**Description of the dataset “Observations”**

**obs\_ID**: running numbers for each data line for easier navigation in file

**observer:** observer of the video recordings: cm=Christina Muck, mb=Martin Bulla, dt=Daniela Tritscher

**year:** year in which nest was found

**nest:** unique identifier for each nest within one year( s=semipalmated sandpiper nest and 3 numbers) The nest identifier might reoccur in other years, but this will be a different nest with different parents!

**file\_name:** file name of the video sequence where the behavior can be observed (file location: grpkemp/field/Barrow/….)

**type:** type of observation: exchange observation (ex) or non-exchange observation (non)

**ex\_non\_ID:** running numbers within nest which indicate the timely order of exchange and non-exchange observations, i.e. the third exchange observation of this nest would get 3, the first non-exchange observation of this nest would get 1, the third non-exchange observation would also get 3…

**pair\_ID:** running numbers within each nest for exchange and non-exchange observation separately. Links specific exchange to non-exchange observation for pairwise comparison (same observation duration).

**start\_time\_video:** time on the video when observation started

**capture**: n=bird was not captured,

0= incubation bout in which partner was released again,

1=first incubation bout after observed bird or partner was released, 2= second incubation bout after release, 3= third, 4= fourth,…

**cage:** Was the nest protected by a cage as part of a different experiment? (y=yes, n=no)

**sex:** sex of the bird sitting on the nest (m=male, f=female)

**sound\_ok:** whether the camera system recorded the sound with sufficient quality to score calling behavior (y=yes, n=no)

**bill\_call\_visible:** data quality indicator: y = camera is close to nest – THUS: identity of calling bird is certain, 1st presence of non-incubating bird can only be assessed when close to the nest (less certain)

n = camera catches a wider area – THUS: identity of calling bird less certain, 1st presence of non-incubating bird visible earlier

vfa = camera very far away from nest – THUS: identity of calling bird uncertain, 1st presence of non-incubating bird uncertain because hard to see

**reality\_dt:** The true date and time when the exchange occurs or when the control observation starts based on RFID data.

**video\_dt:** only for videos that indicated the wrong time: wrong time of video that was adjusted by correct RFID time

**timespan\_before\_presence:** Time until second bird is present (dt\_1st\_presence)

**dt\_1st\_presence:** The date and time when the non-incubating (coming) bird appears for the first time. NA indicates that the data could not be scored (e.g. bad sound) or that the non-incubating bird never arrived (in control observations).

**type\_p:** Indicates how the date and time of 1st presence of the non-incubating bird in the area had been assessed.

a = acoustic

v = visual

b = both acoustic and visual

**dt\_1st\_call:** date and time of the first call heard in the observation period (from either one of the two birds)

**first\_who:** Which bird called first? (o= incubating bird (bird **o**n nest), c= **c**oming bird, un=unknown)

**reply:**  Did the other bird answer the first call? (y=yes, n=no)

**call\_how\_many:** number of calls from both birds (from start of observation until first presence of partner)

**call\_o\_alone:** number of calls during the first calling bout only from the incubating bird (from start of observation until first presence of partner)

**call\_o\_pres\_arrive** number of calls only from the incubating bird (from presence until arrival of the partner)

**call\_c\_pres\_arrive** number of calls only from the coming bird (from presence until arrival)

**dt\_1st\_flyoff:** date and time of the first time the bird flew off the nest for any other reason than exchange

**number\_flyoff:** number of the fly-offs

**duration\_flyoff:** total duration of all fly-offs together during an observation period

**dt\_arrive:** date and time when the coming bird arrived at the immediate nest site (arriving to the pingo)

**type\_a:** How was arrival assessed? (a=acoustically, w=walking in, f=flying in)

**direction\_a:** Indicates from which direction the coming bird arrived at the nest

r = right

l = left

b = back f = front

**with\_calling:** Did the bird call when arriving? (y=yes, n=no)

**o\_replies:** Did the incubating bird answer the calls of the coming bird? (y=yes, n=no)

**call\_c\_int:** Calling intensity of the coming bird during the third calling bout (from arrival to leaving) (0= no calls, 1= one or very few calls, 2= few calls, 3=many calls, constant calling)

**call\_o\_int:** Calling intensity of the incubating bird during the third calling bout (from arrival to leaving) (0= no calls, 1= one or very few calls,2= few calls, 3=many calls, constant calling)

**call\_int\_1:** Calling intensity of both birds together during the third calling bout (from arrival to leaving) (0= no calls, 1= one or very few calls,2= few calls, 3=many calls, constant calling)

**dt\_left:** date and time when the incubating bird left the nest bowl

**type\_l:** indicates how the incubating bird left the nest (w=walk, f=fly, wf= walk and then fly)

**call\_left:** Did the bird call when leaving the nest? (y=yes, n=no)

**current\_bout:** length of the incubation bout of the incubating bird before the observed exchange in decimal minutes (obtained from dt\_on and dt\_left, if not available, obtained from Martin’s database (obtained from RFID and temperature data), if still not available, derived from raw RFID values.)

**next\_bout:** length of the incubation bout of the coming bird after the observed exchange in decimal minutes (obtained from dt\_on and dt\_left, if not available, obtained from Martin’s database (obtained from RFID and temperature data), if still not available, derived from raw RFID values.)

**pushoff\_int:** NA=The incubating bird leaves the nest before the return of the off-duty parent. 0= The coming bird arrives while the incubating bird is still on the nest or right next to it. There may be some single calls by either of the two birds, but no exchange ritual. 1= The coming bird arrives at the nest site while the incubating bird sits on the nest. The coming bird shows a flat body posture (bowing) and calls constantly, followed by an immediate departure of the incubating bird. 2= The coming bird arrives at the nest site while the incubating bird sits on the nest. The coming bird shows a flat body posture (bowing), calls constantly, and remains in this position in the nest vicinity (outside the cage if there is one) until the incubating bird leaves the nest, which does not happen immediately but takes a few seconds. 3= The coming bird arrives at the nest site while the incubating bird sits on the nest. The coming bird shows a flat body posture (bowing) and calls constantly while walking up to the incubating bird on the nest cup. The incubating bird does not leave before the coming bird is right next to it, seemingly being pushed off the nest.

**left\_before\_presence:** Did the incubating bird leave the nest before the coming partner was present? (y=yes, n=no)

**call\_int\_c2:** Calling intensity of the coming bird in calling bout 4 (leaving of previously incubating partner until the coming bird sits on the nest)

**dt\_on:** date and time when the coming bird sits down on the nest

**call\_int\_c3:** calling intensity of the new incubating bird in calling bout 5 (from new bird sitting on the nest until 5 minutes after)

**abnormality:** Was there an abnormality during the observation? If yes, it is specified in the comments (y=yes, n=no, t= technical problems)

**file\_name\_new:** File name of the short video sequence where the exchange is visible (file location: )

**comments:** Comments

**Description of the dataset “time\_series”**

**obs\_ID** running numbers for each data line for easier navigation in file

**observer** observer of the video recordings: cm=Christina Muck, mb=Martin Bulla, dt=Daniela Tritscher

**year** year in which nest was found

**nest** unique identifier for each nest within one year( s=semipalmated sandpiper nest and 3 numbers) The nest identifier might reoccur in other years, but this will be a different nest with different parents!

**start\_time\_video** time on the video when observation started

**end\_dt** time on the video when observation ended (for exchanges: from start of observation until arrival)

**type** type of observation: exchange observation (ex) or non-exchange observation (non)

**partner\_present** Is the partner present during observed behavior? y=yes, n=no

**dt\_behaviour** date and time when a specific behavior was observed

**behaviour** behavior of the observed birdc=call, f= fly-off, n=nothing (usually for non-exchange observations when birds did not show any activity throughout the observation period)

**who** bird showing the observed behavior: o= on nest bird, c= coming bird

**sex** sex of the bird showing the behavior: m=male, f=female

**comments** comments

**Description of the dataset “exclusions”**

**obs\_ID**: running numbers for each data line for easier navigation in file

**year:** year in which nest was found

**nest:** unique identifier for each nest within one year( s=semipalmated sandpiper nest and 3 numbers) The nest identifier might reoccur in other years, but this will be a different nest with different parents!

**type:** type of observation: exchange observation (ex) or non-exchange observation (non)

**capture**: n=bird was not captured,

0= incubation bout in which partner was released again,

1=first incubation bout after observed bird or partner was released, 2= second incubation bout after release, 3= third, 4= fourth,…

**cage:** Was the nest protected by a cage as part of a different experiment? (y=yes, n=no)

**sex:** sex of the bird sitting on the nest (m=male, f=female)

**sound\_ok:** whether the camera system recorded the sound with sufficient quality to score calling behavior (y=yes, n=no)

**left\_before\_presence:** Did the incubating bird leave the nest before the coming partner was present? (y=yes, n=no)

**shorter\_obs:** y=yes if video was not available for the whole observation period and observation therefore is shorter, n=no: video was available and watched as should be. Exclude if y.

**former\_exchange** y=yes if the observation initially was an exchange observation, but later identified as a non- exchange observation, n=no. Exclude if y.

**close\_to\_exchange** y=yes for non-exchange observations that are closer than 30 min before or after the actual exchange. dt\_left was taken as a proxy of actual exchange time. Exclude if y.

**close\_to\_ex\_comment** indicates how close the close\_to\_exchange observations are (in min)

**current\_bout\_biased** y=yes if the incubation bout is biased by researcher activity which influenced the incubation pattern or biased by removing one bird, which also influenced the incubation pattern. Exclude if y.

**total\_exclusion** y=yes if the whole data line is excluded from all analyses, the reason is given in the comments.

**comments** comments