FIRST DOCUMENTATION OF SIBLICIDE IN A MARSH HARRIER CIRCUS AERUGINOSUS: RESULTS FROM TRAIL CAMERA SURVEILLANCE

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Siblicide - or juvenile mortality resulting from the overt aggression of siblings - is not unique to birds. Siblicide as a mechanism for brood reduction has been reported in a number of asynchronously hatching bird species. Hatching asynchrony facilitates a size hierarchy, which in turn enhances the early death of last-hatched chicks.

Waterproof Acorn Ltl-5210A 12MP Digital Trail Camera was used to study Marsh Harrier *Circus aeruginosus* nesting biology. The camera was mounted on wooden pole at ca. 0.5 metres above the water level and pole installed at ca. 1.5 m of the nest. To avoid a nest abandonment caused by the disturbance, camera installation was done when oldest chick began to grow feathers. To mitigate disturbance all the camera installation works were done at shortest possible time. Reeds were used to hide the device. Nest was monitored form June 16 to June 21 and from July 7 to July 14, 2012. During these two trials the camera worked for 297 hours in total.

By using camera two siblicidal killings were recorded. First one started on June 17, 2012, at 08:01 AM. Four nestlings were in nest and the youngest was attacked. Aggressive attacks were characterised by pecking directed toward the head or neck, with or without grabbing victim with the claws.. After first aggression was happened it continued intermittently until victim's death. Victim died on the same day when aggression started.

Second case of siblicidal aggression was recorded on the same nest one day later. It started at 10:41 AM. After a head injury, although infirm, chick has survived throughout the day. After heavy rainy morning of June 19 dominant nestlings used aggression to kill their weaker sibling.

There was no battle; the undersized nestlings never fought back or displayed any effective defence.

Aggression between broodmates could vary because of influences external to the brood. The most obvious example is the amount of food delivered to the nest. In facultative siblicide species food shortages can act as an immediate stimulus to, or proximal cause of, sibling fighting. In contrast, the relative abundance of food does not appear to affect the level of aggression in obligate siblicide species.

Both reported cases of siblicidal behaviour occurred after the rainy mornings when hunting success for adults can be reduced. Being not fed during the night and having food shortage during harsh weather at the morning nestlings might have experienced starvation. Thus, these cases of siblicidal behaviour may coincide with widely accepted Food-Amount Hypothesis. However, Food-Amount Hypothesis is not the only one explaining siblicidal behaviour. There are also hypotheses like Prey-Size Hypothesis, Brood-Size Hypothesis, Challenge (Testosterone) Hypothesis and others, developed to explain the cause of avian siblicidal aggression. However, further research needs to be done to explain siblicidal cases documented here.

In order to find published Marsh Harrier siblicide documentation cases, the scientific community also has been addressed by using the *ResearchGate* - a network dedicated to science and research and *The World Working Group on Birds of Prey and Owls* through its e-mail discussion group (mailing list) - the *RAPTOR CONSERVATION*. These communications and my review of the existing literature suggests that here reported siblicide in a Marsh Harrier is a first documented case for this species.