

Additional file 2

Observations of previously unknown breeding strategies for *Zonotrichia capensis*, *Elaenia albiceps*, and *Anairetes parulus*.

Delayed incubation - *Zonotrichia capensis*

We observed an individual of *Zonotrichia capensis* that laid the last of three eggs on November 3rd, 2015. When we monitored the nest on November 5th, the parents were not around when we approached it (uncommon behavior for this species in our study site) and the eggs were cold (temperature a few degrees above 0° C, measured with the thermal camera). We suspected the nest had been abandoned (at that point we had not installed the camera trap yet). However, when we monitored the nest on November 7th there was an adult sitting on the nest, thus the incubation process had started. Therefore, after the last egg was laid, the start of incubation was delayed at least two days. Coincidentally, on October 31st (the first egg was found the morning of Nov 1st) a snow storm that lasted about a week hit the area. Particularly, the night of November 3rd (when the last egg was laid) accumulated at least 4 inches of snow on the ground. The minimum T° that day was -0.6° C and maximum 10.5° C. On November 5th, the nest was surrounded by snow (but not covered as it was built under vegetation). By November 7th the storm had passed and the temperature increased (min = 3.5° C and max = 12° C). Thus, it could be that what we observed was that even though the clutch was complete, the start of incubation was delayed, likely until the snow storm had passed.

Nest building behavior - *Elaenia albiceps*

A roof for the nest. On November 28, 2014, we found a nest of *Elaenia albiceps* where the female was incubating two eggs. The nest was placed on a branch of *Nothofagus antarctica*, close to the

ground (55 cm) and not very concealed. The tree was partially dead and the nest located in the dead portion of it. After looking closely, we noticed that exactly above the nest, at about 10-15 cm from it, there was a group of twigs that, due to its location, it was serving the purpose of overhead concealment (it provided 70% concealment, estimated from 1 m above the nest looking down). It was interesting to note that most of the twigs had a similar length (between 15 -20 cm) and were well organized, parallel to each other (as parallel as it can be considering these were natural twigs), forming what looked to us to be a roof. The twigs were all dead and located under a bigger branch and on top of smaller ones (Picture 1). Because of how well organized it was, it did not look like the twigs arrived there naturally (i.e. as the effect of wind, or falling directly from the tree). This looked more like a structure that may have been built by some organism, maybe by the parent/s, to protect the nest. However, because we did not witness this process, this is merely speculation.



Picture 1. Right in the center of the picture are the twigs (A), underneath a bigger branch. Below this structure, at about 10-15 cm, was the nest (B). This is the structure that provided most of the overhead concealment for this nest.

Removal of nesting material. The following year, on November 29th, and as part of another study, we deployed a camera trap in front of the same nest described above (i.e. it was an old nest then). Due to the weathering of winter and exposure to wind, the nest was partially damaged, but still held its shape (the roof was gone though). Soon after we installed the camera, an individual of *E. albiceps* visited the nest. For the following two days, it visited at least 20 times, taking material from the nest and transporting it away in its bill. It repeated the process until it completely removed the old nest. The time of the year that this happened overlaps with the time when individuals of this species are actively building their nests. Thus, it is likely that the material was utilized to build another nest.

Building a nest inside another nest. As part of the same study where we deployed camera traps in front of old nests, we detected some unusual activity. We were monitoring an old nest of *Turdus falcklandii* (based on the shape, nest material, and size, as we never saw this nest while it was active). On November 29th, after four days of having deployed the camera, we observed an individual of *E. albiceps* visiting the nest. It stood on the edge of the nest, then sat and moved around inside. For the following 22 days, it continued to visit the nest sporadically (every 2-5 days) repeating the behavior described above, sometimes spending up to seven minutes inside the nest. The morning of December 21st it brought material to the nest. It continued to bring material, such as lichens and dry grass, for the following three days. During this period, it actively worked on shaping the nest. December 24th, after spending the whole morning in the nest, was the last day that the *Elaenia* spent significant time on it. Unfortunately, because of the

angle of the camera, we could not see the content of the nest to see if it had laid eggs. On December 25th an Austral Blackbird (*Curaeus curaeus*) visited the nest. The following day as well as on December 28th a native raptor, Chimango Caracara (*Milvago chimango*), also visited the nest. The pictures did not show whether these birds ate any content of the nest or not (the camera was set to trigger three pictures per detection with a delay of one minute), but after this event the Elaenia did not spend time in the nest, and it only visited briefly twice a few days later (although we do not know if it was the same individual).

Nest building behavior – *Anairetes parulus*

The translocated nest. On December 10th, 2015 we located a nest of *Anairetes parulus* that was being built. It was placed on a *Gaultheria mucronata*, but mostly concealed by *Chiliotrichum diffusum*. At the time we located it, it had most of the external structure in place, exhibiting a clear cup shape. There was no internal lining yet. We decided not to disturb the building process and the bird, and came back to visit the nest four days later. To our surprise, the cup was not there anymore, and only a few grasses were left in the spot where the nest had previously been placed. As we were documenting this, a pair of *A. parulus* approached us aggressively with alarm calls (common behavior for this species when an intruder is near their nest). We decided to hide and visually follow the parents. A few minutes later we saw one of them carrying material to a shrub. After they left to collect more material we approached the site and located the nest. It was almost finished and it was located only 3 m from the place we originally found a nest four days previous.

Many explanations or scenarios can be speculated here. Our field experience working with this species tells us that they are very territorial, exhibiting aggressive behavior against any intruder (either of the same or of a different species). Also, based on our observations, their territory is

larger than 3 m². Finally, we have also observed that when one of the individuals of the pair disappears, the other continues to defend the territory for weeks after. Thus, is it likely that both nests were built by the same pair and maybe they reused the material from the first nest to build the second one. An alternative explanation is that both members of the couple disappeared and the territory was occupied by a new couple who started building their nest immediately.