity. That is why preserving their health, and the health and well-being of the other animals and people that influence their ecosystem, is so critically important. You can help the mountain gorillas and the people who live with them by supporting the Mountain Gorilla One Health Program. Even if you never get the rare opportunity to meet a mountain gorilla face-to-face, you will know that you are helping them survive.



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