

EARTHWATCH INSTITUTE FIELD REPORT 2004

Project Title: Caring for Chimpanzees
Principal Investigators: Roger Fouts, Deborah Fouts, Mary Lee Jensvold
Research Site: Ellensburg, WA USA
Study Species: *Pan troglodytes*
Date Report was Completed: November 27, 2005

SECTION I: RESEARCH

Key Research Objectives

- 1) Record how the chimpanzees use their enclosures
- 2) Record how the chimpanzees locomote
- 3) Compare current locomotion patterns to patterns in 1995-1998
- 4) Enter data into Excel and SPSS and check for accuracy
- 5) Support the chimpanzees at CHCI in a stimulating enriching environment
- 6) Explore the ways that the chimpanzees use their signs with humans and each other and ways to enrich the lives of all captive chimpanzees
- 7) Pilot forage project for 2006 field season
- 8) Review field logs for examples of humor, laughter, and play in the chimpanzees

Data Collection and Results

All teams collected live data collection on how the chimpanzees locomoted and which parts of the enclosure that they used.

Locomotion: Volunteers learned the coding system for locomotion by viewing videotapes, scoring behaviours and discussing their codes with staff. Nearly all volunteers became reliable data collectors. Five teams collected 118.5 hours of data.

Space use: Volunteers learned the coding system for locations by studying maps and practice exercises that are live and videotaped. Nearly all volunteers became reliable data collectors. Five teams collected 120 hours of data.

Progress towards Original Objectives

- 1) *Record how the chimpanzees use their enclosures:* Volunteers completed data collection on this project. We will compile the data from this field season with 2004 and then write up the results for publication.
- 2) *Record how the chimpanzees locomote:* Volunteers completed data collection on this project. We will compile the data from this field season with 2004 and then write up the results for publication.
- 3) *Compare current locomotion patterns to patterns in 1995-1998:* We presented a preliminary comparison in the Earthwatch conference poster and this information will be disseminated in the Friends of Washoe newsletter. The patterns remained stable.

- 4) *Enter data into Excel and SPSS and check for accuracy:* Volunteers entered and checked 238.5 hours of data into Excel. The PI's imported data into SPSS.
- 5) *Support the chimpanzees at CHCI in a stimulating enriching environment:* Volunteers prepared enrichment and meals for the chimpanzees. They cleaned enclosures and helped in the vegetable garden. These tasks supported this objective.
- 6) *Explore the ways that the chimpanzees use their signs with humans and each other and ways to enrich the live of all captive chimpanzees:*
 - *Sign language studies – Masters theses:* Four students who were advisees of Drs. Jensvold and Fouts completed their Master's degrees this year. Jessica Hartel explored the chimpanzees' responses to familiar vs. unfamiliar signers vs. non-signers. Some of the human participants were Earthwatch volunteers. She found clear individual differences in how the chimpanzees responded to the various types of participants; Washoe and Loulis were responsive to all groups while Tatu and Dar restricted their interactions to familiar individuals who signed. Deborah Tierney examined the chimpanzees' responses to a human interlocutor's questions vs. statements. The chimpanzees were more likely to respond to the questions versus the statements. Tennyson Egan explored imaginary play in the chimpanzees in 67 hours of videotape collected over 18 years. She found 21 instances. Susan Shiau examined the chimpanzees' modulation of signs. She found that the chimpanzees modulate their signs in patterns like human signers. Current graduate students are exploring related topics in this area.
 - *PCM project:* The chimpanzees continue to acquire signs. Descriptions of the signs that they acquired while on the cross-fostering project at University of Nevada Reno, and Loulis' early signs were published in the mid-1980's. The PCM Project under the direction of Dr. Jensvold and lead by undergraduate Jason Wallin will document the signs the chimpanzees have acquired in the last two decades and prepare this document for publication. Earthwatch volunteers assisted in this project by searching records and entering data.
 - *Gestural dialects:* We continue to study dialectic differences in gestures of free-living and captive chimpanzees. Two graduate students are exploring topics in this area. One is comparing threat gestures between CHCI chimpanzees to those at Kibale Forest Uganda and Gombe Stream Reserve, Tanzania. During summer 2005 graduate student Laurel Marburg travelled to three African chimpanzee sanctuaries and videorecorded the behaviours of the chimpanzees. Currently she is analyzing these videotapes for her thesis.
 - *Foraging piloting:* Apprentices during summer 2005 tested the methods for the 2006 Earthwatch Field season project, Foraging and Activity Levels. They prepared enrichments and collected data over a two-week period. This helped us to refine our methodology for the Earthwatch 2006 field season.

Summary of Results

Locomotion: The distribution of the chimpanzees' locomotion and postural behaviours is shown in Table 1. The chimpanzees engaged in all of the behaviours.

| Behavior | Total |
|------------------|-------|
| Brachiate | 15 |
| Bad observation | 1618 |
| Back up | 12 |
| Bipedal run | 16 |
| Bipedal walk | 39 |
| Climb | 763 |
| Cling | 328 |
| Crutch walk | 30 |
| Drop | 3 |
| Jump | 30 |
| Lie down | 11038 |
| Other | 115 |
| Quadrupedal run | 88 |
| Quadrupedal walk | 2165 |
| Rock walk | 12 |
| Sit-up walk | 3 |
| Slide | 1 |
| Spin | 53 |
| Stand | 1867 |
| Sit up | 24399 |
| Swing | 52 |
| Total | 42660 |

Table 1: Frequency of locomotion behaviors

A comparison between the postural and locomotor behaviors of the CHCI chimpanzees versus free-living chimpanzees appears in Table 2. Both groups have similar patterns of behavior. This shows that the facility at CHCI allows for the chimpanzees to engage in species-specific behaviors. In addition Table 2 compares the postures and locomotor behaviors of the chimpanzees in 2005 to the 1995-98 field seasons. This shows the chimpanzees' patterns of behavior have remained relatively stable.

| Location | 1996-1998 | 2005 | Tai |
|---|-----------|--------|--------|
| <i>No. Observations of Locomotion Behaviors</i> | 15,088 | 3270 | 1417 |
| Bipedal | 2.58% | 1.68% | 1.20% |
| Climb | 29.28% | 23.33% | 11.00% |
| Leap | 0.52% | 1.0% | 0.30% |
| Quadrupedal | 63.82% | 71.92% | 86.10% |
| Suspensory | 3.80% | 2.04% | 1.25% |
| <i>No. Observations of Postures</i> | 176,763 | 37,644 | 8660 |
| Cling | 0.90% | .87% | 1.55% |
| Lie | 26.70% | 29.32% | 16.85% |
| Sit | 64.15% | 64.82% | 75.70% |
| Stand | 8.25% | 4.99% | 5.85% |

Table 2: Locomotion and postural behaviors at CHCI in 1996-98 vs. present and free-ranging chimpanzees in Tai Forest, Ivory Coast (Doran, 1996)

Space use: The appendix contains a map for each chimpanzee and illustrates which rooms and structures the chimpanzees most often used. Dar used the cargo net in the East Room 32% of his time, cement surfaces in the East room 14%, the wooden platform in the East Room 14%, the ledge outside 11%, and the climbing structure in the East Room 7% of his time. Loulis used the wooden platform in the East Room 27% of his time, the wooden platform in the West Room at 20%, cement substrates in the West Room 16%, and cement in the East Room 10% of his time. Tatu used the ledge outside 19% , the terrace outside 14%, the wooden platform in the East Room 14%, cement substrates in the West Room 8%, and the wooden platform in the West Room at 8% of her time. Washoe spent 30% of her time on the outside ledge, 26% on the wooden platform in the East Room and 22% on cement substrates in the East. All other locations for all four chimpanzees were used 5% of each chimpanzees' time or less. While all of the chimpanzees have clear favorite places they have differences in how they disperse their time among those favorites. For example Washoe was in her three most favorite spots 78% of the time while Tatu was in her three most favorite spots 47% of her time. Despite the favourites the chimpanzees used all of the structures and substrates.

Forms of signs: The chimpanzees at CHCI are always using new signs and each new sign is described in a sign log. With the help of Earthwatch volunteers and the coordinating efforts of our undergraduate Jason Wallin, we are digitizing the sign log database. Some examples of sign logs follow:

- Target sign: DENTIST

People were drilling and pounding in the PlayRoom (very loud) and C3 was shut down. I asked Dar "What's that noise? What's that loud noise?" Dar [signed] DAR LISTEN, LISTEN DENTIST/. (KB, 7/15/83)

- Target sign: DIFFERENT

Tatu had asked for more crackers so I brought over the light [colored] ones. Tatu just looked and signed CRACKER. I vocalized, "Tatu these are crackers." She again just looked at me. I vocalized, "Do you want the different crackers?" She began to rock and signed DIFFERENT/. I went to get the darker [colored] crackers. Apparently this was correct, because she immediately put her hand out. (HB, 12/15/02)

- Target sign: STUPID

Moja acted nervous (slight whimper looking back and forth to Washoe and I) about getting her bowl because Tatu blocked access to the food door. Moja started screaming after about a minute and Washoe got aroused and approached Moja and Tatu. Tatu signed STUPID/ 1L on Moja's head [while looking toward Washoe, perhaps] telling Washoe that Moja is stupid. Loulis and Dar display. Tatu and Moja went up to TUN1 without bowls. Dar took their bowls and ate. Moja cried for quite a while behind Tatu in TUN 1 but Tatu [blocked] Moja. Moja signed GOOD to me. I signed I KNOW YOU GOOD. She signed GOOD several times to Tatu crying and reaching past Tatu but Tatu wouldn't move. Finally, after about 8 minutes, Moja was able to get past and [get] a bowl. Loulis and Dar displayed some more and Washoe was quite aroused too. Finally, everyone calmed and ate lunch. (KB, 7/7/89)

Play, laughter, and humor: Dr. Mary Lee Jensvold, in collaboration with Dr. Lori Sheeran of CWU's Anthropology department, is examining play, laughter, and humor in the chimpanzees. Earthwatch volunteers read caregivers' daily shift reports for examples of these behaviors. Following are some examples that they found.

- I played chase with Loulis in the p.m. I chased him around with a trash bag on my head. Dar wanted the bag so I gave him a shirt and he chased Loulis around with the shirt on his head. (MLA, 6/5/87)

- I served apples to an appreciative group of pant-hooting and hugging chimpanzees. Washoe was walking around with somewhere between three and five apples in her mouth. Lou was laughing and also had a mouthful. Lou even choked at one point. Washoe stopped briefly only to continue tickling after he caught his breath. Needless to say I think the chimps really enjoyed the apples. (MB, 7/26/88)
- When I was bleaching the drain, Loulis was being a hoot. With a big playface, he'd fill up at the fountain and come over and get ready to spit. I'd say in a playful tone, "Don't you spit at me!" He'd swallow and shake his head with an exaggerated open mouth playface. I'd tickle him and we'd go through it again. Then when I'd turn my back he spit at my waist. I'd say, "I'm gonna get you," and when I turned around, he'd be running away. (HS, 3/18/87)

Significance/Benefits of Research

- *Local:* The research benefits the chimpanzees at CHCI in terms of discovering what is the best environment for them and ways to improve their health and well-being. The volunteers create enrichment which adds diversity to the chimpanzees' environment and is beneficial to the chimpanzees' psychological well-being. CHCI provides educational and research experiences to the general public, Earthwatch volunteers, and students at Central Washington University and other universities. Each program participant is enriched by their experience at CHCI. The Earthwatch program brings revenue to Central Washington University as we utilize the Conference Program and Dining Services. Volunteers bring revenue to the cities of Ellensburg, Roslyn, and Leavenworth while shopping, dining, and entertaining themselves.
- *National:* The findings of the research conducted through the Earthwatch grant are shared in national and international forums in the forms of research conferences, the Friends of Washoe newsletter, and peer review publications. Our Earthwatch volunteers are largely American. Often they share their experiences through presentations in classes or service groups. This spreads the message of Project Washoe, a compassion for all living beings. Other volunteers go onto volunteer at their local zoo or sanctuary. This brings new husbandry and enrichment ideas to these places that can directly effect the non-human primates there.
- *International:* A small percentage of volunteers come from outside of the U.S. Like the American volunteers, the international volunteers often give talks or volunteer. This brings our message even further - globally. Our husbandry practices, philosophy, research findings have been presented in international conferences, thus affecting husbandry practices there as well.

Chimpanzee and humans are very closely related. Chimpanzees are closer to humans than they are to gorillas. Washoe and the other chimpanzees at CHCI use American Sign Language to communicate to humans and each other. Often the Earthwatch volunteers share in these conversations, and with that these chimpanzees are reaching across an imagined gap between humans and the rest of nature. When the volunteers span that gap they realize that humans are not very different from other species. They realize that there is a continuity between all species and our planet. With this realization, exploitation becomes more difficult. When humans cease their exploitation of other beings and resources on this planet, sustainability can take a foothold. Washoe and her family create a bridge between humans and non-humans that takes us toward sustainability.

Dissemination of Results

Scientific Papers

- Hicks, T.C., Fouts, R. S., & Fouts, D. H. (2005). Chimpanzee (*Pan troglodytes troglodytes*) tool use in the Ngotto Forest, Central African Republic. *American Journal of Primatology*, 65(3), 221-237.
- Jensvold, M.L., Field, A., Cranford, J., Fouts, R.S., & Fouts, D.H. (2005). Incidence of wounding within a group of five signing chimpanzees (*Pan troglodytes*). *Laboratory Primate Newsletter*, 44, 5-7.
- Hicks, T.C., Fouts, R. S., & Fouts, D. H. (Submitted for publication). A survey of chimpanzees (*Pan troglodytes*) and gorillas (*Gorilla gorilla*) in the Ngotto Forest, Central African Republic. *International Journal of Primatology*.
- Daspit, L.L., Fouts, R.S., & Fouts, H.N. (Submitted for publication). Animal knowledge and classification: Similarities and differences between Bofi foragers and farmers in central Africa. *Journal of Ethnobiology*.

Management Plans and Reports

The Chimpanzee Management Plan Working Group to the National Advisory Research Resources Council at NIH (R. Fouts speaker), Bethesda, MD, May, 2005.

Presentations

- Fouts, R. S. Donald Griffin's continuity: Embracing Darwinian reality. Paper presented at the Animal Behavior Society Meetings, Snowbird, Utah, August 9, 2005.
- Washington State University, Vancouver, WA
Athena Montessori College, Wellington, New Zealand
Victoria University, Wellington, New Zealand
University of Puget Sound, Tacoma, WA
Museum of Natural History, London, England

Radio and Television

- New Zealand National Radio, New Zealand.
50.connect.com, BBC Radio Ulster, UK
BBC Radio Devon, UK
BBC Radio Jersey, BBC West Midlands, UK
BBC Radio York, Radio Xfm, UK
BBC 3 Counties Radio, BBC Radio Derby, UK
BBC Hereford & Worcester, Manx Radio, UK
BBC fivelive nat'l, ITN TV, London.
ZDF TV. Germany

Books and Chapters

- Fouts, R.S. (2005). Foreward. In F. D. McMillian (Ed). *Mental health and well-being in animals*. Iowa State University Press, pp. xv-xvii.
- Fouts, R. & Fouts, D. (2005). Captive chimpanzees. In Andrew Linzey (Ed.) *The international animal world*. Oxford: Oxford University Press
- Fouts, R., Jensvold, M.L., & Fouts, D. (In press). Taking chimpanzees on their own terms: Thirty-five years of non-invasive research. In D. Herzog (Ed). *Crossing interspecies boundaries*. Temple University Press.
- Fouts, R. Jensvold, M.L., & Fouts, D. (In press). Talking chimpanzees. In M. Bekoff (Ed.) *Encyclopedia of animal behavior*. Greenwood Publishing Group.

Jensvold, M.L., & Gardner, R.A. (In press). Conversational use of sign language by cross-fostered chimpanzees. In F. Columbus (Ed.), *New research in non-verbal communication*. Hauppauge, NY: Nova Science Publishers.

Jensvold, M.L. & Sheeran, L.S. (In press.). Ape cognition. In H. J. Birx (Ed.), *Encyclopedia of anthropology*. Sage Publications.

SECTION II: VOLUNTEERS

Volunteer Tasks and Accomplishments

Almost all of our volunteers became reliable data collectors. They created wonderful meals and enrichment which brings diversity into the lives of the chimpanzees. Some brought items for the chimpanzees. Return volunteers were helpful because they were able to assist other volunteers in learning to identify the chimpanzees.

We collected a total of 238.5 hours of data and entered it all into the database. Each volunteer cleaned enclosures and prepared enrichment several times during their stay at CHCI. Also summer teams helped us with the chimpanzees' vegetable garden. Volunteers worked on the Play, Laughter, and Humor project and the PCM project. This was a tremendous help. They made enrichment that Friends of Washoe then shipped to Save the Chimps a sanctuary in Alamogordo, NM. This enriches the lives of hundreds of chimpanzees. After departure some volunteers gave talks which helps to spread our educational message.

Project Development

During our pilot phase of the forage project with our summer apprentices we realized the difficulty that some Earthwatch volunteers may have in the data collection method. After discussion with some Earthwatch volunteers and their experiences in data collection for other projects, we decided to have data collectors work in dyads in the next year. That change should make data collection and training an easier process. This year there were many volunteers who later complained about the training and reliability process for the space use and locomotion project. Since that project is concluded we don't have to find a solution for that. We will also work on disseminating results from previous field seasons in peer review journals and conferences.

Educational Opportunities

- *Students:* CHCI has a student intern program with about 30 undergraduates and has a graduate program in Experimental Psychology with 12 students. These students work with the Earthwatch volunteers and both students and volunteers come to meals so they have an opportunity to know each other. Graduate students serve as Earthwatch staff and train the volunteers. CHCI offers a 10 week summer apprentice program which overlaps in time with some Earthwatch teams and pilot research projects for upcoming Earthwatch field seasons.
- *Other groups:* CHCI offers Chimposiums, one hour educational workshops to the general public. These are presented by our Docents who are community volunteers. Earthwatch volunteers have an option to come to a Chimposium the weekend they are here.

In all of these programs individuals learn about chimpanzees and sign language studies with chimpanzees. This knowledge helps them to understand the continuity between humans and the rest of nature. By understanding our place in nature we are less likely to exploit it.

The following graduate students completed their Master's degrees under the advisement of Drs. Jensvold and Fouts:

- Shiau, Jen-shiuan. Chimpanzee Use of Modulation in Response to Question. November, 2005
- Hartel, Jessica. Effects of Familiarity and Use of American Sign language (ASL) on Chimpanzee (*Pan troglodytes*) Conversational Behavior. November, 2005.
- Egan, Tennyson, Chimpanzees Exhibit Imaginary Play. July, 2005.
- Tierney, Deborah. Communicative Competence in Four Captive Chimpanzees as Indicated by Responses to Questions Versus Statements. June, 2005.

We have 12 Master's students now in CWU's Experimental Psychology Program. Summer apprentices are involved in several research projects as well. The findings from this summer appear in McCarthy, M., Haight, J., Helble, N., Moskowitz, H., Smith, L., Smith, S., Jensvold, M.L., & Keyser, J. (2005) Forage Pilot Study. *Friends of Washoe*, 27(1), 13-15.

Partnerships

Friends of Washoe and Roger and Deborah Fouts are partnered with the Chimpanzee Collaboratory – working toward releasing chimpanzees from exploitation in the entertainment industry. Roger Fouts is the Chair of the Board of Directors for Save the Chimps and is on the Board of Directors of Animal Welfare Institute. Roger and Deborah Fouts and Mary Lee Jensvold are on the board of directors for the Chimpanzee Retirement Sanctuary Northwest and on the Board of Advisors for the Fauna Foundation in Canada.

All of these organizations work toward improving conditions for all chimpanzees and other fellow beings which is part of the mission of CHCI.

The chimpanzees at Save the Chimps forage for the results (food enrichment that the volunteers make). The data results can be used to create new and effective enrichment and define what is the best kind of enclosure. The Chimpanzee Retirement Sanctuary Northwest aspires to help other sanctuaries design good facilities and our data would directly influence this work. This applies today and years into the future.

Acknowledgements

We wish to thank the staff and students at CHCI for helping to make our Earthwatch project a success and the many Earthwatch volunteers who came and helped us this year.