HEB 1330: Primate Social Behavior

Methods in behavioral data collection

Announcement

- Extra Quiz

- Additive points for revision Wikipedia

Overview

1) Introduction in behavioural data collection
2) Exercise for setup of individual research projects

Reading: Whitehead Chapter 3 page 53-79

Steps to behavioral data collection

1) Formulate a hypothesis and derive testable predictions

2) Establish ethogram → selection of appropriate behaviour

Ethogram

- Observe and collate list of behaviors
- Definitions of behavioral categories should be clear, comprehensive and **UNAMBIGUOUS**
- Organization of behaviors under different major categories

    Broad categories:

    - Affiliation
    - Aggression
    - Sexual behaviour
    - General activity
    - Communication

Genito-genital rubbing in bonobos

Steps to behavioral data collection

1) Formulate a hypothesis and derive testable predictions

2) Establish ethogram → selection of appropriate behaviour

3) Determine observation method

Observation method

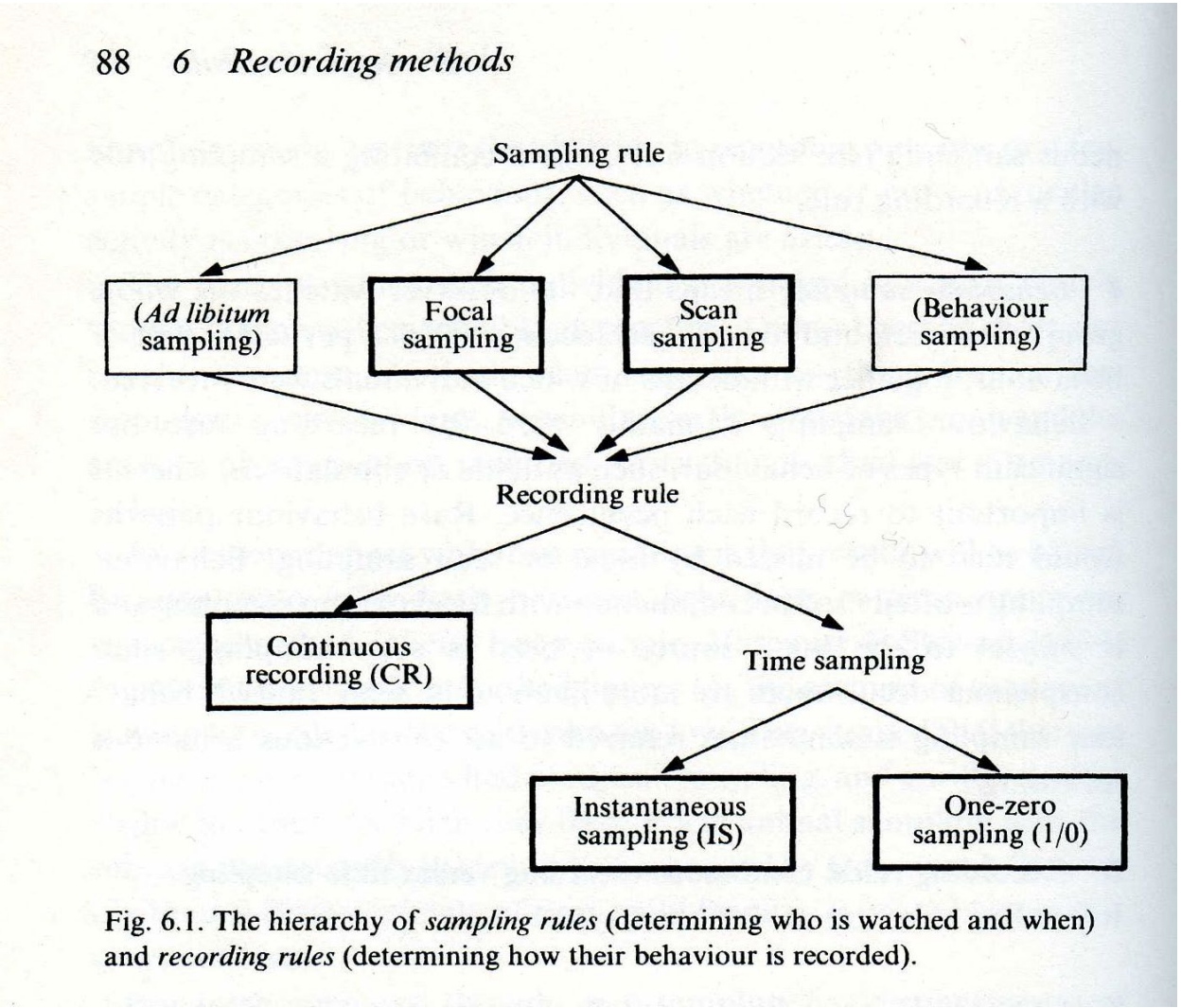


Fig. 6.1. The hierarchy of *sampling rules* (determining who is watched and when) and *recording rules* (determining how their behaviour is recorded).

Sampling rule

- Ad libitum sampling:

Observer writes down what he sees and considers relevant

- Focal sampling:

Observer focuses **on a single individual** for a given time

- Assign random order
- Avoid biased sampling for time of day, or individuals

- Scan sampling:

Behaviour of **several individuals** is recorded at regular intervals

- Choice of interval
- Minimum number of individuals

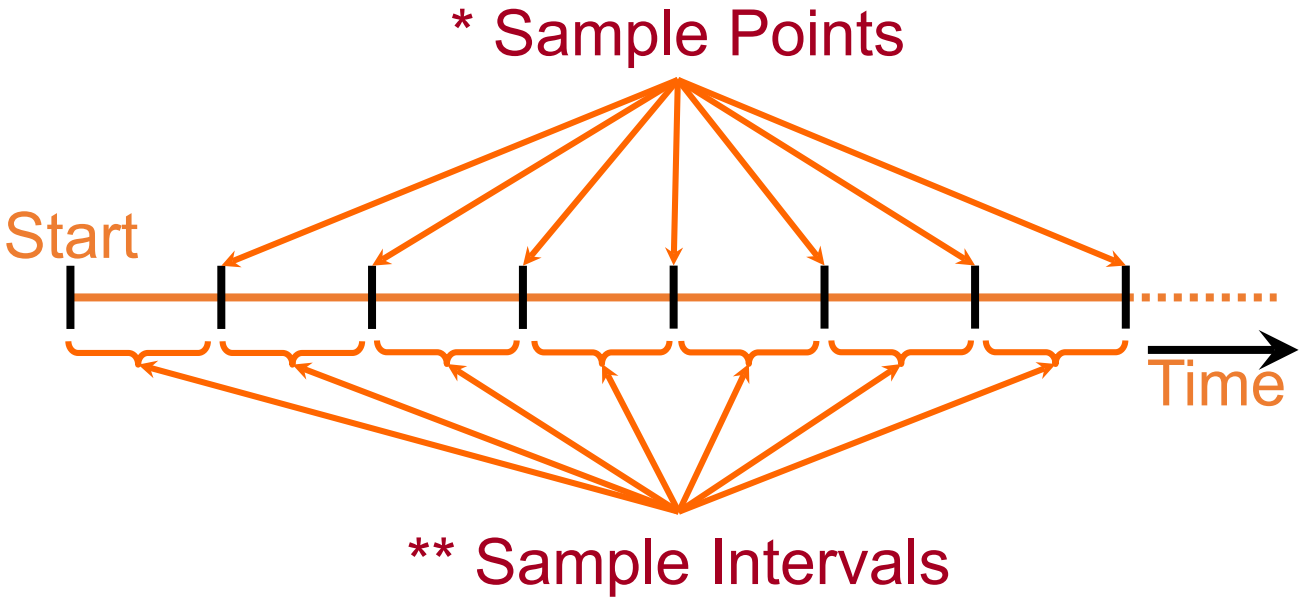
- Behaviour sampling:

Observer focuses on **all individuals** and records all occurrences of certain behaviours

Recording rule

- **Continuous recording** (record of all occurences)

- **Time sampling** (instantaneous* and one-zero**)



Recording rule

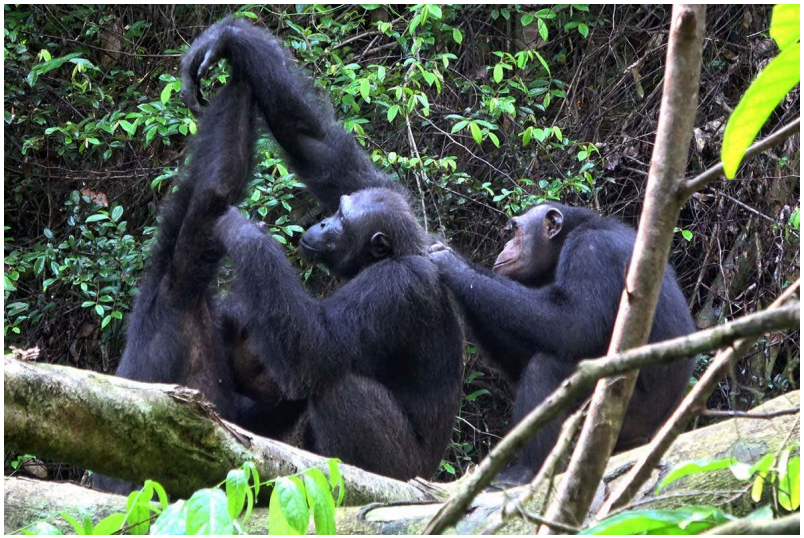
Recording rule

Choice depends on

- Type of behavior (behavioral state versus event)
  - Events?
  - Behavioural states?

Examples sample/recording rule

How to quantify relationships?

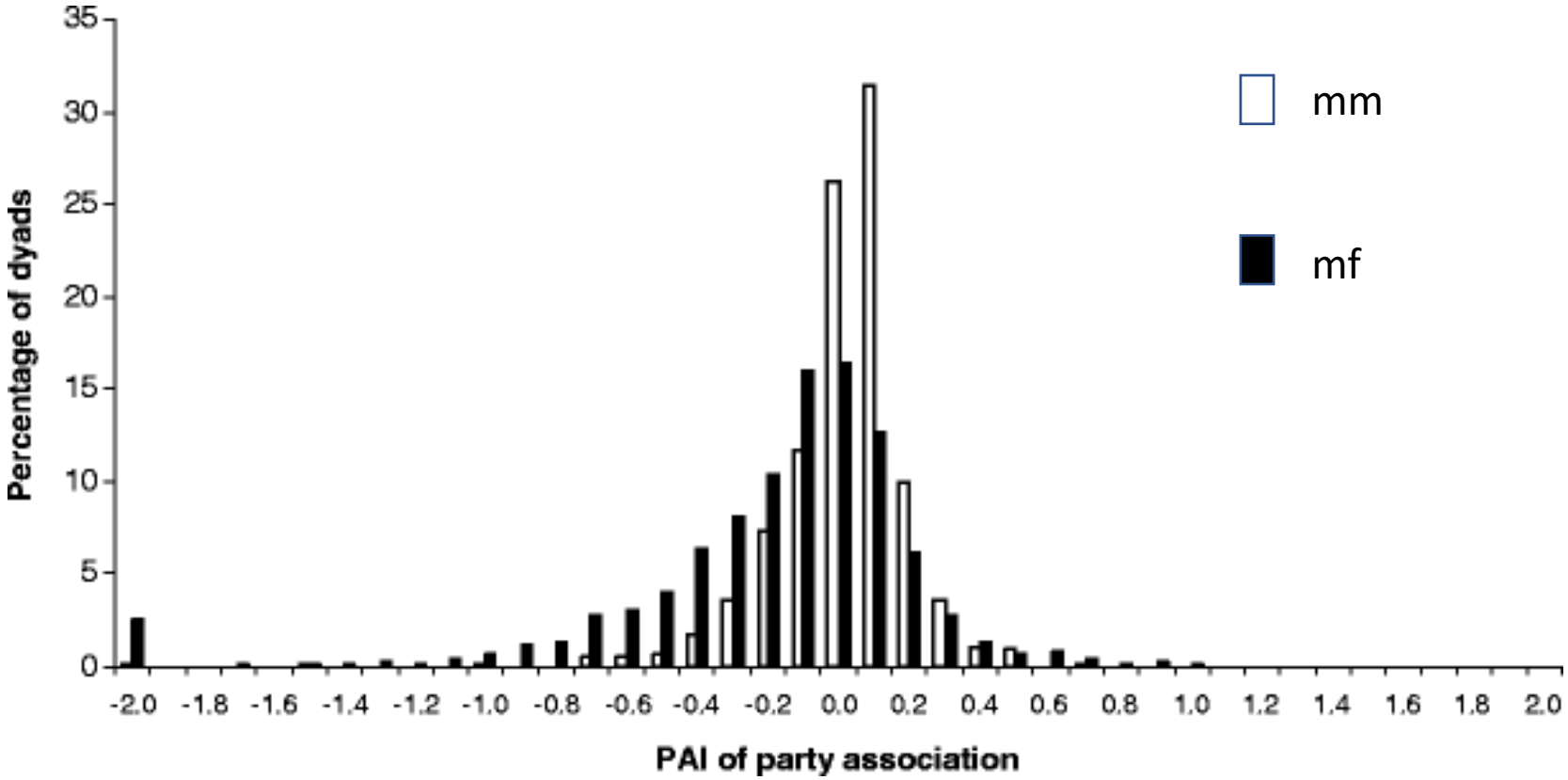


Analyses of party associations, ranging behavior, spatial proximity, and grooming of male–male and male–female dyads are based on focal follows (duration, 1–13 h) of chimpanzees conducted by K.L. Only individuals of reproductive age were included in our analyses (adolescent and adult males≥10 years: N=52, adult females≥14 years: N=45). Females with sexual swellings, whether full or only partial, were not included. At half-hour intervals, K.L. recorded the identity of individuals who were associating in the same party (i.e., within≈50 m) and in close proximity (5 m) to the focal subject, as well as their location on a map of the Ngogo territory overlaid with 500×500-m grid cells. Observations were conducted during two separate sampling periods (period 1: October 2003–September 2004, N=4,174 point records; period 2: October 2007–March 2008, N=1,028 point records). Analyses of male dominance ranks at time of conception were based on both focal and ad libitum observations of "pant-grunts," a formal signal of submission given by lower-ranking to higher-ranking individuals, and decided aggressive interactions (i.e., those in which aggression by one individual led to a submissive response by another) made by D.W. and the long-term Ngogo field assistants over the 13-year period in which conceptions occurred.

Langergraber et al 2013

Examples sample/recording rule

How to quantify relationships?



Langergraber et al 2013

Examples sample/recording rule

We collected activity data by scan sampling from November 2001 to October 2003 for a total of 280 days.

How to quantify time investments?

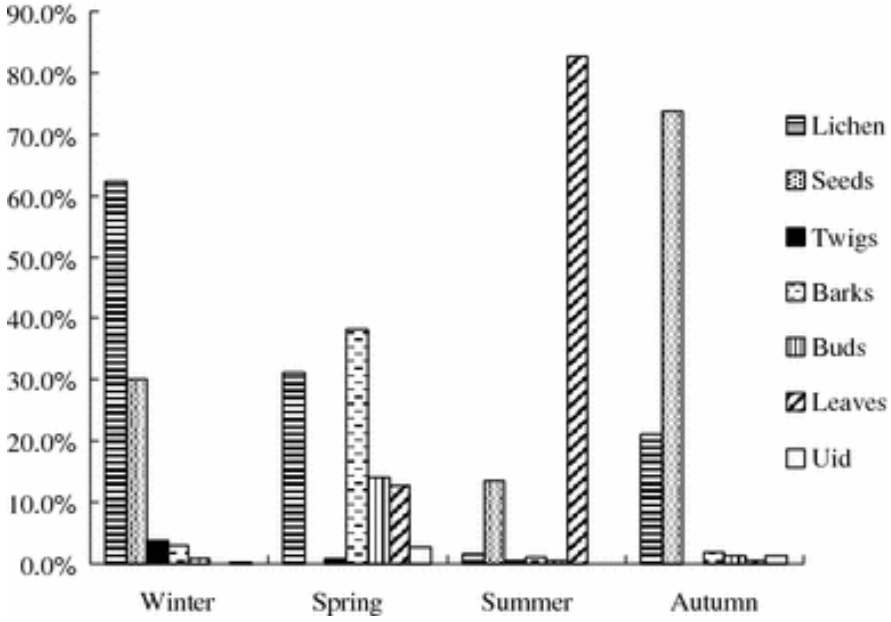
We recorded the activities of all visible animals using scan sampling over 5 min at 15-min intervals. The activity categories were resting, moving, feeding, and other, defined as:

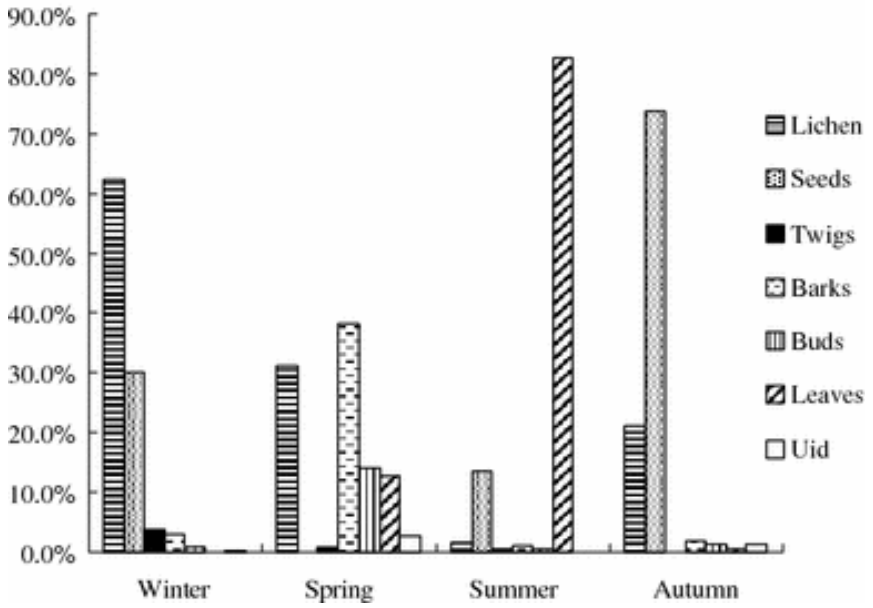
resting, when a monkey was stationary or sleeping;
•*moving*, when a monkey was traveling;
•*feeding*, when a monkey was actively manipulating potential food items, ingesting or masticating food; and
•*other*, a category which included activity such as grooming, mounting, copulating, playing, fighting and episodes when an infant was embraced by the other monkeys in the troop.

Guo et al 2007

Examples sample/recording rule

How to quantify time investments?





Guo et al 2007

Steps to behavioral data collection

1) Formulate a hypothesis and derive testable predictions

2) Establish ethogram → selection of appropriate behaviour

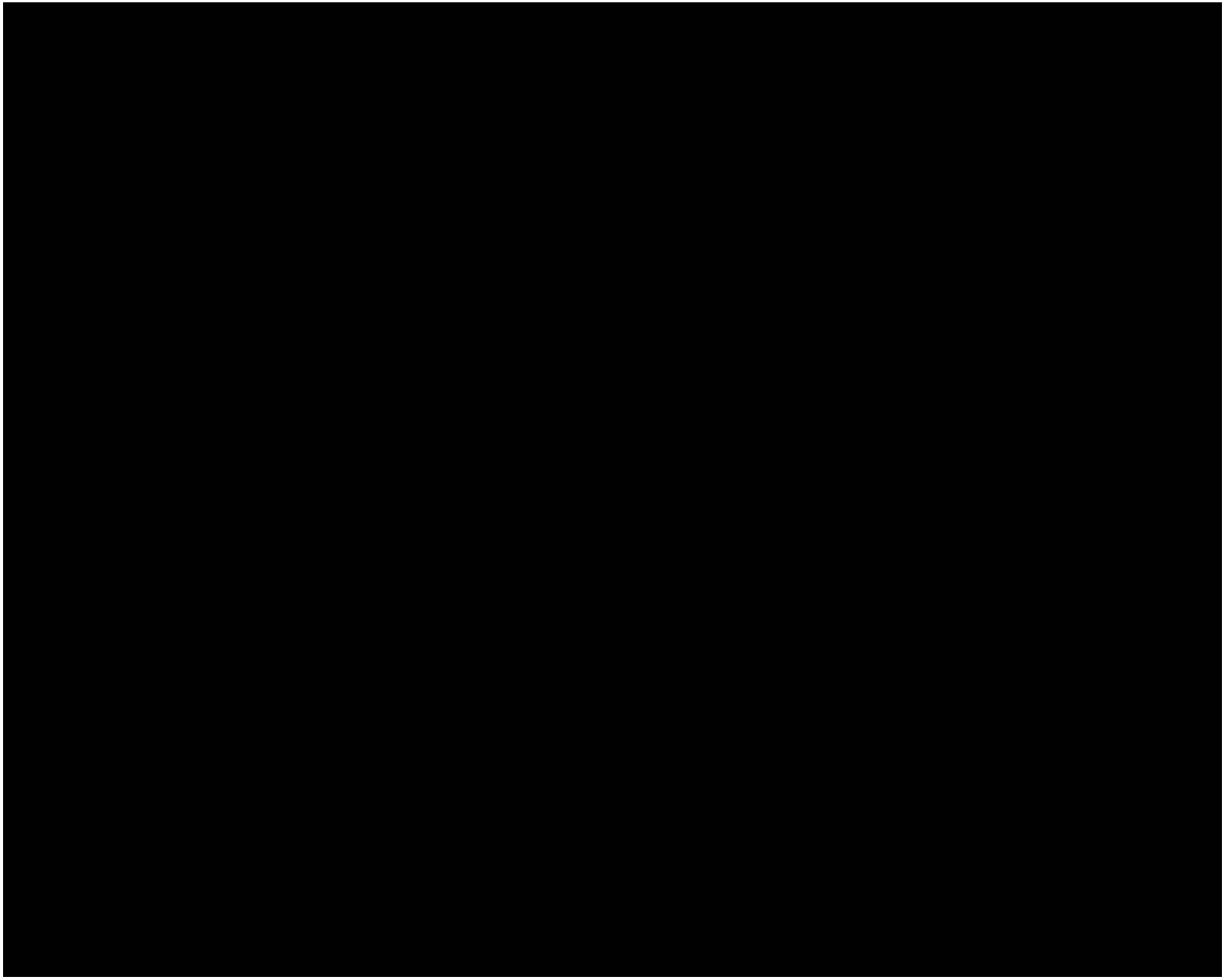
3) Determine observation method

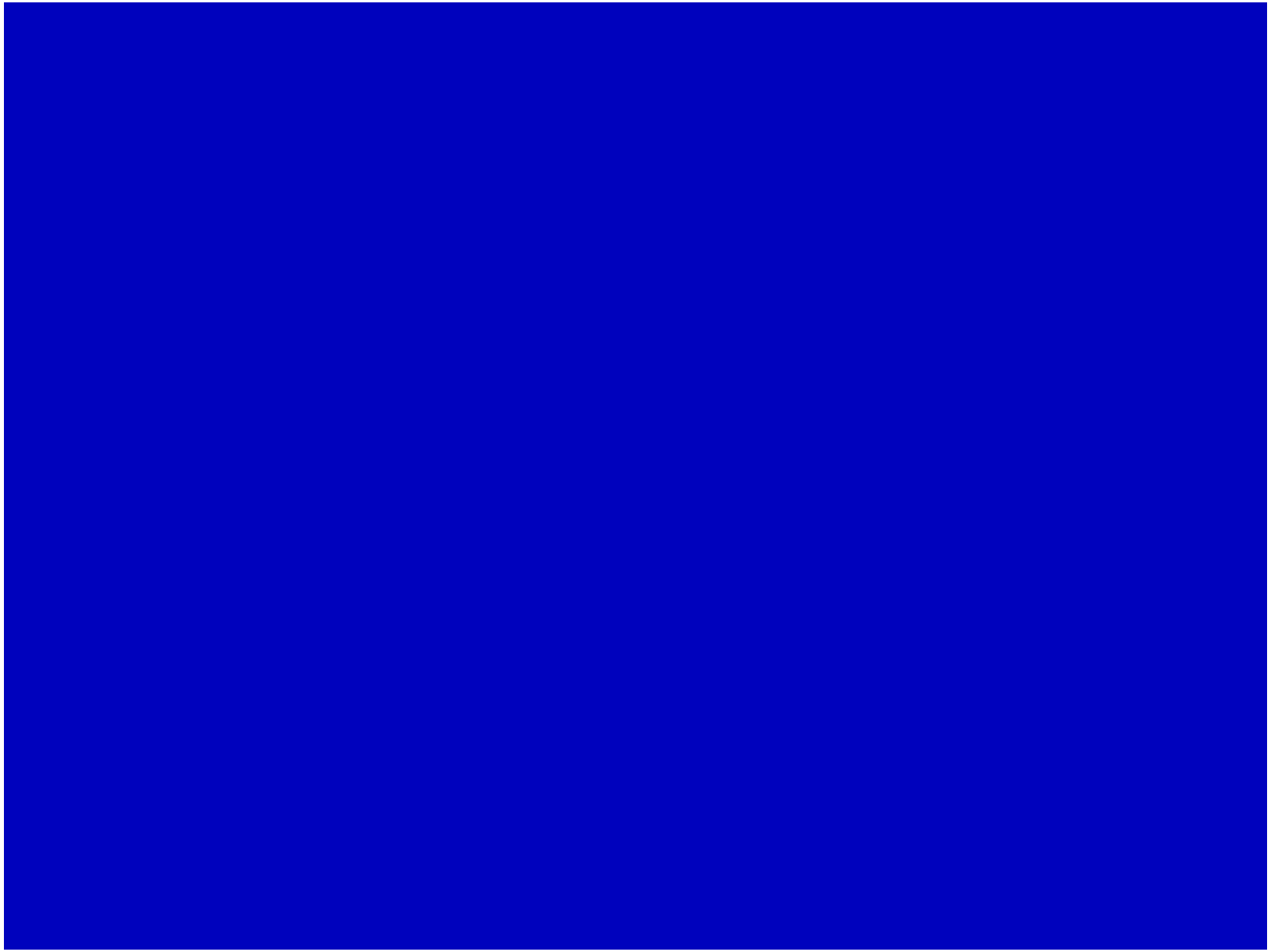
4) Preparation

Preparation

Identify interesting study population

- Camera traps (remote sensing)



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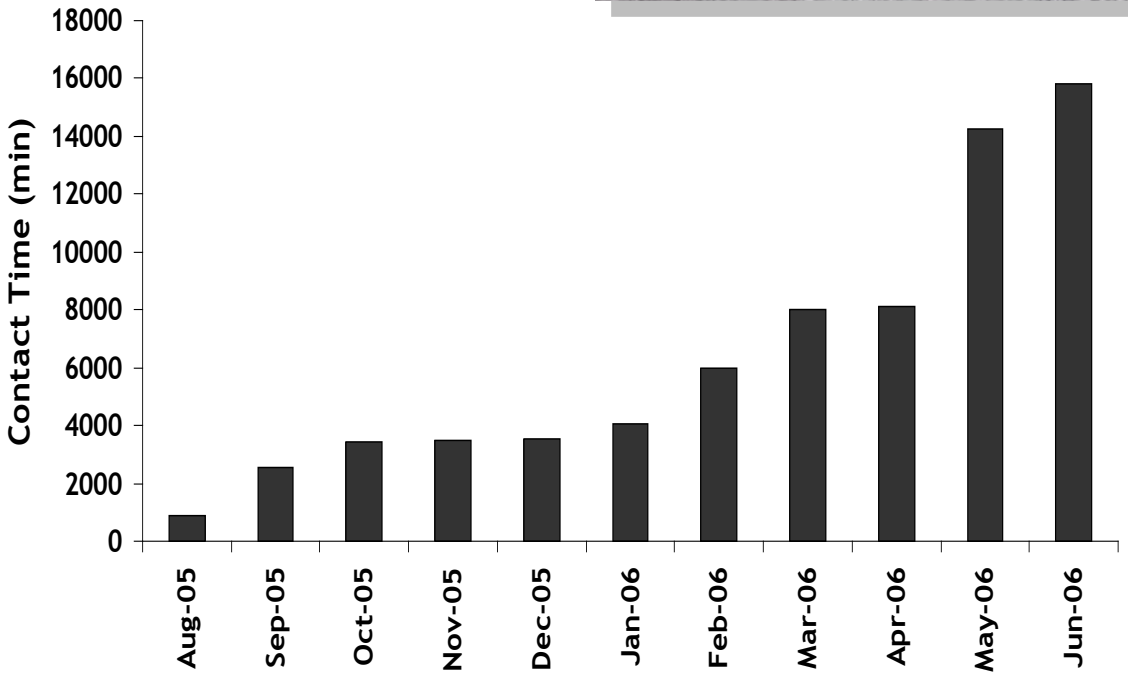
Habituation

- Getting animals used to constant observer presence
- May take months to years



Habituation

Alternative to habituation

- Bais or other areas where animals congregate

Steps to behavioral data collection

1) Formulate a hypothesis and derive testable predictions

2) Establish ethogram → selection of appropriate behaviour

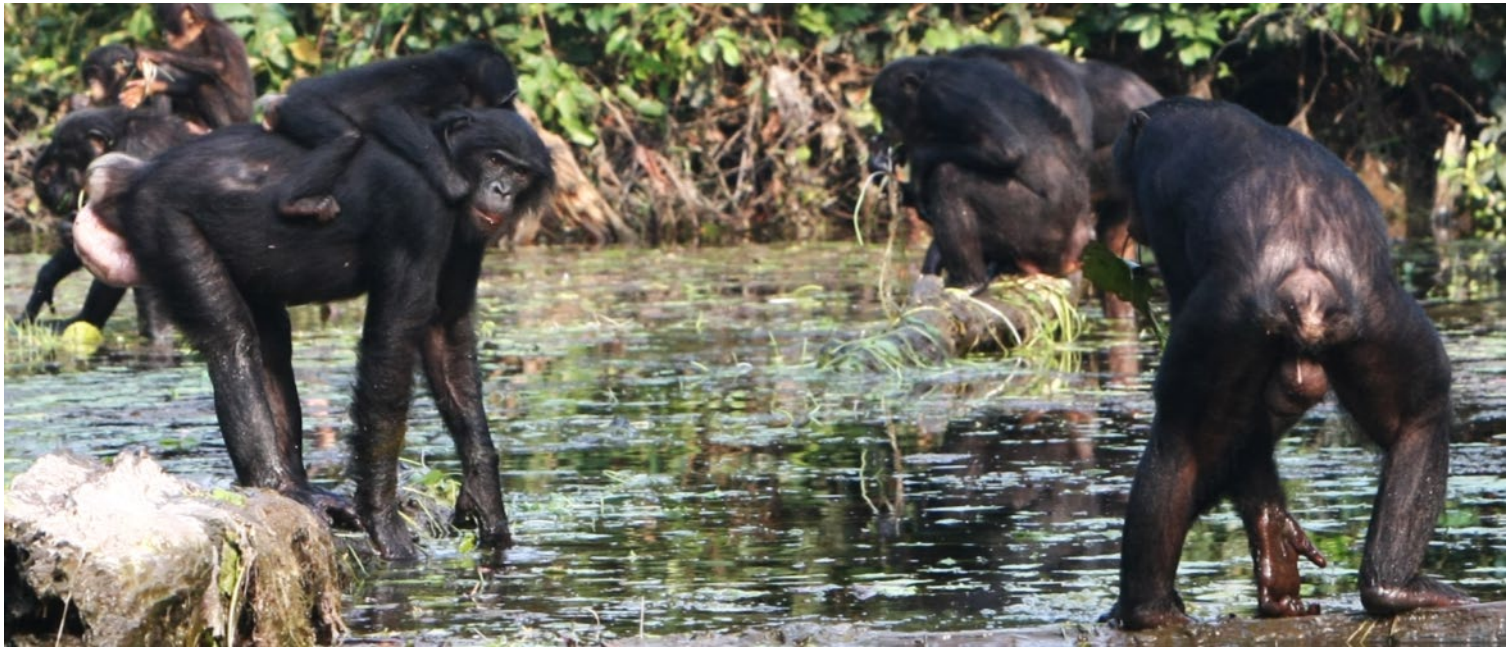
3) Determine observation method

4) Preparation

5) Identify individuals

Individual identification

- Sex (not gender): male, female



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Individual identification

- Sex (not gender): male, female

- Age: infant, juvenile, subadult, adult




Individual identification

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- Individual characteristics (**scars**, pigmentation, testis, swellings etc)

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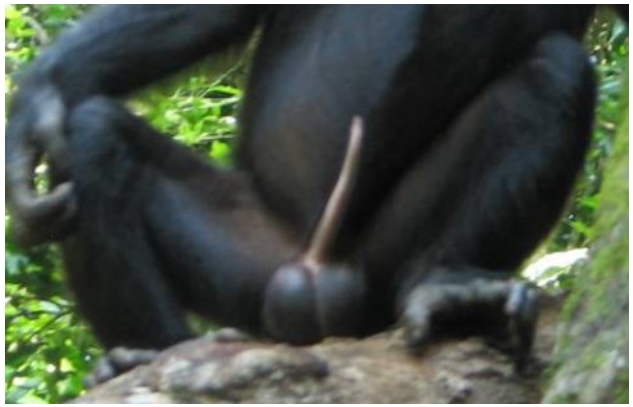
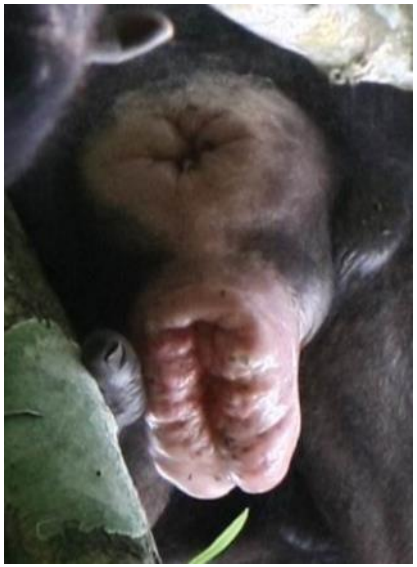
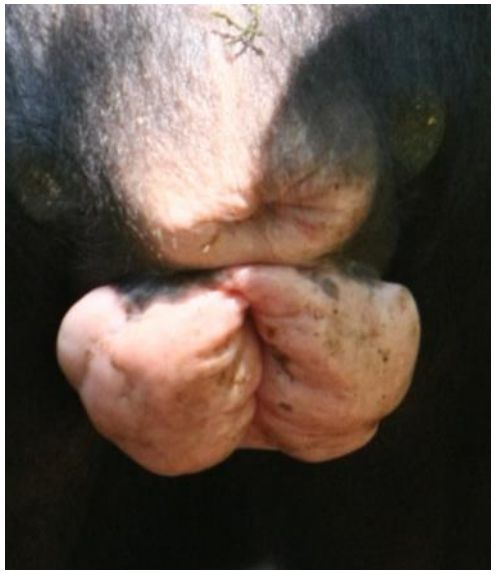
- Individual characteristics (scars, pigmentation, **testis**, swellings etc)



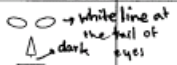
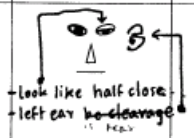
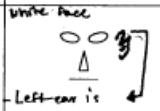
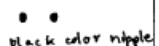
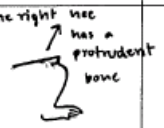
Individual identification

- Sex (not gender): male, female
- Age: infant, juvenile, subadult, adult
- Individual characteristics (scars, pigmentation, testis, **swellings** etc)

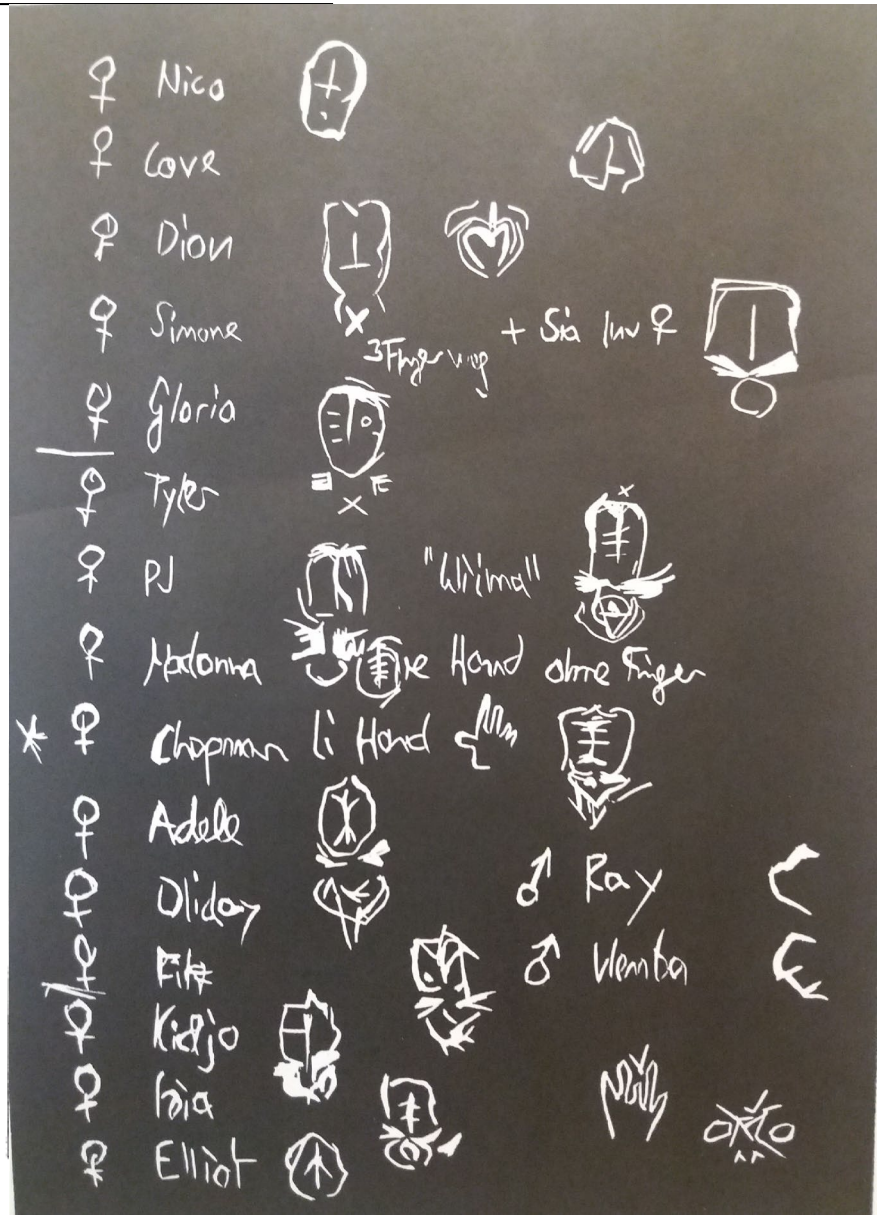

Individual identification

Documentation

Name	facial marks (color, beard, spots, ears, nose, eyes, etc)	nipple (color, size) and fur (color, bald patches, etc)	limps and fingers (missing, broken, etc)	tail shape (curves, hairy, thin, etc)
Achilles				
Wallace				
Rocky				
Soawk				
Bruno				
Chang				
Limp				
Otto				

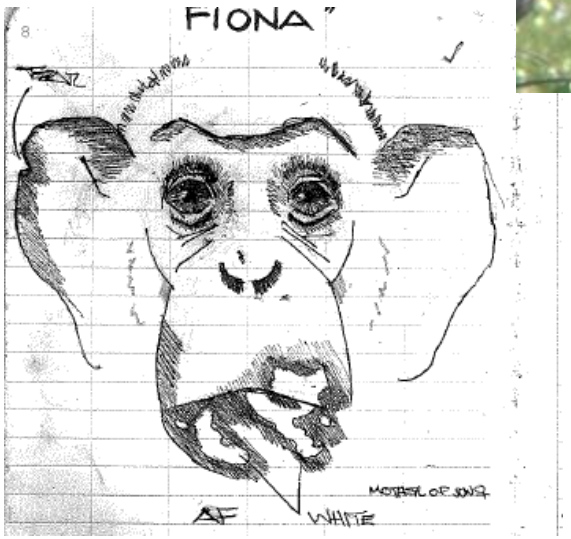
Individual identification

Documentation



Fiona

Community: Moto
ID: AF8
Offspring:

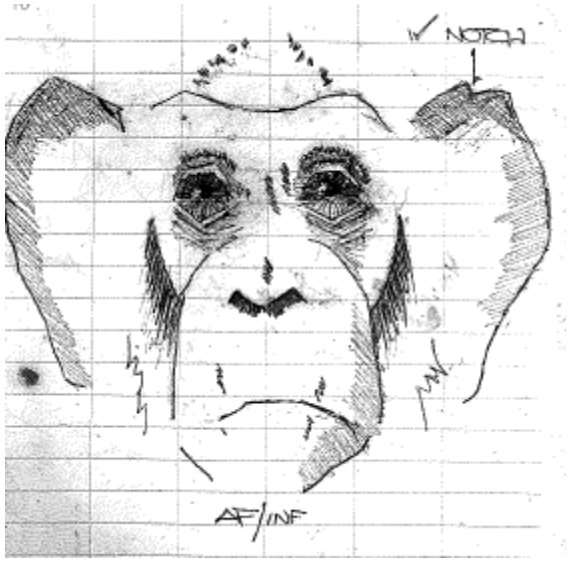


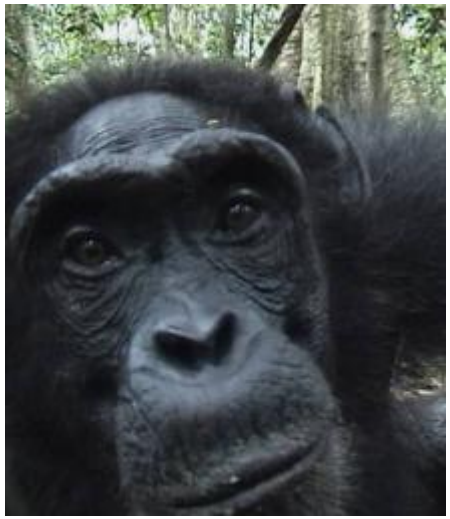
Date	Description of New Identification Characteristic	Temporary/ Permanent	Video of New Feature?

Images from Goualogo Triangle Ape Project

AF10

Community: South Moto
ID: AF10
Offspring: INF24, JUVF11





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Steps to behavioral data collection

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4) Preparation

5) Individual identification

6) Start!!

Overview

1) Introduction in behavioural data collection
2) Exercise for setup of individual research projects

Reading: Whitehead Chapter 3 page 53-79

Group exercise

- Group of 2
- Think of a simple question about a type of student/human behavior
- Discuss a simple ethogram
- Discuss a data collection protocol
- Present orally question/ethogram/data collection protocol

Roadmap research project

- 2nd November: research outline (question and plan of data collection) email to Isaac and Martin → immediate response from us

- 5th November short presentation of question method and first data to class (not graded but valuable feed back on what you present…the better the presentation the better the feedback)

- 30 November research paper due

- 3rd /5th December research presentation (10 minutes) and 10 minutes discussion

Roadmap research project

The outline (2nd November) should include:

-A big-picture research question

-A specific research question

-At least two possible answers to your specific research question

-The list of behaviors you will measure/observe in order to answer your question

-Description of your subjects (i.e., what videos/animals will you be using for data collection

Isaac the ideagiver