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Movement analysis of rescued and captive-reared Lesser Flamingos from Kamfers Dam, Kimberley, South Africa, 2019 – 2021

Nearly 2000 Lesser Flamingo (Phoeniconaias minor) chicks were rescued from Kamfers Dam, South Africa in January and February 2019 when receding water levels and drought exposed abandoned nests. The dam, located in the semi-arid savannah area north of Kimberley, Northern Cape Province, has supported breeding Lesser Flamingos since 2006 and is one of four breeding localities for the species globally. The rescued birds were hand-reared at accredited Zoo and Aquarium facilities as well as at registered bird rehabilitation centers around South Africa, returned to Kimberley between April and September 2019 for release back into Kamfers Dam. Overall, 614 individuals survived, and 21 birds were fitted with Druid GSM/GPS tracking units. We present results from selected GPS tracking data. Overall dispersal from Kamfers Dam is variable and multi-directional and revealed previously unknown routes of Lesser Flamingos from Kamfers Dam. Multi-state log-normal hidden Markov models (HMMs) were fitted to GPS data from selected tracked birds to understand patterns of movement in relation to time of day, month of the year, altitude and moon phase. A four-state model HMM provided the best fit to the movement data, with the fourth state inferred to represent relocating behaviour. We found strong relationships between the long relocations, and nocturnal flights, altitude and moon phase. The relocating state occurred more frequently during the full moon phase and less regularly during the third quarter. As a first large-scale rescue and release operation of Lesser Flamingos in Africa, it highlighted the scientific and conservation success of such an operation but also the risks of young flamingos to hand-rearing processes and crossing vast arid landscapes during their first long flights.