the Jane Goodall Institute

CELEBRATING GOMBE STREAM RESEARCH CENTER

Research findings contributing to our understanding of chimpanzees and their socio-ecology

- Within the community territory, female chimps have different core-areas (Williams, Murray)
- Females migrate from their community of birth and breed elsewhere (Pusey), and incest is rare (Goodall)
- The different maternal styles, restrictive, *laissez-faire*, have been studed closely to examine their effects upon the infants (Goodall, Gardner-Roberts, Murray)
- Female compete for space and resources, and are very resistant to the arrival of immigrant females into the community: this competition may extend to infanticide (Pusey, Carson, Wallauer, Wilson, Wroblewski, Goodall, Schroepfer-Walker, Miller)
- High-ranking females are more successful breeders (Pusey, Wlliams, Goodall)
- Males compete for dominance rank, but this competition is moderated by reassurance and reconciliation, allowing cooperation among males in defence of the territory (Goodall, Bygott, Simpson)
- Individuals' dominance-histories have been well studied, showing the importance of coalitions and political strategies, but high rank is rewarded with higher reproductive success (Goodall, Bygott, Riss, Pusey, Gilby, Wroblewski)
- However, alternative mating strategies, such as consortships, allow males of middle and lower rank to achieve more matings than expected (McGinnis, Tutin, Wroblewski)

Research findings on social organisation and habitat-requirements, which contribute to Conservation and Wilderness Management

- The diet mostly is fruit, for which the chimps range widely according to season (Wrangham)
- Their prey-species are mainly young mammals especially monkeys (Teleki, Wrangham, van-Zinnicq Bergmann, Stanford, Boesch, Gilby)
- Their forest-habitat in Gombe National Park has increased greatly (via GIS technology, Pintea *et al.)*
- Chimps live in large fission-fusion communities (Goodall, Wrangham, Pusey, Williams, Mjungu)
- Communities live in large territories, which the males defend aggressively (Bygott, Jane, Wilson)
- Genetic analyses show considerable variation within the chimp communities (Morin, Moore, Woodruff, Hahn, Pusey, Wroblewsky)
- The involvement of the local human community is very important toward long-term conservation has (Pusey *et al*)

Current and future research

- There is increasing use of GPS and GIS, to document habitat-changes (Pintea), individual ranging patterns (Gilby), and even the movements of disease (Parsons)
- Genetic analyses from chimpanzee-dung allow genetic profiles of communities, assignment of paternities, and comparison of relationships between close and distant relatives (e.g. fathers and offspring vs non-offspring) (Constable, Wroblewsky)
- Fecal samples are also a non-intrusive way of examining parasite infection, other disease-status (e.g. SIVcpz), and gut flora (microbiome) (Gillespie, Lonsdorf, Murray, Oehlert)
- Hormones extracted from urine and from dung allow studies of changes in reproduction and maternal behaviour (Emery-Thompson, Murray), and evidence of stress (Muller, Carson, Markham)
- Levels of stable-isotope ratios in chimpanzee and baboon bones are being compared with the corresponding ratios in their plant-foods, to establish whether such ratios in fossil-hominin bones may be any indicator of their extinct diet
- Questionnaire-studies across the long-term observers are used to examine details of the chimpanzees' personalities (Weiss)

Research findings contributing to our knowledge of chimp health and survival

- Chimps' life-histories show that reproductive rate is very low, but their lifespan long (Goodall, Wallis, Pusey *et al*, Hill)
- Causes of death have been described, at Gombe chiefly disease (Willams, Lonsdorf, Wilson, Pusey, Goodall, Terio)
- The major chimp parasites have been described (File, Murray S, Nutter, Bakuza, Gillespie, Travis)
- Gombe chimps carry the virus SIVcpz, elsewhere the origin of HIV, and it reducess chmpanzees' health, birthrate, infant survival, and population growth (Santiago, Hahn, Kamenya, Pusey, Goodall, Keele, Rudicell, Wroblewski)
- Chimps have many natural bone-pathologies (Morbeck, Zihlman, Kirchhoff)
- Chimpanzees use some plants as medicines (Wrangham, Huffmann)

Research findings conrtibuting to our understanding of chimpanzee intelligence and culture

- Numerous sex-differences have been described: males tend to hunt more meat, females tend to eat more insects (McGrew) and forage more successfully (Pandolfi): infant females are better in learning some tool-use patterns (Lonsdorf)
- When chimpanzees catch or obtain meat, they share it selectively for different social benefits (Gilby)
- Cultural differences have also been described, between different communities and different populations: these differences include choice of foods, patterns of insectivory, use of tools, and gestures (the grooming hand-clasp, & leaf-clipping) (Goodall, McGrew, Wallauer, Wrangham, Whiten, O'Malley
- Some chimpanzees show preferential hand-use (left or right-handedness) for different tasks (McGrew, Marchant)

A number of other primates sympatric with the chimpanzees at Gombe have been studied over the years and are still being studied:

- Colobus monkeys have been the subject of a series of studies (Clutton-Brock, Kamenya, Stanford, Watt)
- Baboon-life histories and behavior have been studied continuously since 1967 (Ransom, Nash, Owens, Packer, Mueller-Graf, Collins)
- Guenons (*Cercopithecus:* the red-tail monkey *C. ascanius* and the blue monkey *C. mitis*) are being studied to find why they hybridise, and to compare the hybrids' internal genetics and external phenotype, and to examine their fertility (Detwiler)
- Monthly surveys of the major trees and vines which are important food-species for the chimps are being conducted to look for seasonal and annual variations in productivity, and also to compare habitat-quality in the ranges of the three different communities