Exhaustive Scan sampling to create an Activity/Behavior Budget

When evaluating an animals well being in captivity it is essential to understand its natural history and its species typical behaviors, which may require quit a bit of background research. Only by doing this can we even guess at what the animal needs to ensure its physical and psychological well being. Even with the resources and references available today there is relatively little information on most animals.
Invariably questions will arise as to the physical and psychological well being of the animals (even when following the advice of those that have housed the species long term and utilizing all of the research that has been done on the species in captivity and in-situ) and what we can do to improve upon it.
Additional stressors may also be added that will impact the animal's physical and/or psychological well being. This may require changing the daily husbandry in order to reduce the impact on the animal.

Before a course of action is taken you must first develop a baseline to determine if the changes that are made are effective. Only systematic data collection can lead to the conclusion that particular management decisions had anything to do with success.

A common goal of Zoo research is to identify changes in behavior occurring as a result of change in the Zoo environment, such as the addition of furniture or the introduction or loss of a group member.
It is usually impractical to collect data 24/7. For this reason sampling methods have been devised ~~to~~ ensure *unbiased estimates of behavior based on a subset of total time. Unbiased means that the observations* are representative of what is going on when observations are not being made, and that, when data is being collected, researchers do not inadvertently record data supporting their assumptions (hypothesis) at the expense of data refuting them.

Exhaustive scan sampling is a time sampling based system in which the observer records the behavioral state at the instant ending of a predetermined interval and the subject or focal animal is always recorded as doing something even if not visible or other.
A time sampling scoring system is based on a predetermined time interval rather than on a behavior change as some other research methods use. The behaviors are recorded at the moment of the transition between intervals as opposed to recording each specific behavioral change as it occurs.
Scan sampling provides the easiest method for estimating the percentage of time spent in specific activities.

General procedures/guidelines

- At the predetermined time interval (every 30 or 60 seconds) observe the animal for 5 seconds and then record the behavior at the termination, this is done to make sure you can interpret what behavior(s) you are witnessing
- Record the "action" not the "posture", do not project what you think the animal may do and do not guess
- Use only the defined behaviors in the Key
- *Concentrate only on the focal animal*
- Multiple behaviors may be recorded simultaneously, just remember that if you do this your overall percentages will overlap when you calculate your totals, instead of exhaustive scan sampling you can conduct "Mutually exclusive" scan sampling in which the recording categories do not overlap – the subject is only recorded as doing only one behavior (this will be the primary behavior – if the subject is brachiating and singing you would only record brachiating), if this method is chosen a certain amount of arbitrariness will prevail ensuring that some vital information will be lost or disregarded
- At the end of the observation period compile your raw scores for that day, this will assist you in the totaling of the scans at the end of the project

To calculate your daily activity frequency you simply add up the total number of times each behavior was recorded and the total number of minutes (or scans) that were recorded.
To calculate your total percentages for the total activity frequency sheet add up the total number of times each behavior was recorded on all of the daily activity frequency sheets, add up the total number of minutes (or scans) recorded on all of the daily activity frequency sheets, divide the total number of each behavior recorded by the total number of minutes (or scans) recorded, and then multiply that by 100.

Activity/Behavior Key

B = Brachiation - locomotion in which the animal uses its arms to swing fluidly through its enclosure
M = Any form of locomotion other than brachiation (terrestrial traveling, climbing on vertical chain link, walking or running on perches, etc.)
F = Foraging - any activity such as feeding or looking for food
D = Drinking - comment may be made in reference to the source of water
R = Resting - sitting or lying down with eyes open
SL = Sleeping - sitting or lying down with eyes closed
G = Grooming - cleaning of another animal
AG = Autogrooming - cleaning of itself
P = Playing - nonaggressive interaction (other than G, BR, C) with another animal or itself, note with whom
C = Conflict - aggressive interaction with another animal
BR = Breeding - copulation or attempted copulation with another animal
N = Nuerosis - any steriotypic behavior such as rocking, pacing, self mutilation, etc.
S = Singing/Vocalizing - focal animal singing solo
SD = Singing Duet - focal animal singing in tandem with another animal
DF = Defication or Urination
K = Keeper interaction - interacting with the animals care taker
O = Observation - animal observing someone or something (watching the observer, another animal, an object, a vehicle, etc.)
LOST = when animal is out of view
U = Unknown - any behavior that is not readily linked to one of the behaviors in the Activity/Behavior Key, note a brief discription of the behavior

Activity Budget Sheet

Pg._____

Genus Species:___________________________

Focal Animal:____________________________

Social Grouping:__________________________

Observer:__________________________

Weather:__________________________

Location:__________________________

Date:________

Time Start:________

Time End:________

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Activity Budget Comment Sheet

Pg._____

Genus Species:______________________________ Observer:______________________________ Date:_________

Focal Animal:______________________________ Weather:______________________________

Social Grouping:______________________________ Location:______________________________

Time	Behavior	Comments

Daily Activity Frequency Calculation Sheet

Genus Species:_____ Observer:_____ Date:_____
Focal Animal:_____ Weather:_____
Social Grouping:_____ Location:_____
Time Start:_____ Time End:_____ # of Minutes Observed:_____
Time Start:_____ Time End:_____ # of Minutes Observed:_____
Time Start:_____ Time End:_____ # of Minutes Observed:_____
Total # of Minutes Observed:_____

Behavior/Activity	# of Minutes	Total # of Minutes
B		
M		
F		
D		
R		
SL		
G		
AG		
P		
C		
BR		
N		
S		
SD		
DF		
K		
O		
LOST		
U		

Total Activity Frequency Calculation Sheet

Genus Species:________________________ Observer:________________________ Date:________
Focal Animal:________________________ Weather:________________________
Social Grouping:________________________ Location:________________________
Time Start:________ Time End:________ # of Minutes Observed:________ Date:________
Time Start:________ Time End:________ # of Minutes Observed:________ Date:________
Time Start:________ Time End:________ # of Minutes Observed:________ Date:________
Time Start:________ Time End:________ # of Minutes Observed:________ Date:________
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Time Start:________ Time End:________ # of Minutes Observed:________ Date:________
Date Start:________ Date End:________ Total # of Minutes Observed:________

Behavior/Activity	# of Minutes	Total # of Minutes
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M		
F		
D		
R		
SL		
G		
AG		
P		
C		
BR		
N		
S		
SD		
DF		
K		
O		
LOST		
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