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To Whom It May Concern:

Coline Rual did her 2nd-year Master placement at Newcastle University's Centre for Behaviour and Evolution from January to May 2014. The project we proposed to her was a completely new project for both supervisors. It involved investigating whether rooks convey meaning in the sequencing/timing of their vocalizations, rather than just in the types of vocalizations used. When Coline arrived, we only had some ideas and recording equipment, leaving it up to Coline to set up the project – a challenging experience.

Coline spent the first month exploring different field sites and trying out recording methods. She was very independent and pro-active from the start, taking initiative to try new sites and making her own suggestions. Eventually, with the help of an amateur ornithologist friend, we found a small rookery that was easily accessible for sound recordings in the garden of a rural pub in Newcastle. Coline worked out all the practicalities of the recordings, including communications with the pub landlord to obtain permission to work in the garden. She worked incredibly independently and efficiently and got it all set up in good time. She then designed the recording protocol (in discussion with her supervisors) and set out to implement it. She did this all by herself, using public transportation to go to and from the field site, and arriving at the field site often very early in the morning to obtain recordings at dawn. Her work ethic is brilliant, and will serve her very well as a PhD student.

Coline's understanding of the rooks' biology was also very impressive. She could recognize all the individuals by behaviour and vocalizations (they were not individually marked) and really got to know them. She observed some interesting social interactions with helpers at some of the nests and was able to identify this and flag it up as of general interest. She is clearly a good biologist with solid knowledge of animal behaviour, and of rook behaviour in particular. This will again serve her very well for the PhD project she has applied for.

Finally, Coline's data analysis skills were also very good. She learned to use a combination of Sound Analysis Pro and Praat to quantify the vocalizations, and she used R for her statistical analyses. The data analysis was well done, and she quickly understood any extra suggestions we made of different ways of looking at the data. She also seems to have identified a very interesting phenomenon, in which the pattern of female begging calls is different in different contexts, potentially signalling different information through different temporal patterning of the same call.

In summary, Coline Rual has been a great Masters research student and will make a very good PhD student. Her knowledge and experience with rooks also makes her the perfect candidate for the project she has applied for. We very strongly recommend her to you. She will be a real asset to your research team.

Sincerely,

Tom Smulders, PhD

Joel Wallenberg, PhD