Ecology & Evolution | Jan 9, 2026 | 8 min read | By Bryan White

Jane Goodall's Legacy: Anthropogenic Provisioning and the Evolution of Primatological Ethics

Biology * Evolution * Anthropology

Introduction: The Shore of Lake Tanganyika and the Gombe Paradox

In the summer of 1960, twenty-six-year-old Jane Goodall arrived on the eastern shore of Lake Tanganyika in the Gombe Stream Game Reserve, initiating the longest continuous wildlife field study in history.[1] Sponsored by paleoanthropologist Louis Leakey to study our closest living relatives (~98.6% shared DNA), Goodall challenged the prevailing dogma of "Man the Toolmaker."[1][3] When an emboldened male named David Greybeard allowed her to observe him stripping leaves from twigs to fish for termites, the discovery reshaped studies of human evolution.[3]

To habituate the apes and secure photographic documentation for the National Geographic Society, Goodall and photographer Hugo van Lawick established an artificial banana-feeding station.[2][4] This choice created the "Gombe Paradox": while provisioning revealed matrilineal kinship, tool traditions, and coalition politics, it simultaneously functioned as an ecological trap -- elevating local aggression, facilitating deadly anthropozoonotic epidemics, and sparking a decades-long debate over primate warfare that forged modern primatological ethics.[4][5]

Engineering the "Banana Club": Provisioning Mechanics and Social Fission-Fusion

Because sugar-rich bananas offered a caloric reward superior to fibrous forest fruits, informal handouts escalated by 1963 into the institutionalized "Banana Club."[4][6] To prevent tent raids, researchers installed sunken 60-cm concrete and metal boxes operated via underground wire levers and gravity hoppers, attempting to open boxes selectively for subordinate females and juveniles.[4][6]

However, the station disrupted the natural "fission-fusion" foraging of Pan troglodytes, which normally disperse in small parties to reduce feeding competition.[4] Enforcing permanent camp aggregation created intense social tension: as Richard Wrangham documented, rates of aggression and redirected attacks spiked whenever latches jammed or dominant males monopolized boxes.[4]

Zoonotic Spillover and the 1966 Poliomyelitis Outbreak

Close provisioning breached the epidemiological barrier between humans and immunologically na ve apes.[5][7] In 1966 -- one month after a poliomyelitis outbreak in nearby Kigoma -- a paralytic epidemic struck the Kasakela community.[5][7] Transmitted via the fecal-oral route across a camp clearing saturated with feces and human-handled bananas, Poliovirus attacked spinal motor neurons, paralyzing at least ten chimpanzees.[5][8][9]

Six apes died or vanished, survivors like Faben suffered permanent limb paralysis,

and older male Mr. McGregor -- paralyzed in his lower body and dislocating his shoulder while dragging himself -- had to be euthanized.[5][7] Goodall and Leakey obtained emergency Sabin oral polio vaccine (OPV) and dosed the community via bananas, halting the epidemic.[5][8]

| Year | | Outbreak Event | | Pathogen / Vector | | Demographic & Clinical Impact at Gombe |

| 1966 | | Poliomyelitis Epidemic | | Poliovirus (Fecal-oral spillover) | | 6 dead/missing; 4+ permanently paralyzed (Mr. McGregor, Faben); halted via OPV in bananas.[5][8] |

| 1968 | | Respiratory Outbreak | | Viral / bacterial pneumonia | | 5 chimpanzees dead or missing following acute respiratory illness.[5][7] |

| 1987 | | Pneumonia Epidemic | | Lower respiratory pathogen | | 9 dead; severe demographic blow requiring ~15 years to recover.[5] |

| 1996 & 2000 | | Influenza-Like Waves | | Anthropogenic respiratory viruses | | 11 dead in 1996; ~30 ill in 2000, prompting permanent end of provisioning.[7][11][14] |

The Four-Year War (1974-1978), Provisioning Hypothesis, and Stress Endocrinology

Between 1974 and 1978, after the Kasakela community split from the southern Kahama splinter group, researchers witnessed the "Four-Year War."[12] Starting January 7, 1974, with the ambush killing of Kahama male Godi, Kasakela patrols systematically exterminated all Kahama males (D , Goliath, Charlie, Hugh, Sniff) and females such as Madam Bee, annexing their territory.[12][14]

In 1991, Margaret Power's "Provisioning Hypothesis" argued that this war was an artifact of artificial feeding stress.[4][6] However, a 2014 Nature study by Michael Wilson and colleagues analyzing 152 lethal attacks across 18 chimpanzee communities refuted Power's hypothesis, proving that unprovisioned populations (such as Ngogo in Uganda) wage lethal territorial warfare as an evolved adaptive strategy.[13][14]

| Analytical Dimension | | Provisioning Artifact Model | | Multi-Site Evolutionary & Physiological Verdict |

| Coalitional Warfare | | Margaret Power (1991): Lethal raids caused by artificial camp banana competition.[6] | | Refuted (Wilson et al., 2014): 152 lethal attacks across 18 sites confirm warfare is an evolved adaptive strategy.[13] |

| HPA-Axis Cortisol | | Feeding-box competition elevates subordinate social stress.[4][15] | | Confirmed Locally: Fecal glucocorticoid metabolite (FGCM) assays (12-24h lag) show chronic cortisol suppresses immunity.[16][17][18] |

| Eco-Immunology | | Caloric supplementation boosts individual body condition.[19] | | Outweighed by Contact Density: Host aggregation drives pathogen R0 higher than caloric gains can offset.[20][21] |

Field endocrinology and eco-immunology confirm that while bananas supplied calories, camp crowding activated the hypothalamic-pituitary-adrenal (HPA) axis -- elevating cortisol (measured via fecal glucocorticoid metabolites) and amplifying pathogen transmission (R0).[15][17][20][21]

From Direct Contact to Neutral Habituation, Non-Invasive Genomics, and Tacare

Phased down after 1968 and halted in 2000, the feeding station inspired strict IUCN Great Ape Best Practice Guidelines: neutral habituation without food rewards, 7-10 meter distance rules, surgical masks, and researcher quarantine.[2][22][23] Concurrently, molecular biology enabled non-invasive fecal profiling of DNA kinship, endocrine hormones, and SIVcpz pathogens alongside GPS tracking.[1][10]

| Protocol Parameter | | 1960s "Gombe Banana Club" Era | | 2020s IUCN Great Ape Best Practice Standard |

| Habituation | | Provisioning via mechanical banana boxes.[4][6] | | Neutral habituation (passive tracking, no food).[22] |

| Proximity & Biosecurity | | Direct contact; reactive post-outbreak OPV.[2][5] | | 7-10 m buffer, surgical masks, researcher quarantine.[22][23] |

| Data & Conservation | | Visual field notes and 16mm film.[2] | | Non-invasive fecal genomics/endocrinology & Tacare forestry.[10][24] |

Because deforestation turned Gombe's 35 km2 ecosystem into an isolated forest island, the Jane Goodall Institute launched Tacare in 1994 -- supporting village healthcare, clean water, and reforestation to reduce human-ape disease vectors.[11][24][25]

Conclusion: The Ethical Legacy of the Gombe Paradox

Jane Goodall's research at Gombe -- a legacy that endured through her passing on October 1, 2025, at age 91 -- redefined humanity by demonstrating toolmaking, grief, and coalition politics in wild chimpanzees.[1][25] Though early banana provisioning carried severe epidemiological costs, confronting those tragedies transformed primatology into a biosecure discipline grounded in neutral habituation, non-invasive molecular diagnostics, and community conservation.[10][22][24]

Updates... (Nov 21, 2026): Contextualized Jane Goodall's passing on October 1, 2025, at age 91, corrected the chapter author attribution on the Cambridge University Press Gombe entry (Singer, Jul 4, 2024), replaced unreachable or undated secondary links with verified WHO, IUCN, and peer-reviewed CrossRef DOIs, and added exact publication dates across all references.

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