

Studying the nesting biology of Golden eagles (*Aquila chrysaetos*) by use of a trap camera.

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Introduction

In the last decade the use of trap cameras is becoming increasingly more common for studying of the nesting biology of raptors. Here I report the initial findings of a survey on Golden Eagles in Bulgaria

Methods

Trap camera was installed in an active nest of Golden Eagles in Eastern Rhodopes, Bulgaria. The area is well known for having a population that during the breeding season feeds mostly on land tortoises. The device was placed on about three meters from the nest. The model and parameters of the trap camera were: Bolyguard BG590-K2, 32 MP, invisible IR at night, quick trigger time 0.7s, supports up to 64GB SD card, operating with 8 AA Panasonic batteries. The trigger of the camera was set at "normal sensitivity" with taking of a photo whenever there is activity with minimal time interval of 10 sec. To secure uninterrupted recordings, the batteries and SD card were changed once in the middle of the period.

Results

The recordings encompassed 45 days in June and July and the camera took 12 900 photos (43,3 GB), from the time when the single chick was ca. 32 days old (June 2nd), until its fledging (July 15th) at ca. 75 days old.

Food provisioning

84 food deliveries were recorded (Table 1), with the prey identified in 76 of them. Land tortoises dominated the diet (65% of the items), followed by Edible Dormouse (*Glis glis*) (10,5%), snakes (7,9%) and European Hare (*Lepus europaeus*) (5,2%). The male delivered most of the food – 60 vs 21 of the cases. The male brought seven of the eight dormouses and three juvenile hares, while the female brought a hind leg of an adult hare.

Adding of greenery to the nest

Both birds brought branches with green leaves to the nest. Of 111 recorded cases (Table 2), 105 involved fresh branches with leaves and six branches without leaves. The female brought 103 branches and the male eight.

Cleaning of the nest from prey remains

35 cases of removal of prey remains (mostly tortoise shells) from the nest were identified, invariably done by the female. In at least 24 of the cases the remains seemed to have little if any nutritional value left. In at least three of the remaining 11 cases (involving a deer (*Dama dama*) leg, a juvenile Stone marten (*Martes foina*) and a Chukar partridge (*Alectoris chukar*), the prey item removed still had substantial amount of meat left and was probably eaten outside of the nest.

Nesting biology in the night

Only the female was roosting in the nest with the chick until when it was 50 days old, after which roosted in the nest only once in a rainy night at 58 days age of the chick.

Conclusion

The quality of the photos allowed for easy individual identification by plumage characteristics of the two adults especially on the medium coverts and the method provides opportunity for following the lifetime reproductive success of unmarked Golden Eagles.

Species	No ind.
Tortoises <i>Testudo hermanni/graeca</i>	50
Edible dormouse <i>Glis glis</i>	8
Snakes (Colubridae)	6
Brown Hare <i>Lepus europaeus</i>	4
Fallow deer fawns <i>Dama dama</i>	2
Stone marten cubs <i>Martes foina</i>	2
Green Lizard <i>Lacerta viridis</i>	1
Grass Lizard <i>Lacerta trilineata</i>	1
Red squirrel <i>Sciurus vulgaris</i>	1
Chukar Partridge <i>Alectoris chukar</i>	1
Unknown	8
Total	84

Table 1. Prey species brought to the nest by both adults.

Tree species	No
Oaks (<i>Quercus</i> sp.)	46
Hornbeam (<i>Carpinus betulus</i>)	18
Linden (<i>Tilia</i> sp.)	9
Manna ash (<i>Fraxinus ornus</i>)	7
Balkan maple (<i>Acer hyrcanum</i>)	3
European hop-hornbeam (<i>Ostrya carpinifolia</i>)	3
Lilac (<i>Syringa vulgaris</i>)	2
Turkish hazel (<i>Corylus colurna</i>)	1
Scots pine (<i>Pinus sylvestris</i>)	1

Table 2. Composition of tree species used for nest maintenance during the nestling stage.

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Contact

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The female – left side.



The male carries to the nest two hind legs of a Fallow Deer fawn.



The male brings an Edible Dormouse with a torn tail.



A juvenile Stone Marten brought by the male.



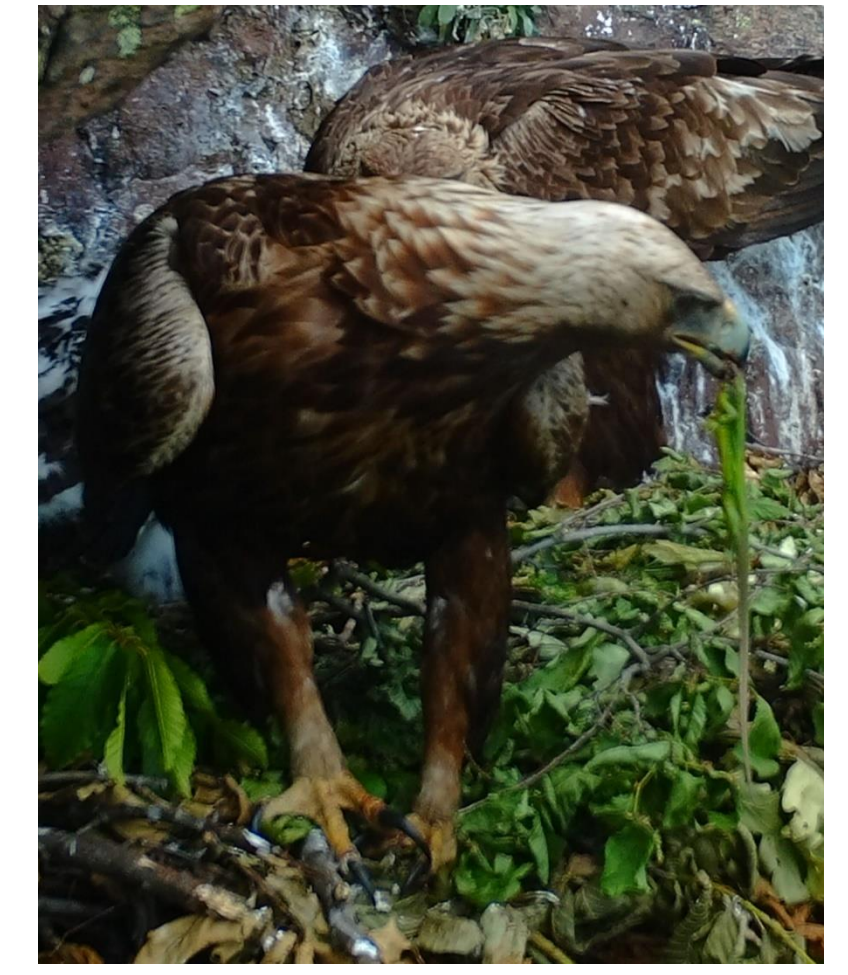
The female – right side.



The male – right side.



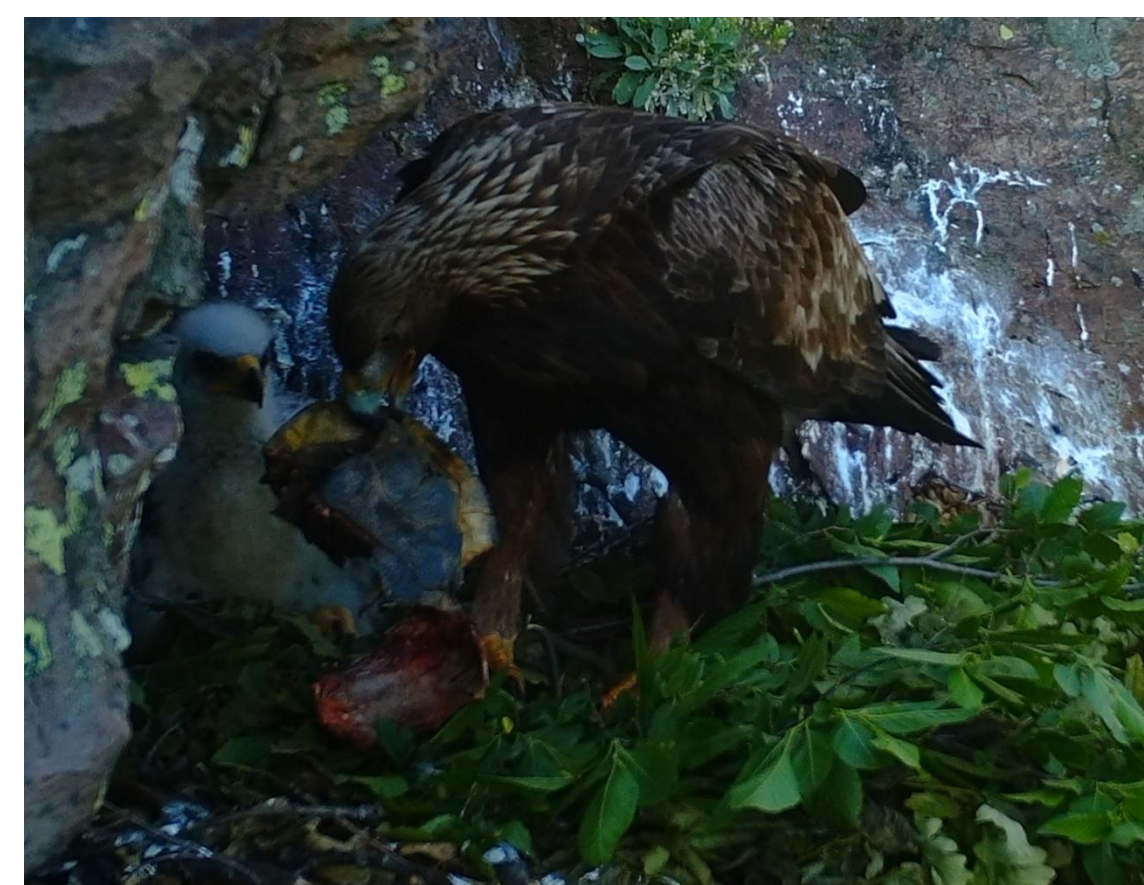
The male brings a land tortoise – most of them were Hermann's (*Testudo hermanni*).



The male with an adult male Grass Lizard.



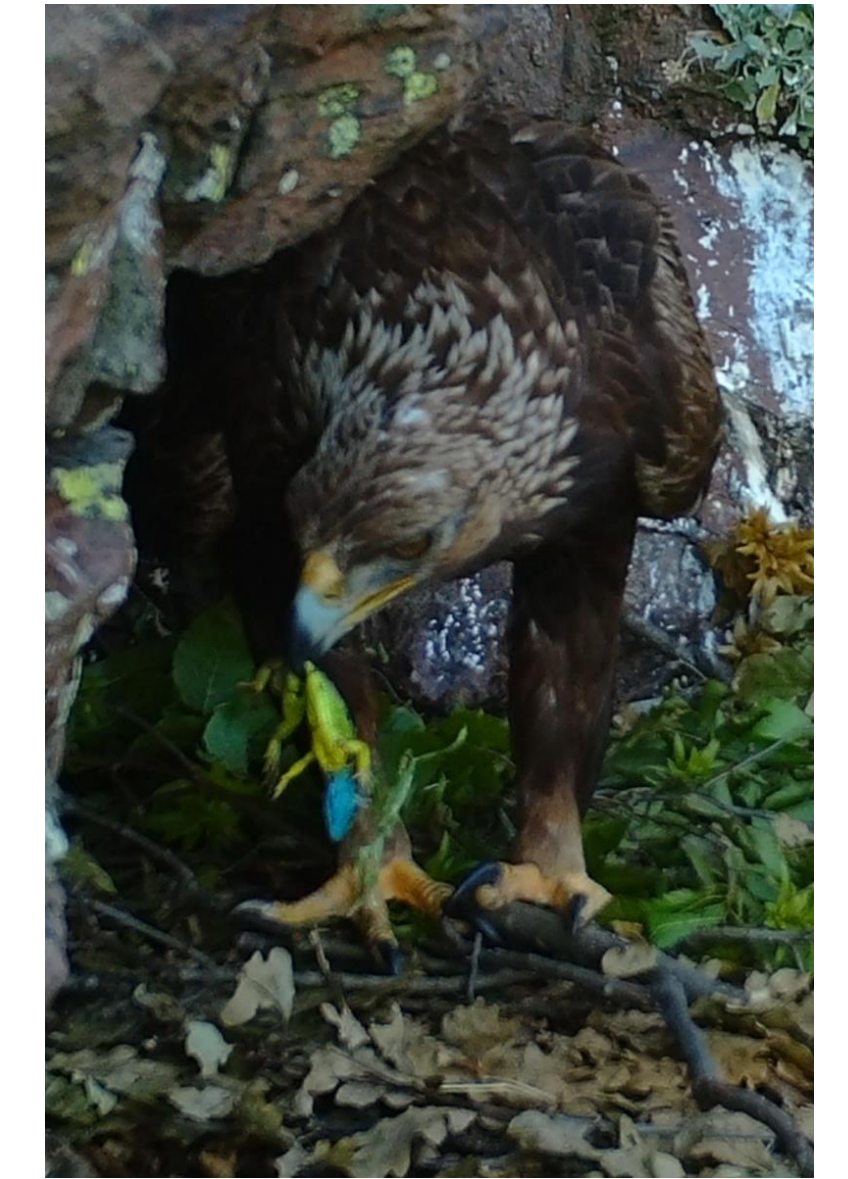
The female has just brought two hind legs of a Fallow Deer fawn.



The female cleaning the nest of tortoise shells.



The male carrying a fully skinned juvenile European Hare.



The female with an adult male Green Lizard.



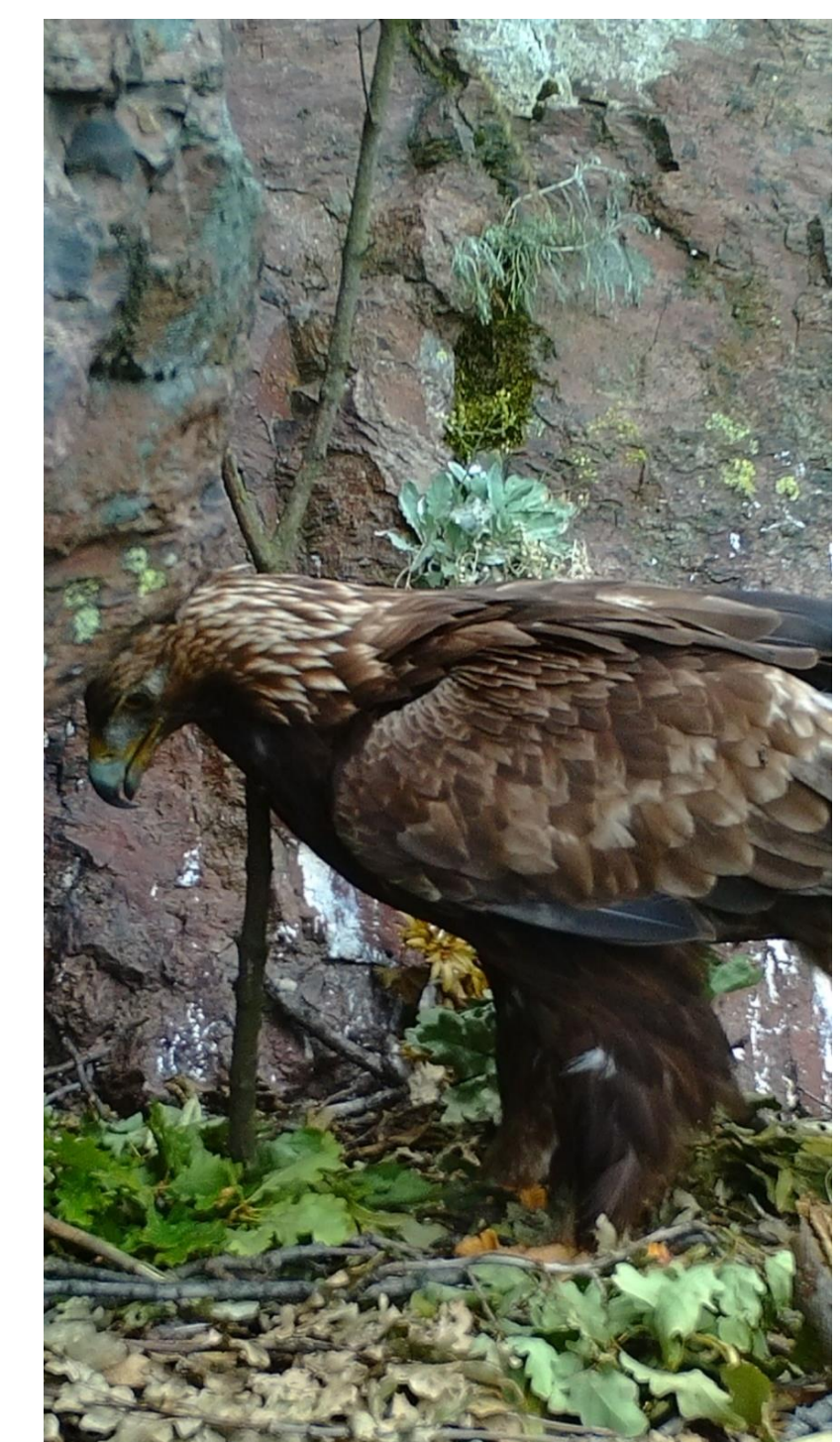
The female with an oak branch, before being added as a greenery.



The male bringing a branch of Manna Ash.



A fresh branch of Linden visible on the rim of the nest.



The female has just brought the biggest branch.



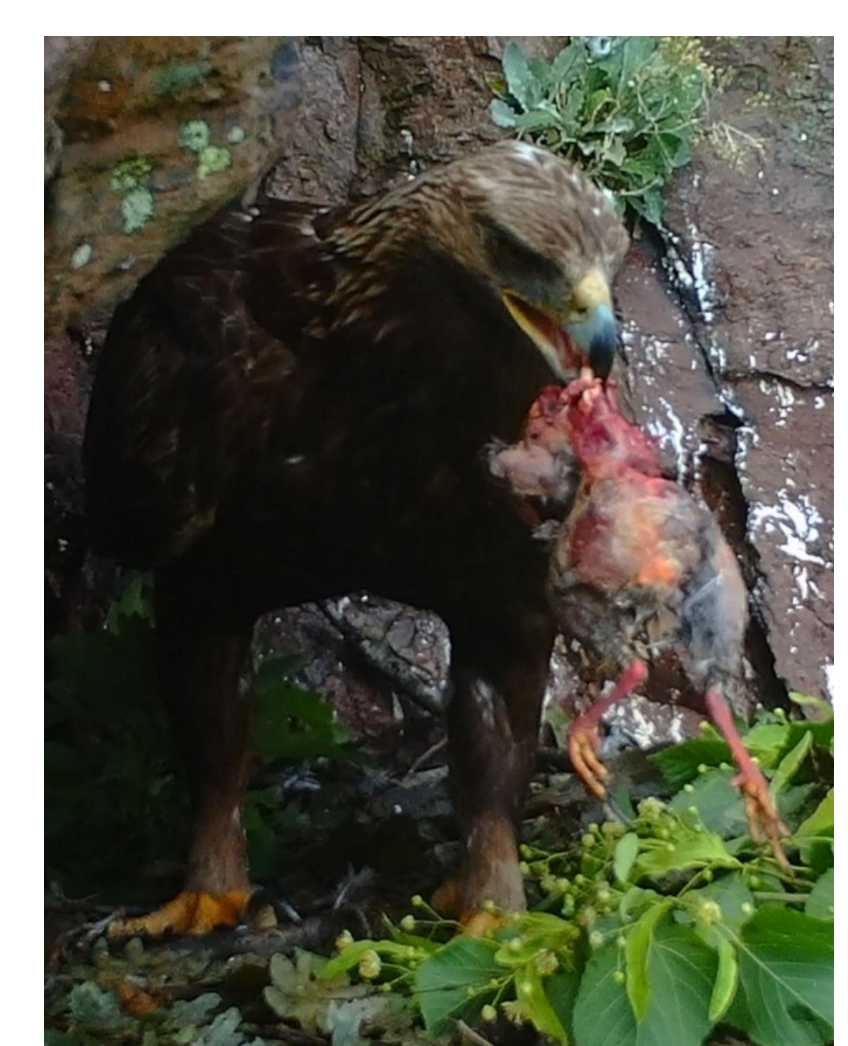
The female before carrying away one of the many tortoise shells.



The female roosting in the nest when the chick is ca. 46 days old.



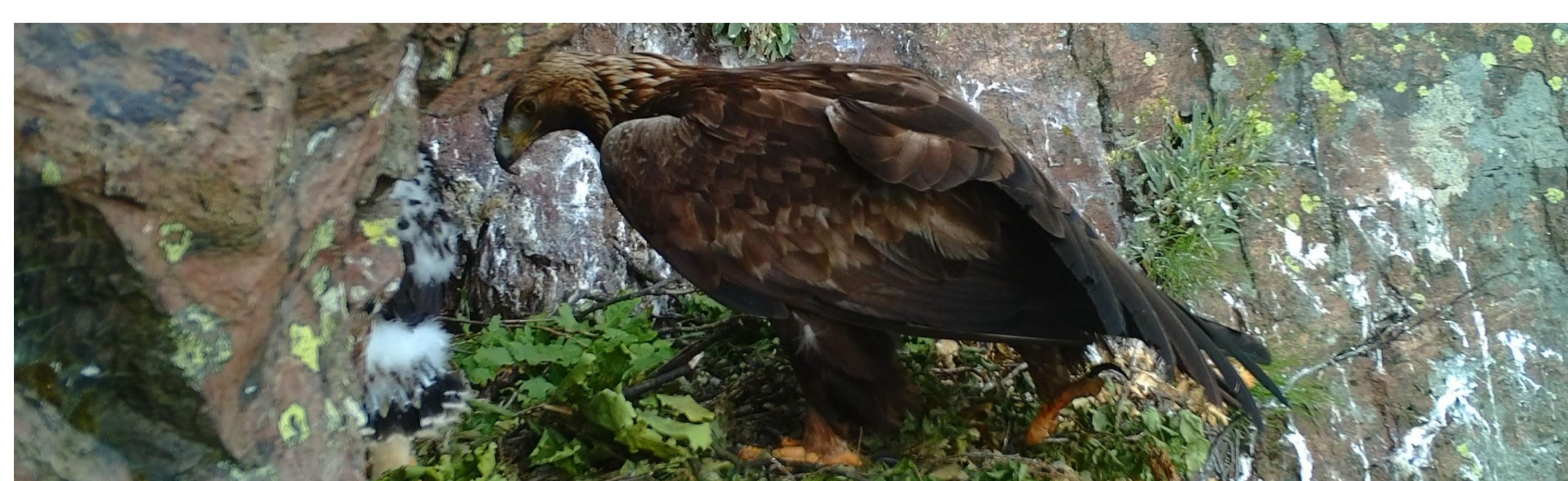
The young, swallowing a whole Edible dormouse



The female flying out of the nest with a partially eaten Chukar partridge.



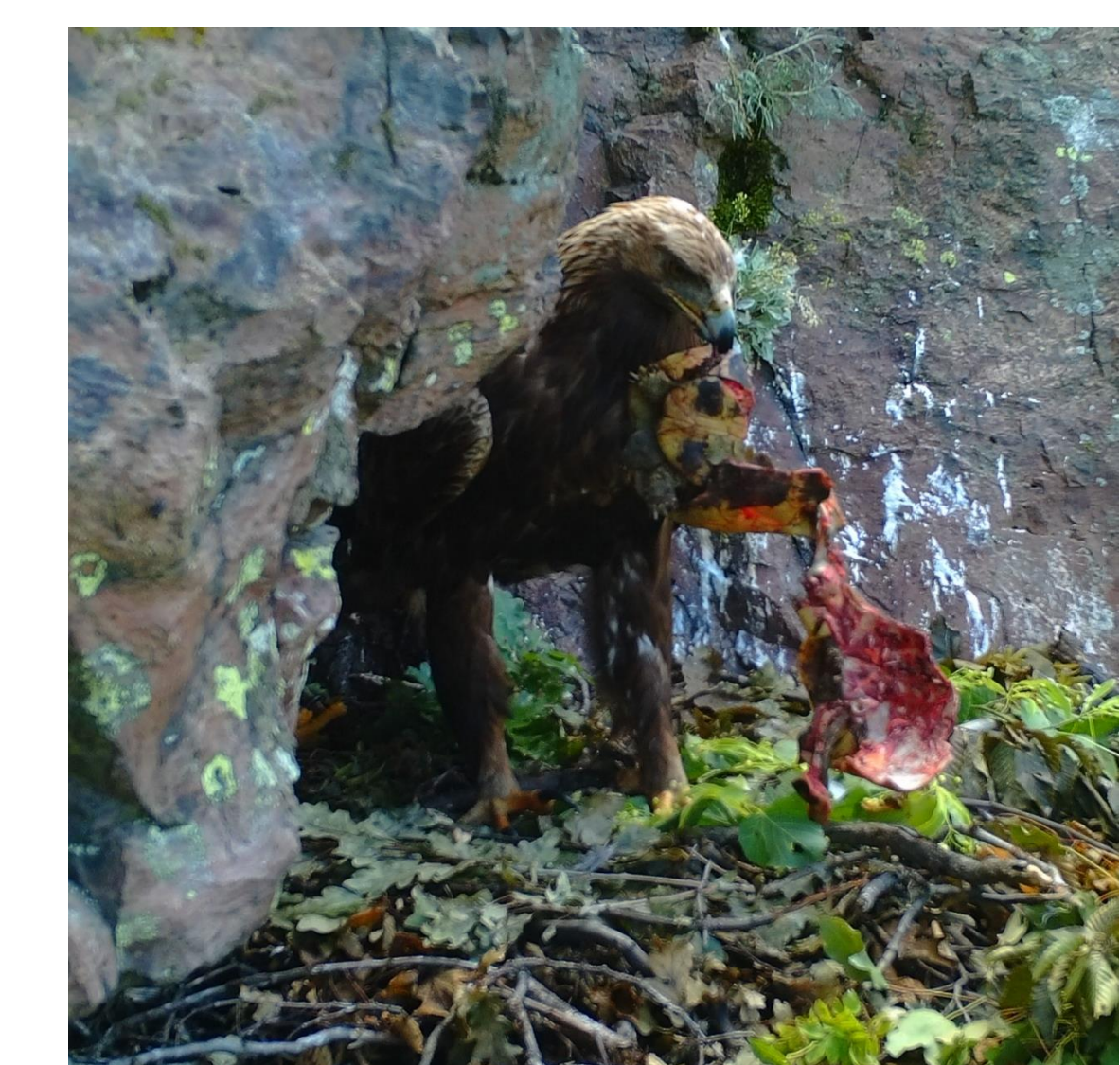
Diagram 1. Comparison between the times of prey delivery and bringing of nesting material by both adults.



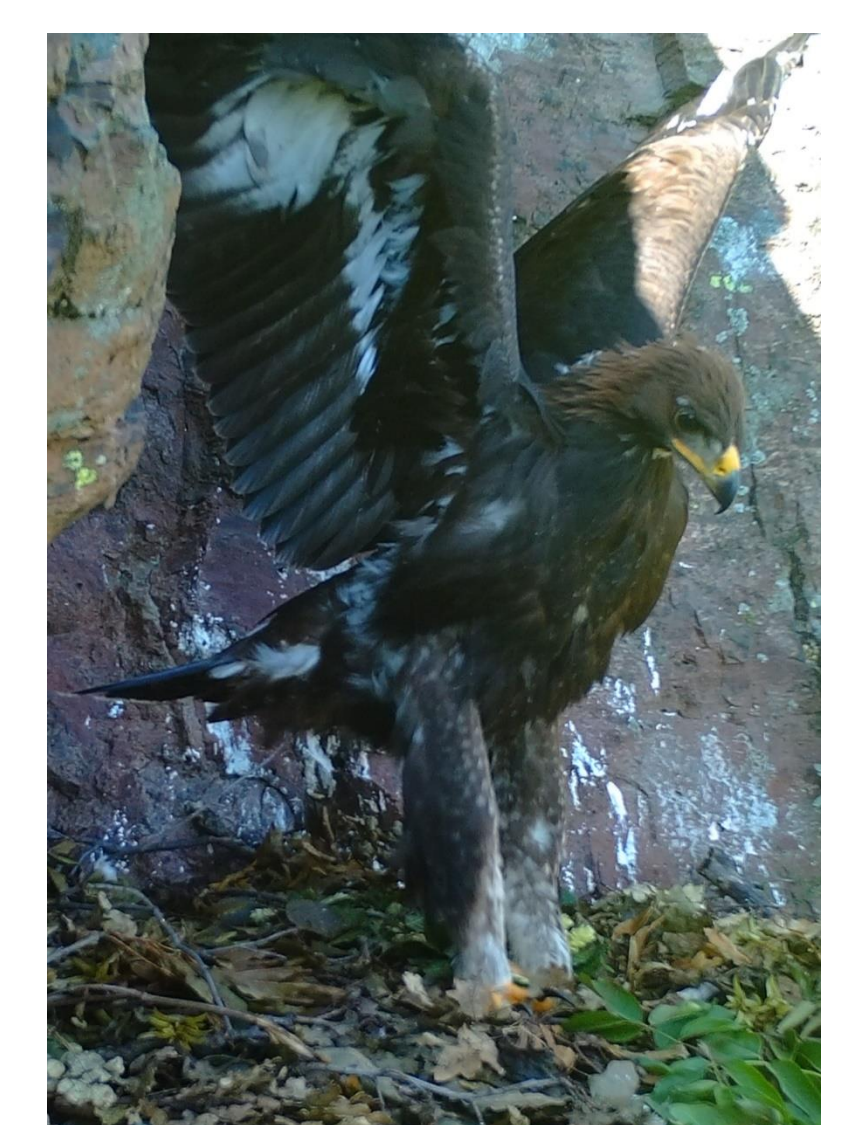
The female performing wing-leg-tail-stretch offering good view of its hind claws.



The juvenile has a rarely seen, unusually wide black terminal band of the tail.



The female seconds before taking off with the broken tortoise carapace.



The young at ca.68 days old preparing for its first flight.