

ORANGUTAN PROJECT TUANAN AND SUAQ BALIMBING

Instructions for collection of behavioral data on orangutans during focal follows

During the Orangutan Culture Workshop (February 2002) in San Anselmo, USA, a document on orangutan data collection standardization was drafted based on the experience of all participants. Every field project will have different main questions and will thus have to make choices about which data to collect in detail. However, it is hoped that observers in all field sites will collect basic data in a standardized way, so that these can be used for comparison between different sites.

FOCAL SAMPLING – GENERAL RULES

1. **Write down everything you find interesting, unusual or remarkable. Better write too much than too little.**
2. EVERY focal individual needs to be identified, and if in doubt about identity describe with as much detail as possible sex-age class, size, scars, stiff fingers, etc. Try to take pictures for comparison and consultation with others and take a fecal sample for genetic analysis. We cannot do anything with unidentified focals, but it is ok to start a focal and hope for ID afterwards through pictures and descriptions or the next day by another observer.
3. Repeat name focal(s), date and observer on every datasheet, including map(s).
4. At two minute intervals record on the focal sheet the activity (see Activity definitions) of the focal individual (when in doubt about (instantaneous) **Activity** count to 5 - note first activity sustained for more than 5 seconds.
When in doubt use the hierarchy: Soc > M > F > R.
5. In addition to activity, record the food eaten (item and species), the height of the focal and the distance to all other orangutans within 50m, including distance to a focal female's own dependent infant.
6. **Vocalizations:** note all vocalizations by the focal in the special column, including those made during the entire 2 minute period between the 'instantaneous' activity samples.
7. **Describe all social interactions** in detail, also those between mother and offspring (see also section on associations).
8. Note and describe all **special activities** and unusual features (check the list of "**possible cultural variants**").
9. **Patch Residence:** Make a vertical line in column "jenis/patch", ending when focal leaves the patch. End with ___. Different trees of the same species less than 10 m apart are considered a single patch.
10. **Feeding rate:** Whenever possible measure feeding rate of fruits and other items by measuring the time it takes the focal to eat one item. On the check sheet note the species and the ripeness of the fruit, fruit availability in the tree or other details of the food item (e.g. number of fruits in the tree and feeding technique).
11. **Long Calls:** fill out the long call sheet for every call given by the focal and for every call heard by observer (and focal).
12. **Map/GPS points:** indicate the focal's location either on a map or with GPS at the morning nest or the start of the focal if found during the day, and subsequently at every whole and half hour. Mark additional locations at food patches used for >5 minutes and always mark the evening nest or the location where focal observation stopped and the end time (see GPS instructions).
13. **Weather:** *on the focal sheet for every half hour note* what type of weather it is (sunny, cloudy, heavy rain, drizzle, windy etc.).
14. **Nests: Morning-** Write down when observer arrives at the nest, as well as the start of the active period = when the focal becomes active on the nest (sits up, plays with infant etc.) or leaves nest. Whenever the focal has moved to another nest during the night, or if data were incomplete on the previous night's nest, complete the sarang pagi info on the nest sheet. Similarly complete this information for

all nests made during the focal follow (**sarang siang**). **Evening nest:** Write down activities until the focal lies down (**golek**) on the evening nest (**sarang malam**).

15. **Visibility:** Write down every two minute how well you can see your focal to fill out the visibility column: 0= no or very bad visibility, 1= some visibility but not enough to see details, 2= good visibility, clear view.
16. **Tree tags (TUANAN ONLY):** tag every tree your focal feeds in for more than 5 minutes, if the tree is not tagged yet. Take a GPS point of the tree and write the tree tag number next to the tree species name on the data sheet. Also, fill out the tree tag data sheet for new trees.
17. If you can't tell the activity of your focal write **u (unknown)**. This also applies for the height, party distances.

ACTIVITY DEFINITIONS

Activity	Write in Activity column	Write in Item column	Write in Jenis column	Definition
Move	M			All locomotion, usually between trees/patches, if within patch movement should last for more than five seconds and not be simultaneously with feeding
	For some projects more detail in type of locomotion is used, such as:			
	Mq			Quadrupedal walking on horizontal substrate
	Mb			Brachiating
	Mt			Trees way
Rest	R		Jenis lokasi, if known	Sit, lie, stand, hang for more than 5 seconds, not doing anything else
	Rs		Jenis lokasi, if known	Sit or lie on nest (= sarang)
Feed	F	Feeding: processing, gathering, ingesting food items, some movement (less than 5 seconds duration) within a patch consistent with these goals may be included. Whenever the focal uses a tool indicate in the item column and give details in social notes). If the focal feeds in a different patch than the species of the food species, add the jenis lokasi (e.g.: "Akar Kamunda/ Puwin" means focal eats Akas Kamunda in a Puwin tree. Food items distinguished include:		
		fr/M	species of food item	· ripe (matang) fruit
		fr/Mu	species of food item	· half-ripe fruit
		fr/u	species of food item	· unripe fruit
		<u>Item detail:</u> to be added for fruits (combine if multiple apply: ex. fr/M; sd+dg or fr/Mu; dg+ku)		
		sd		· seeds
		dg		· fruit flesh
		ku		· fruit skin
		sem		· all of the fruit
		<u>Non fruit items:</u>		

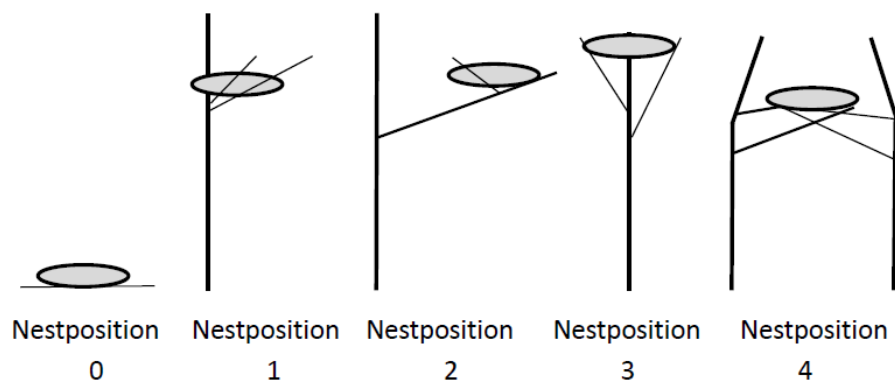
		fl	species of food item	· flowers
		yl	species of food item	· young leaves
		lv	species of food item	· mature leaves
		bk	species of food item	· “tree bark” in fact orangutans feed on the phloem of trees after removing the outer bark
		pith w	species of food item	· young vegetative material inside stems, woody
		pith h	species of food item	· young vegetative material inside stems, vegetative
		veg	species of food item	· vegetative matter (non-leaves)
		ins	insect specification (rayap, semut...)/ species of substrate	<ul style="list-style-type: none"> · specify species/ kind of insect in the jenis column: termites=rayap, ants=semut, sweatbees= madu keringat, madu= honey etc. · Always specify the technique (using mouth, hands, tools) and the substrate (rotten wood, tree hole, nest etc.) in the social notes. · If you can find out the species of the substrate, add it after the insect species (e.g. rayap/ Puwin for eating termites out of dead Puwin twigs). · When the focal is manipulating objects/ substrates where insects can be expected write ins for item but ‘search’ in the jenis column.
		w	Substrate	<ul style="list-style-type: none"> · Drinking water. Specify the substrate (e.g. ground/tree hole/Nepenthes cup) in the jenis column or social notes. Describe in detail how the focal drinks, i.e. which technique it uses (e.g. with mouth directly/ using hand/ dripping water from fingers..) in the social notes.
Try Feed	TF	fr/ sd/ fl/ bk/ pith/ dead twig/ leafy branch (..)	species of the food item or object/ jenis lokasi	“Feeding attempt on a food item or other object whereby the item is taken into the mouth but not properly processed and not ingested”. Add same items as for F or a description of the item if it is a non-food ("object") item in item column (such as detached stick/twig with leaves/liana etc.). Add the species in the jenis column. If possible add the specie of the location/ substrate. Fill out the Explorative behavior sheet or give all the details in social notes.
Suckle	D			Drinking milk from mother
Nest	N		species of nest tree(s)	Building a nest. Always note special features (roofs, repair old nest, etc.) – in the social notes. Use the checklist for nests and nest positions in the diagram below for this. Make sure somebody is filling out a nest sheet.

Auto play	APO	dead twig/ leafy branch/ lv/ bird nest (..)	species of the object or food item/ jenis lokasi	“Solitary object play: manipulation of objects with no apparent immediate goal, including repetitive movements with objects“. Add same items as for F, or a description of the item if it is a non-food item ("object") in item column (such as detached stick/twig with leaves/liana etc.). Add the species in the jenis column. If possible add the specie of the location/ substrate. Fill out the Explorative behavior sheet or give all the details in social notes.
	APM		jenis lokasi	Solitary movement play: repetitive movement such as twirling, swinging etc., also repetitive swinging of just one arm or leg. Give details in the social notes.
	APdispl	objects used	jenis object/ jenis lokasi	‘Playful’ display with branches, usually by immatures. Write down details in social notes. Also write at whom it is directed in the Ftol column (use “observer” if it is directed at you or sb else in the follow team).
Exploration	EXP	dead twig/ leafy branch/ lv/ bird nest (..)	species of the object or food item/ jenis lokasi	“Non-repetitive, usually destructive manipulation of objects without apparent feeding purpose“. Add same items as for F or a description of the item if it is a non-food item ("object") in item column (such as detached stick/twig with leaves/liana etc.). Add the species in the jenis column. If possible add the specie of the location/ substrate. Fill out the Explorative behavior sheet or give all the details in social notes.
Cling	F/M/R/(...)			Only for immatures: being carried clinging to the mother’s body, write “c” in the cling column. Cling is not an exclusive category is used in combination with other compatible activities. Note in the social notes whether mother supports her offspring with her arm or leg in the social notes.

NEST POSITIONS AND ADDITIONS

Definition of Nest additions:

- *Pillow (bantal): a pile of twigs or big leaves at one side of the nest on which the focal puts its head when lying down.*
- *Blanket (selimut): a cover made from branches or leaves covering the body, not covering the head*
- *Lining (alas): a layer made on the nest from leaves or twigs on top of which the focal lies down.*
- *Roof (atap): a construction made from branches or twigs by the focal above and covering the nest (don’t forget to write down whether there is rain or bright sun: sunroof!)*
- *Bunk nest: if the focal rests in a nest directly under another nest (either old or just made) this is called a bunk nest. Write details.*
- *Carry leaves: focal picks and carries leaves (note species) towards the nest from other tree.*



ASSOCIATIONS & SOCIAL INTERACTIONS

1. **Association:** whenever the focal is within 50 m of other orangutans this is an association (“party”). Note the **identity** (or at least age-sex class) of party members, including dependent offspring. Note time start & end for associations per association partner on the summary sheet.
2. On the focal sheet note the distance to the focal individual at the same 2 minutes intervals as the focal’s activity in the appropriate column (write the name/class of the partner in the column, reserving the first column for the mother or the dependent infant), using the following distance classes:
 - 0 = contact
 - <2 = no contact but less than 2 m
 - <5 = more than 2 m but less than 5 m
 - <10 = more than 5 m but less than 10m
 - <50 = more than 10 m but less than 50 m
 - >50 = more than 50 m (out of sight)
3. The **identity of the association partners is really important, thus always try to take pictures** and make a good description of all partners enabling identification later.
4. **Approach and Leave:** Note on the focal sheet next to the distance to partner whether the focal or the partner (identify!) was responsible for a change in distance at the indicated distance intervals (who approached “mendekati”, or who moved away “menjauhi”). **All approaches that cause the other to move away immediately should be described in the social notes** even at large distances.
5. For every association note who initiated/approached to within 50m and who ended/moved to >50m the association – also if this coincided with the arrival of an additional individual.
6. Describe in detail all **social interactions** between the focal and the association partners – use additional social sheets if necessary. When multiple association partners are not also focals of another observer, record all their conspicuous behavior and vocalizations as well as social interactions (note time and duration, actor and reactor/recipient, response by other etc.).
7. Note whether focal and an association partner is peering or watching (see definitions of these behaviors) the other as well as the distance and the activity (during feeding which food item/technique?; during nest building which stage) being peered at.
8. When focal **travels** with associates, including mother - offspring dyads, always note who leads: write 1 or 2 next to the activity (e.g.: M₁) as well as the party name in the Ftol column. Note that the number written next to the activity refers to your focal whereas the number written next to the name in the Ftol column refers to this party member.
9. Similarly when focal starts to **feed** always note whether the focal or the associate (including offspring) arrived first in the patch by writing numbers in the “Ftol column” (the numbers in the Ftol column refer to the party member written there, not to the focal. Numbers written next to the activity of the focal individual refer to the focal).

10. When the focal is in a **food patch** note the following situations in the “**Ftol column**” (see also food related social behavior):
- **feeding tolerance (Activity column: F; Ftol column: who):** focal and other (including own offspring/mother) are both actively feeding in same patch < 10 m apart. This is written in the special column next to activity. In addition write whether focal or partners was first (1) or second(2) in starting to feed.
 - **co-feeding (Activity column: coF; Ftol column: who):** focal and other are feeding from same item close together or take turns. ALL co-feeding interactions should be described in the social section, as well as indicated in the Ftol column
 - **active food sharing:** active giving of food by one to other. All occurrences should be noted in the social notes. If it happens on the dot: write Fshare as activity and who does what (e.g: Jinak -> Joya) in the Ftol column. Add details in social notes. Also note how food was transferred: **hth**- from hand to hand, **mtm** - mouth to mouth, **htm** - hand to mouth, **mth** - mouth to hand .
 - **tolerated theft:** one individual takes food from the other, note whether the “owner” tolerates or objects. Write Ftheft as activity and and who does what in the ftol column (e.g: Joya from Jinak). ALL tolerated theft interactions should be described in the social notes (for example was the food transfer preceded by begging and/or vocalizations. Also note how food was transferred: **hth**- from hand to hand, **mtm** - mouth to mouth, **htm** - hand to mouth, **mth** - mouth to hand.
 - **begging** by gestures and/or vocalizations, but not yet holding on to food. All occurrences should be noted in social notes. If it happens on the dot: write Sbeg as activity and who does what in the ftol column (e.g: Joya from Jinak). ALL begging interactions should be described in the social notes. Also note how: **hth**- from hand to hand, **mtm** - mouth to mouth, **htm** - hand to mouth, **mth** - mouth to hand.
 - Also describe in the social notes when there is clear avoidance of food tolerance and co-feeding and refusal of food sharing despite begging/ attempts to take food from other.
11. When focal makes **nest** while in association, including mother - offspring parties, always note on the appropriate nest form who starts making a nest first and the distance between the nest of the focal and nest(s) of the party members and whether in the same tree or not. Also note for mother-offspring dyads whether the **offspring makes its own nests** or joins its mother in the nest. Pay special attention to whether there is peering.
12. Describe **ALL social interactions** (also the ones between other party members) from beginning to end as completely as possible (including who approached/initiated interaction and who ended/departed first) in “social” notes on focal sheet using behavior elements as defined in the list (if behavior is not on list describe in detail!) - note time and duration. (continue on extra social sheet(s)).
13. For all **sexual interactions**, describe in detail who approaches and initiates contact, who makes vocalizations, whether there is intromission, who thrusts, whether ejaculate is visible afterwards and if so where. In addition always note with duration whether:
- *female resists successfully or attempts to resist (forced copulation or attempt), describe whether she struggles (may include bite, slap, pull etc.) and whether female becomes passive/cooperative later on*
 - *female is passive, allows intromission, but without active cooperation*
 - *female is cooperative, positions herself to facilitate intromission*
 - *female is active: she initiates mating and she thrusts*
 - *a third individual (often offspring) interferes by getting in between, pulling, slapping etc.*
14. **Social Play:** For all social play (SP as activity, the kind of social play as item), write down identity of the partner in the “Ftol” column. Note in the “social” notes time + duration, kind of play (wrestle, chase, other), position (on nest?), postures (hang from hands/feet/ each other?) and other details.
15. If you can’t classify/ abbreviate the social interaction you observe, write **Soc** as activity and describe the details in the social notes.

ADDITIONAL RULES FOR MOTHER-OFFSPRING ASSOCIATIONS

1. Follow all rules for associations and social interactions and pay special attention to approach-leave (mendekati –menjauhi) and peering interactions.
2. **Travel:** when the mother has formed a bridge for the offspring to cross between 2 trees or assists in another way during a cross: write “bridge” in the items column (if on the dot, otherwise describe in social notes). There also other forms of ‘**assisted travel**’, e.g. mother treesways and the offspring is positioned above her in the same tree and can cross thanks to the mothers actions, or mother repositions in a small tree so that the tree bends enough towards the offspring so that it can cross. Give full descriptions of all occurrences in the social notes.
3. When mother starts to leave a patch, but then rests and “waits” until her offspring follows or gets into contact (and is then carried), write “wait” in items column (if on the dot, otherwise describe in social notes).
4. **Initiative toward contact:** when mother-offspring contact is established, note whether the mother collected the infant or the offspring made the contact in the social notes.
5. Many activities are compatible with either being supported by the mother or being in contact with the mother. Always indicate whether in contact in the C column on the infant focal sheet and the other activity in the activity column (e.g. C/D, C/M, C/F or C/TF, C/R, C/Rs, C/AP, C/SP). When the infant is trying to feed on an item, by playing around with it in its mouth this should be noted as TF (Try Feeding) in the activity column, when the infant is manipulating something that is obviously not a food item (but not in a repetitive way) write Exp (Explore) in the activity column (see also Activity definitions).

BEHAVIOR ELEMENTS: SOCIAL CONTEXT

These elements are used for describing of all social interactions, also between mother and offspring. Give details in of any social interactions in the social notes, including how interaction started and ended. If the social interaction happens on the dot of the two minute interval, fill out the activity sheet as shown below. You can indicate the direction or sequence of the social action using numbers next to the names in the Ftol column (this number refers to the party member written in this column) and next to the focal’s activity (this number refers to the focal).

If you are unsure how to properly abbreviate the social interaction or how to fill out the different columns of the activity sheet, just write Soc in the activity column and describe the interaction in detail in the social notes.

Agonistic social behavior				
Write in Activity Column	Write in Item Column	Write in Jenis Column	Write in Ftol Column	Definition
SAgo	Unprovoked Retreat/ submission	Jenis lokasi, if known	From whom	in response to a ‘neutral’ approach, other one shows signs of fear (submissive mips) and retreats
	Active displacement	Jenis lokasi, if known	who	fast approach, may include touch or enter into nest resulting in retreat of the approached individual
	Chase	Jenis lokasi, if known	who	pursuit over more than 10 m or into other tree
	Flee	Jenis lokasi, if known	from whom	fast retreat from other individual

	Flee to	Jenis lokasi, if known	from whom towards who	approach and stay close to more dominant individual after third individual approached/threatened
	Bite	Jenis lokasi, if known	who	
	Slap	Jenis lokasi, if known	who	
	Pull	Jenis lokasi, if known	who	
	Push	Jenis lokasi, if known	who	
	Fight	Jenis lokasi, if known	who	whole body wrestle
	Display	Jenis lokasi, if known	At whom	sway, drop (or throw) branches; push over dead tree trunks. Display can be directed at conspecifics, other species or observers. Always specify in the Ftol column.

Other social behavior				
Write in Activity Column	Write in Item Column	Write in Jenis Column	Write in Ftol Column	Definition
SLc		Jenis lokasi, if known		Focal gives long call
SP	wrestle/ chase/ slap...	Jenis lokasi, if known	with whom	Social play with a partner; write kind of play in the item column (wrestle, chase, slap, bite...); note details of the play in social notes and include position (on/above nest, hanging, upside down, etc.) (Remember to fill in the appropriate approach/leave entries). Indicate with numbers who initiated the play (e.g. if the party member initiated write a 1 next to his name in the Ftol column, and a 2 next to the activity (SP) of the focal). Note if there is any playfakes.
Skiss		Jenis lokasi, if known	who	Touching other individual mouth to mouth ("smell")
Sembrace		Jenis lokasi, if known	who	Touching at least shoulder/back of other individual
Sgroom		Jenis lokasi, if known	who does what (e.g. Joya -> Jinak ,or use the numbers: 1 for actor, 2 for target)	Skin/hair care (with fingers while looking at this) of other individual; describe details: which body part, wound
Swatch		Jenis lokasi, if known	who does what (e.g. Joya at Jinak, or use the numbers: 1 for actor, 2 for target)	Intently looking in the direction of another individual or noise/vocalization – this may happen over distance of >10m (describe details and distance in social notes)
Slook away		Jenis lokasi, if known	from whom	Looking away from ("actively ignore") other's action at close range

Sbridge		Jenis lokasi, if known	for whom	Forming a bridge between trees to let smaller individual transfer
Scollect infant		Jenis lokasi, if known	name of the infant	Mother actively collects infant into body contact
Temper-tantrum	Stantrum	Jenis lokasi, if known	At whom	Wild repetitive movements, often with screaming/crying, mostly by dependent immatures; describe details and context

Food related social behavior					
	Write in Activity Column	Write in Item Column	Write in Jenis Column	Write in Ftol Column	Definition
Feeding Tolerance	F	item	Food species	Who	Two individuals feed on the same food source (species and item) within 10 m of each other. Indicate who started eating first and who stops eating first by adding numbers to the name in the f-tol column (they reference to this individual, not to the focal).
Co-feeding	F	item	Food species	Cof + Who	Focal and other are feeding from same item close together or take turns
Tolerated theft	TolTheft	item	Food species	who does what (e.g: Jinak -> Joya, or use the numbers: 1 for actor, 2 for target) + mtm/hth/mth/h tm	Individual who collected food item allows other individual to take (part of) it; common from mother to offspring but also seen in other dyads. Food transfer can go 'mouth to mouth'(mtm), 'hand to hand'(hth), mouth to hand (mth) or hand to mouth (<i>htm</i>).
Active sharing	Fshare	item	Food species	who does what (e.g: Jinak -> Joya, or use the numbers: 1 for actor, 2 for target)	Individual who collected food item actively takes initiative to give some of it to (move item towards) other individual.
Begging	Sbeg	item	Food species	At whom + mtm/hth/mth/h tm	Trying to obtain food from conspecific. By reaching with hand, stretching hand out towards mouth or hand of target or brining mouth close to mouth or hand of the target. Specify if 'mouth to mouth'(mtm), 'hand to hand'(hth), mouth to hand (mth) or hand to mouth (<i>htm</i>).
Peering	Speer	item	Food species	At whom	"Directly looking at the action of another individual sustained over at least 5 seconds, and at a close enough range that enables the peering individual to observe the details of the technique used by the other". (Fill out the peering sheet or describe time, duration, technique, response, who/why end, etc. in the social notes).

OTHER BEHAVIOR ELEMENTS

These additional behavioral elements should be described in the social notes whenever they occur.

Activity	Definition
Defecate	
Yawn	
Scratch	Scratch with fingers or toes, describe body part.
Symmetrical scratch	Scratch with both hand (corresponding body parts).
Autogroom	Skin/hair care of own body, with fingers while looking at the groomed spot.
Penile erection	
Pilo erection	Fluffed out fur
Throat poach inflation	
Bulging lips	
Ect.	