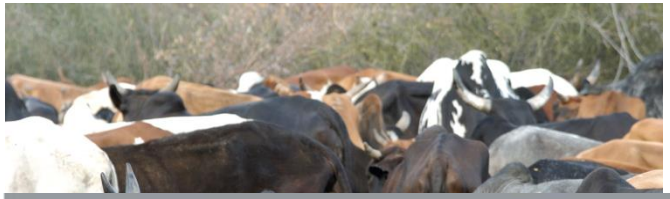
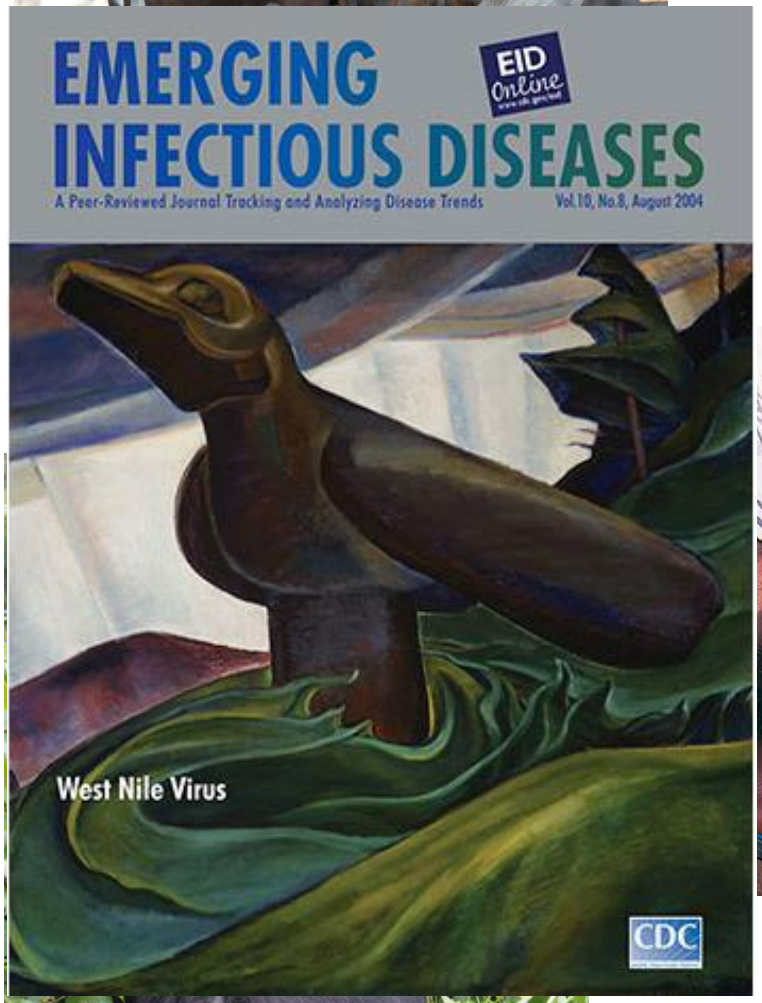
One Health In Action:
From the Field to the Classroom

UCDAVIS
VETERINARY MEDICINE
Karen C. Drayer Wildlife Health Center



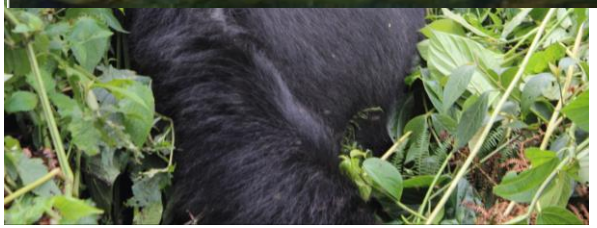
Majority of human infectious diseases are of animal origin



75% of emerging infectious diseases in humans have wildlife origins

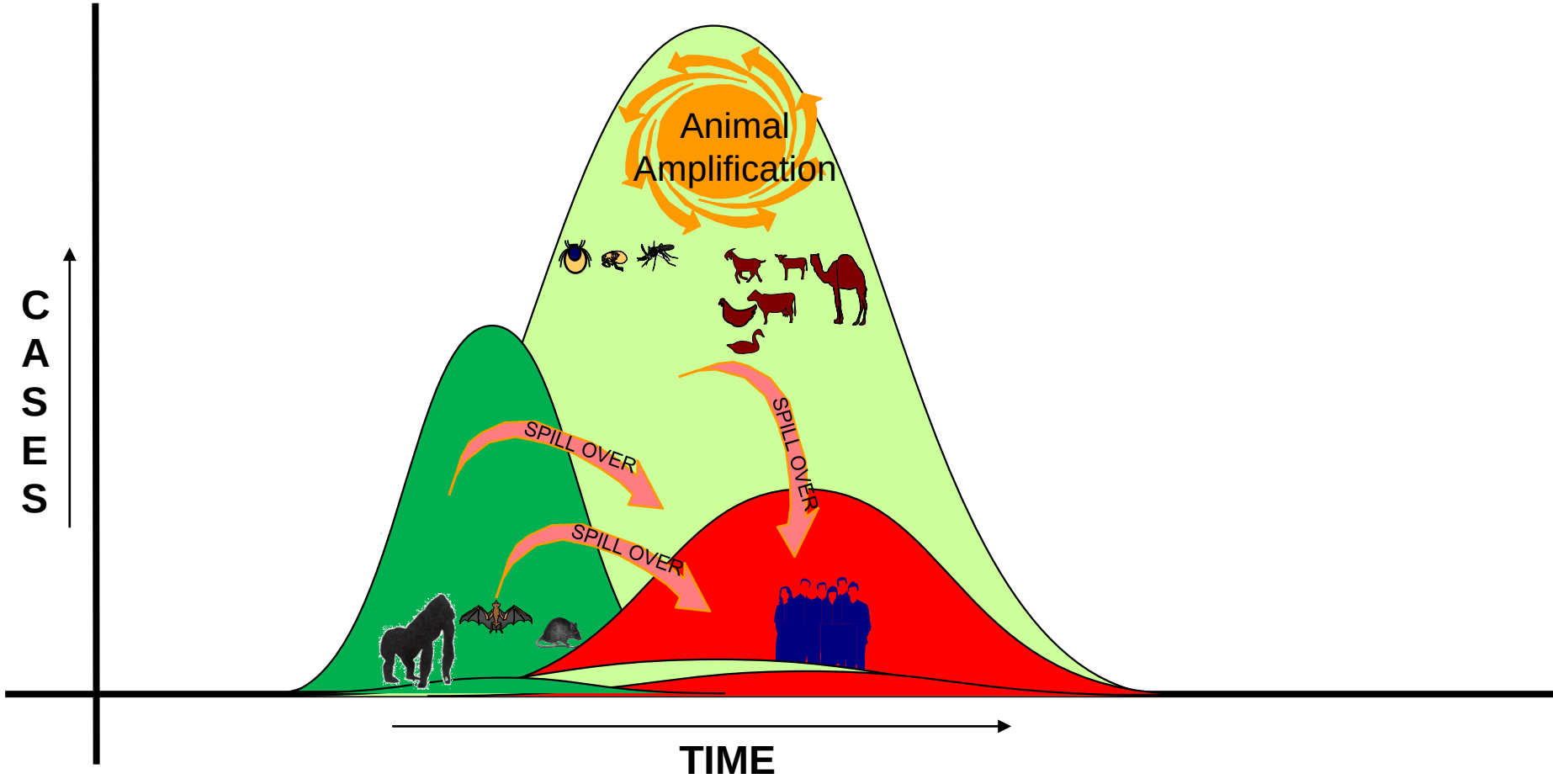
Human contact with wildlife has been linked to recent emergent diseases

Human population growth is highest near diverse wildlife areas



Zoo and wildlife veterinarians uniquely positioned to discover EIDs and mitigate the potential for pandemics

USAID Emerging Pandemic Threats
PREDICT Project



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UCDAVIS VETERINARY MEDICINE
WILDLIFE CONSERVATION SOCIETY
EcoHealth Alliance
METABIOTA
Smithsonian


Walkerfilm © 2013


P. Telfer, 2005

PREDICT Diagnostic Strategy

Targeted screening for different wildlife taxa

	primates	bats	rodents	human	birds
Family level primers	Retro, Filo, Flavi, Influenza, Paramyxo, Henipa, Pox, Bunya, Herpes, Seadorna, Astro, Corona, Arena	Flavi, Corona, Henipa, Paramyxo, Rhabdo, Arena, Filo, Reo, Influenza, Bunya, Seadorna, Astro	Arena, Hanta, Pox, Alpha, Flavi, Reo, Paramyxo, Influenza, Bunya, Seadorna, Astro	Retro, Filo, Flavi, Influenza, Paramyxo, Henipa, Pox, Bunya, Herpes, Seadorna, Astro, Corona, Arena, Hanta, Entero, Lyssa	Orthomyxo, Paramyxo, Flavi

Refine with specific primers or sequencing
Advanced pathogen discovery

20 PCR protocols developed and going out to countries

Follow-up on-the-ground field investigations
develop diagnostics
screen local human cases
screen local wildlife

USAID FROM THE AMERICAN PEOPLE | PREDICT

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UCDAVIS VETERINARY MEDICINE One Health Institute

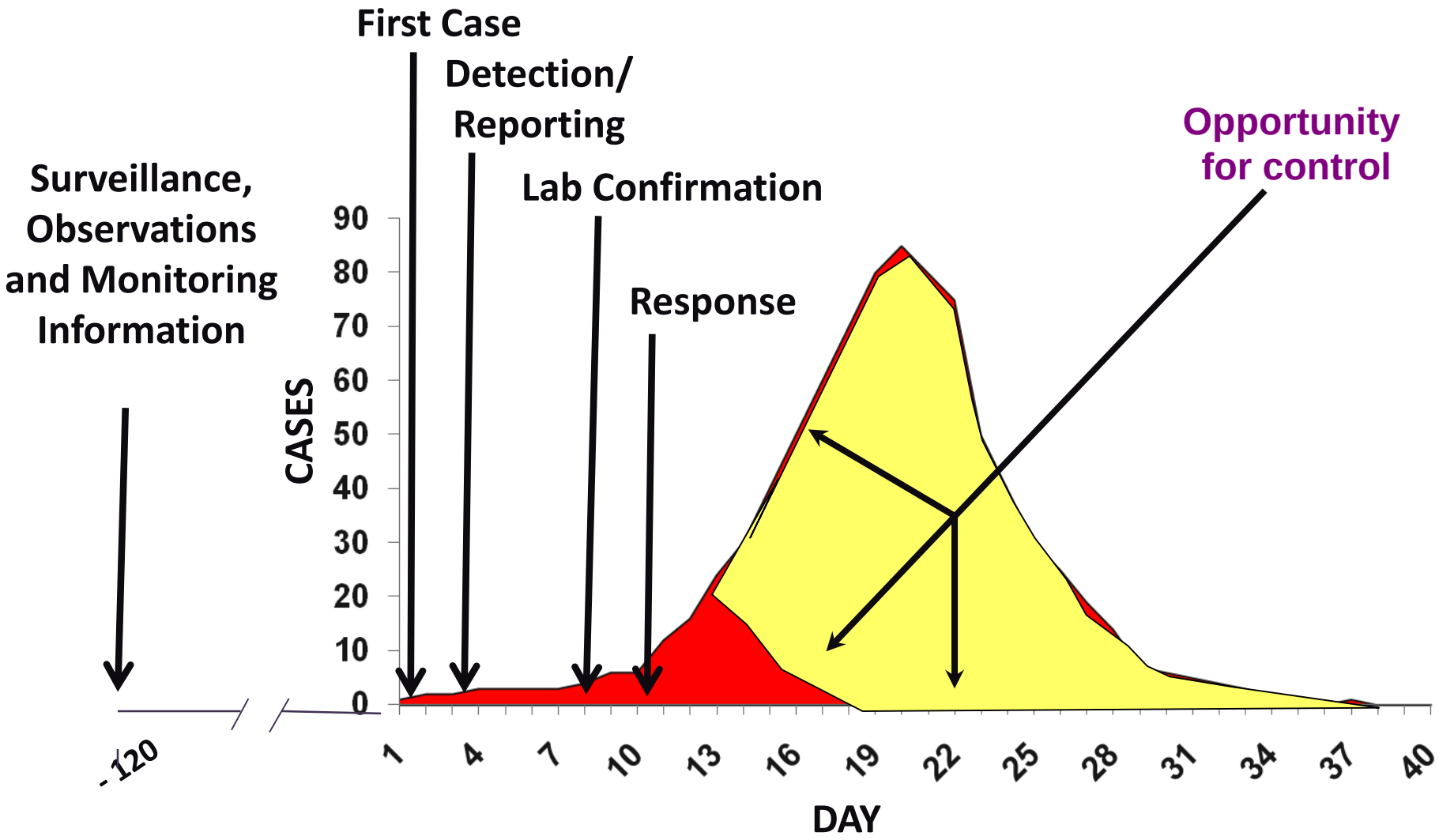
WILDLIFE CONSERVATION SOCIETY

EcoHealth Alliance

METABIOTA

Smithsonian Institution

- Trained >2,000 field personnel, veterinarians, laboratory technicians, public health workers from 20 countries in 59 ministries
- Building capacity to test for viral families in 33 labs
- Collected samples from 50,000 animals
- Discovered >250 novel viruses in wildlife (e.g. corona, retro, adeno, rhabdo, herpes, boca)
- Documenting human pathogens in wildlife and animal-origin pathogens in humans



Adapted from J. Davis, Climate Adaptation Workshop, Nov. 2003

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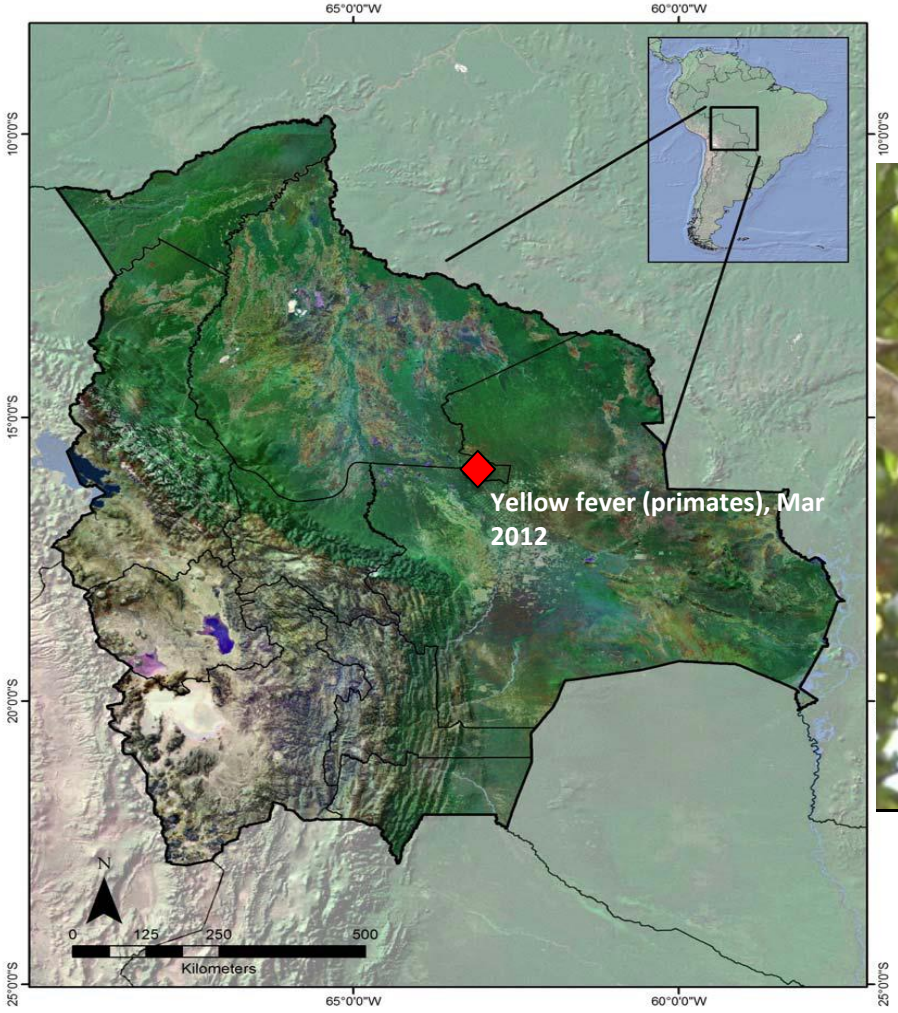
VETERINARY MEDICINE
One Health Institute

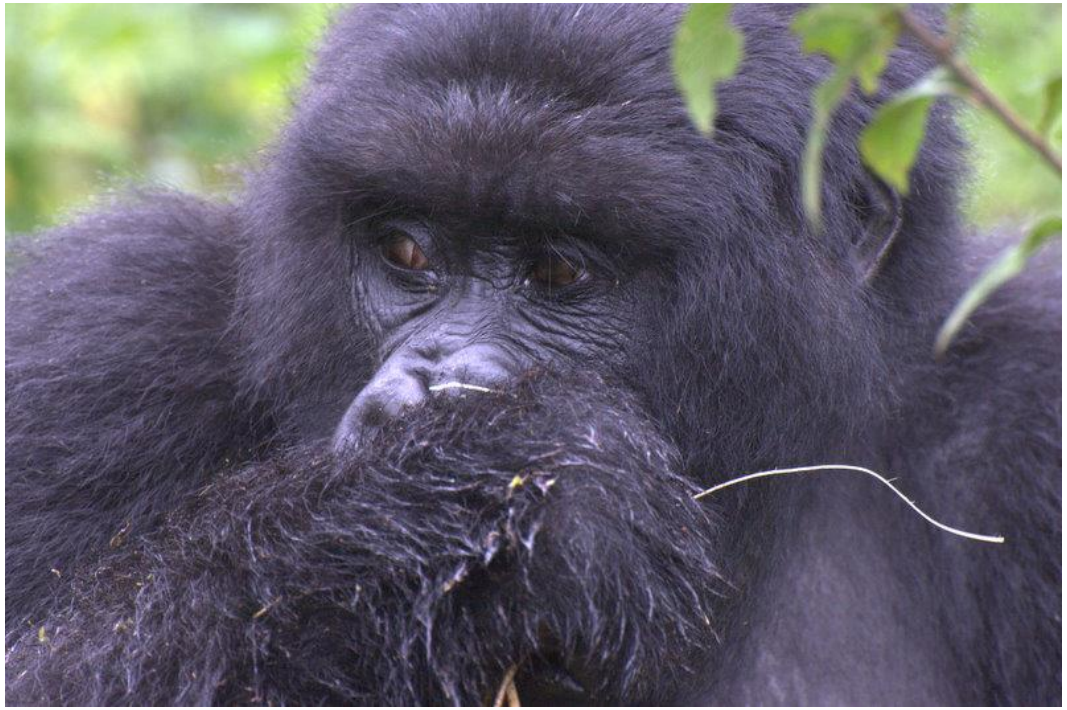

65°0'0"W
60°0'0"W
10°0'0"S
15°0'0"S
20°0'0"S
25°0'0"S
Yellow fever (primates), Mar 2012
N
0
125
250
500
Kilometers


ESURS
U.P.D.
LYCEE EMBLO

MOUNTAIN GORILLA
VETERINARY PROJECT

ESTABLISHED 1986


11,370,425 people;
1,087 people/sq. mi



Human Metapneumovirus Infection in Wild Mountain Gorillas, Rwanda

Gustavo Palacios, Linda J. Lowenstine, Michael R. Cranfield, Kirsten V.K. Gilardi, Lucy Spelman, Magda Lukasik-Braum, Jean-Felix Kinani, Antoine Mudakikwa, Elisabeth Nyirakaragire, Ana Valeria Bussetti, Nazir Savji, Stephen Hutchison, Michael Egholm, and W. Ian Lipkin

The genetic relatedness of mountain gorillas and humans has led to concerns about interspecies transmission of infectious agents. Human-to-gorilla transmission may explain human metapneumovirus in 2 wild mountain gorillas that died during a respiratory disease outbreak in Rwanda in 2009. Surveillance is needed to ensure survival of these critically endangered animals.

Gorilla Conservation Employee Health Program

- Sensitization, consent forms
- Logistics (site, transportation)
- Pre-exam questionnaire
- Physician examination
- Laboratory testing
  - CBC
  - TB intradermal test
  - HIV
  - Measles titer

Gorilla Conservation Employee Health Program

- +/- vaccination: DPT, polio, MMR, tetanus
- De-worming and health/hygiene education
  - Quarterly, including families
  - Mebendazole
- Follow-up

<u>2012/13</u>

1,850 individuals

DOI: 10.7589/2012-09-229

Journal of Wildlife Diseases, 50(1), 2014, pp. 21–30

GIARDIA IN MOUNTAIN GORILLAS (*GORILLA BERINGEI BERINGEI*), FOREST BUFFALO (*SYNCERUS CAFFER*), AND DOMESTIC CATTLE IN VOLCANOES NATIONAL PARK, RWANDA

Jennifer N. Hogan,[1] Woutrina A. Miller,[1] Michael R. Cranfield,[2,5] Jan Ramer,[3,5] James Hassell,[4] Jean Bosco Noheri,[5] Patricia A. Conrad,[1] and Kirsten V. K. Gilardi[2,6]

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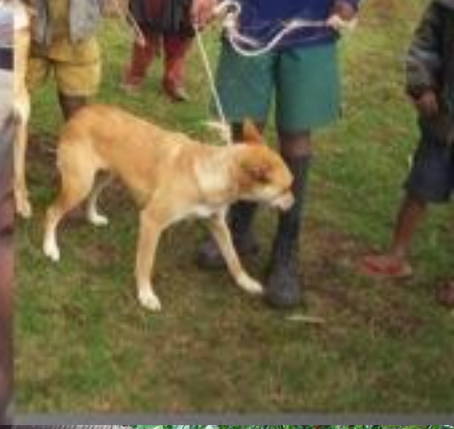
[5] Current address: Mountain Gorilla Veterinary Project, 1876 Mansion House Drive, Baltimore, Maryland 21217, USA

[6] Corresponding author (email: kvgilardi@ucdavis.edu)



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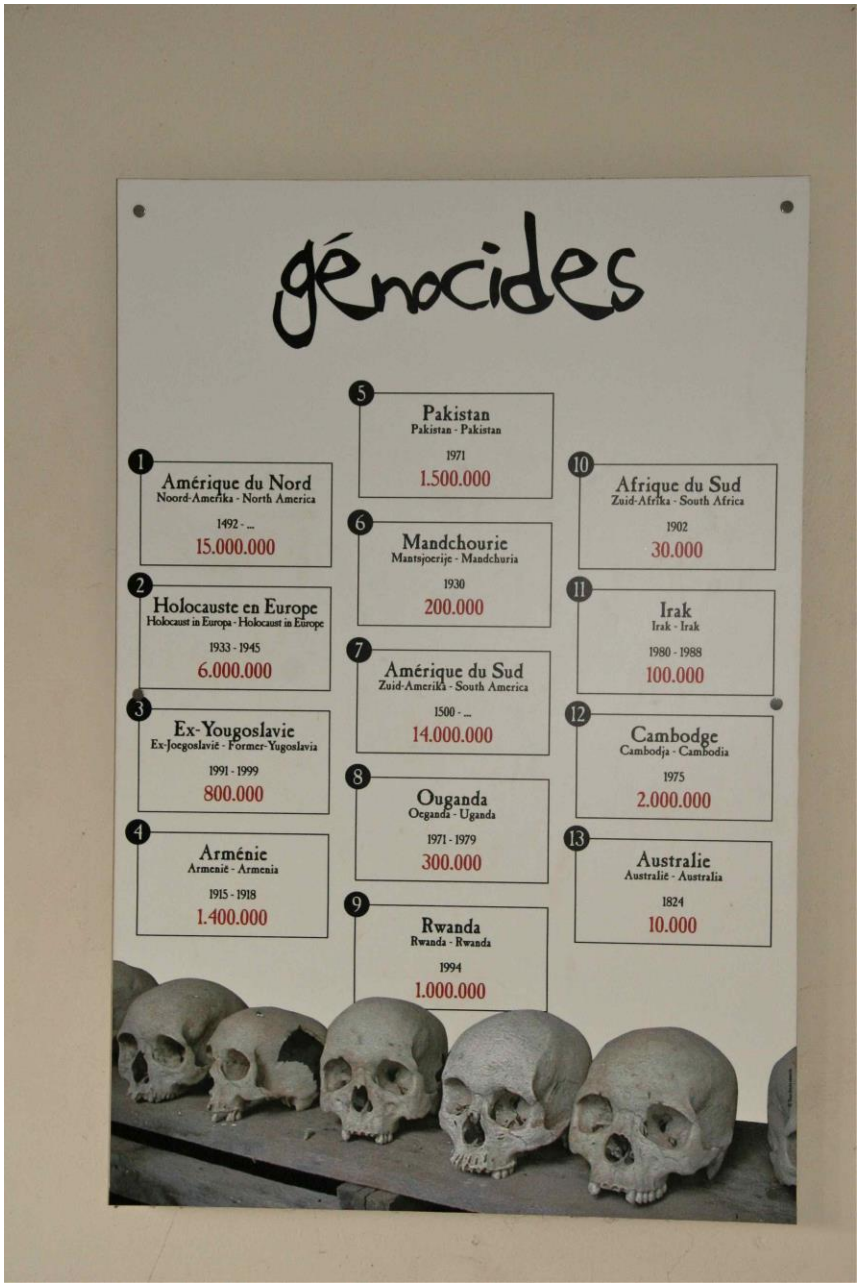
PLoS one

Extreme Conservation Leads to Recovery of the Virunga Mountain Gorillas

Martha M. Robbins[1]*, Markye Gray[2], Katie A. Fawcett[3], Felicia B. Nutter[4], Prosper Uwingeli[5], Innocent Mburanumwe[6], Edwin Kagoda[7], Augustin Basabose[2], Tara S. Stoinski[3,8], Mike R. Cranfield[4], James Byamukama[2], Lucy H. Spelman[4], Andrew M. Robbins[1]


génocides
1
Amérique du Nord
Noord-Amerika - North America
1492 - ...
15.000.000
2
Holocauste en Europe
Holocaust in Europa - Holocaust in Europe
1933 - 1945
6.000.000
3
Ex-Yougoslavie
Ex-Joegoslavië - Former-Yugoslavia
1991 - 1999
800.000
4
Arménie
Armenië - Armenia
1915 - 1918
1.400.000
5
Pakistan
Pakistan - Pakistan
1971
1.500.000
6
Mandchourie
Mantsjoerije - Mandchuria
1930
200.000
7
Amérique du Sud
Zuid-Amerika - South America
1500 - ...
14.000.000
8
Ouganda
Oeganda - Uganda
1971 - 1979
300.000
9
Rwanda
Rwanda - Rwanda
1994
1.000.000
10
Afrique du Sud
Zuid-Afrika - South Africa
1902
30.000
11
Irak
Irak - Irak
1980 - 1988
100.000
12
Cambodge
Cambodja - Cambodia
1975
2.000.000
13
Australie
Australië - Australia
1824
10.000


THANK YOU
TOURIST!