

# *Captive breeding of a circannual species – chronobiological chances and pitfalls*

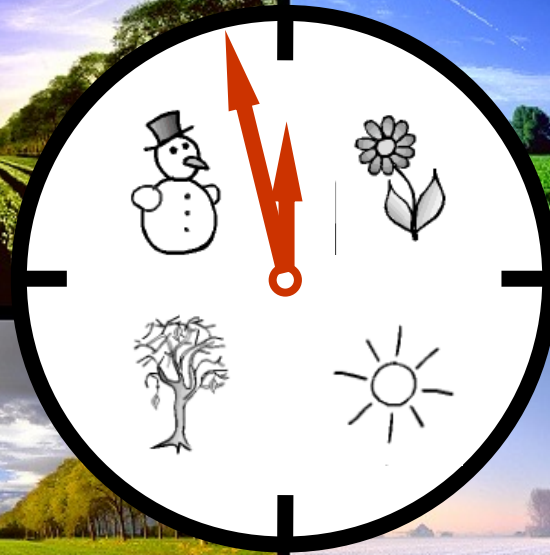
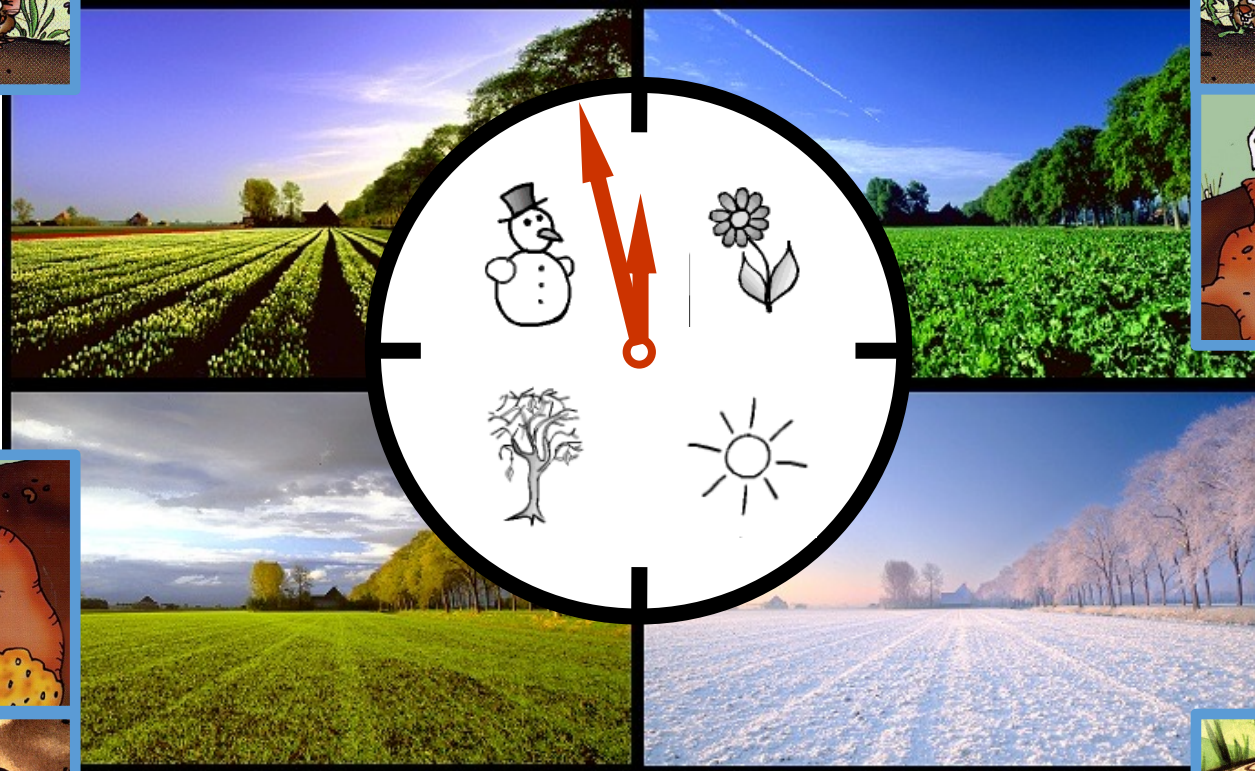


STEFANIE MONECKE

J. KRITSCHKER, N. MÜLLER, C. STÜCKER,  
B. LÖHRMANN, S. THIMM, A. HIRZ  
C. CHMELA, M. STEVENS

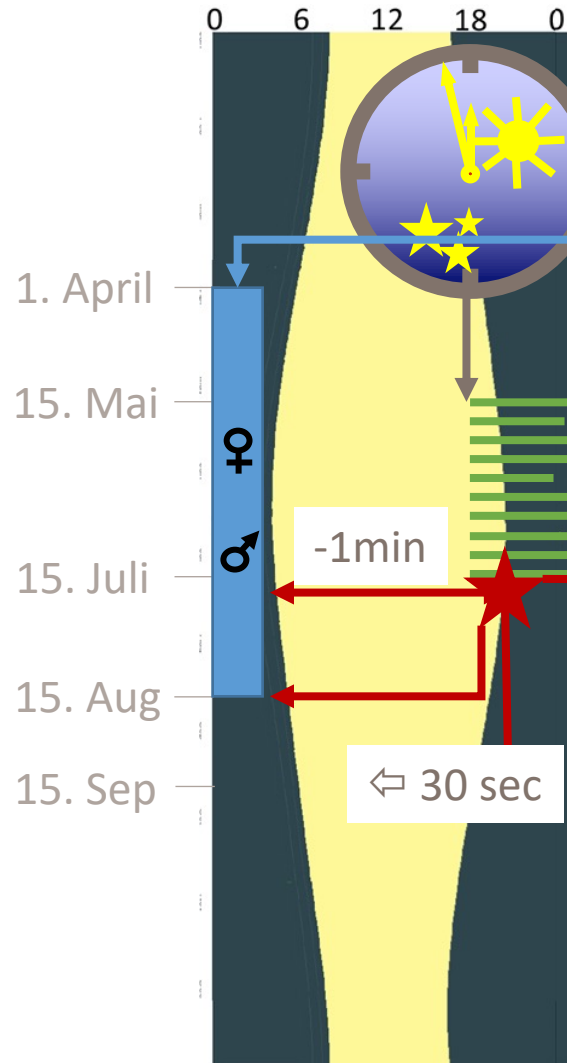


# Natural changes in the environment

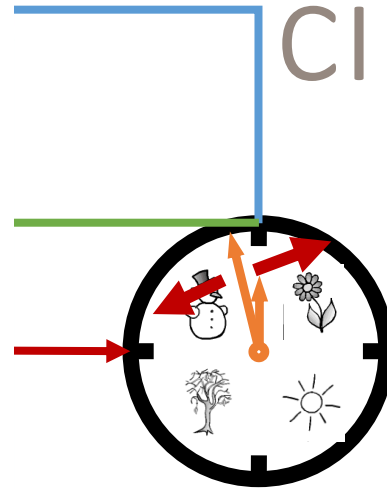


Cartoons: Olaf Godman AGFHA

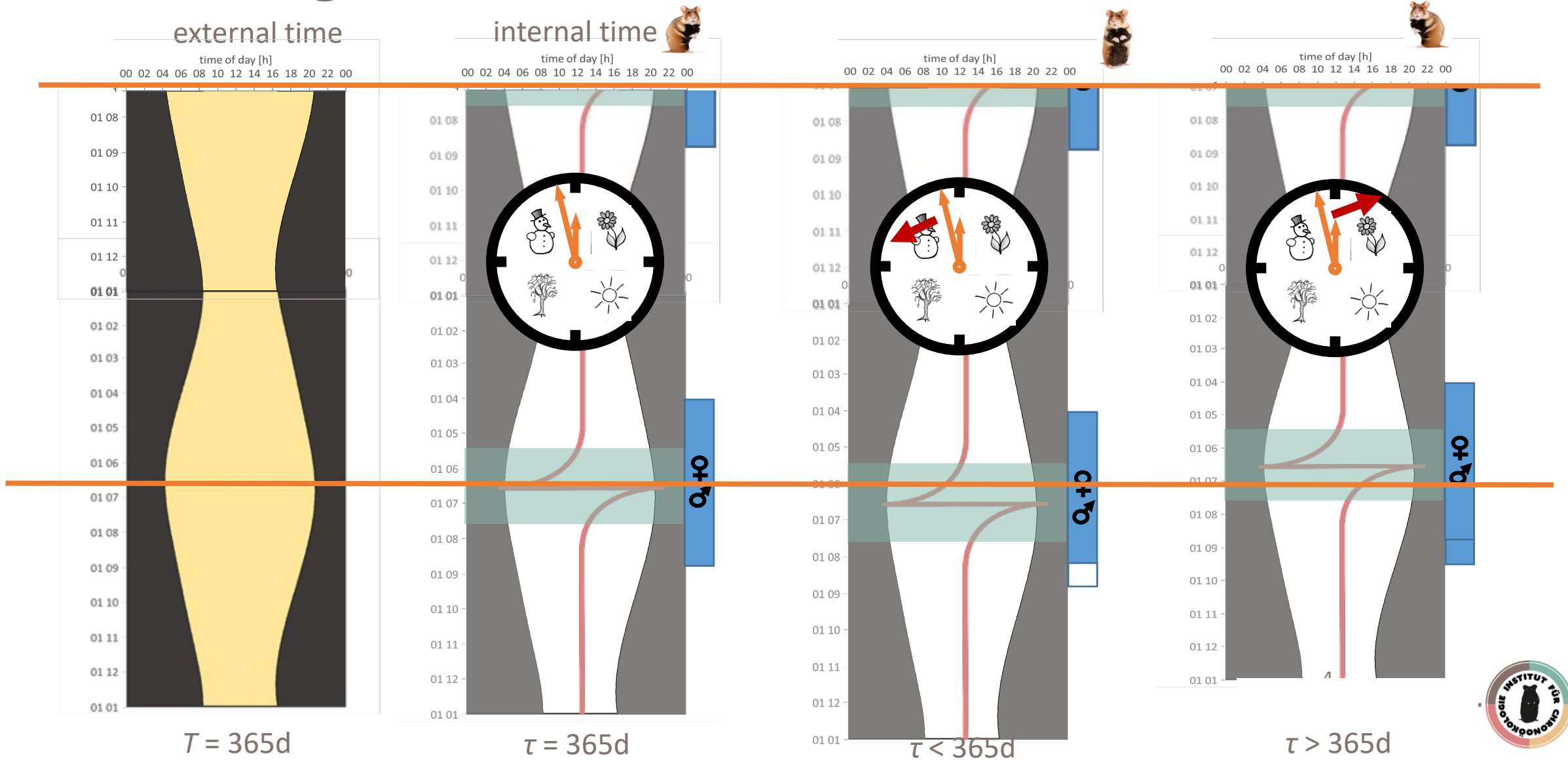
# Resetting of the circannual clock



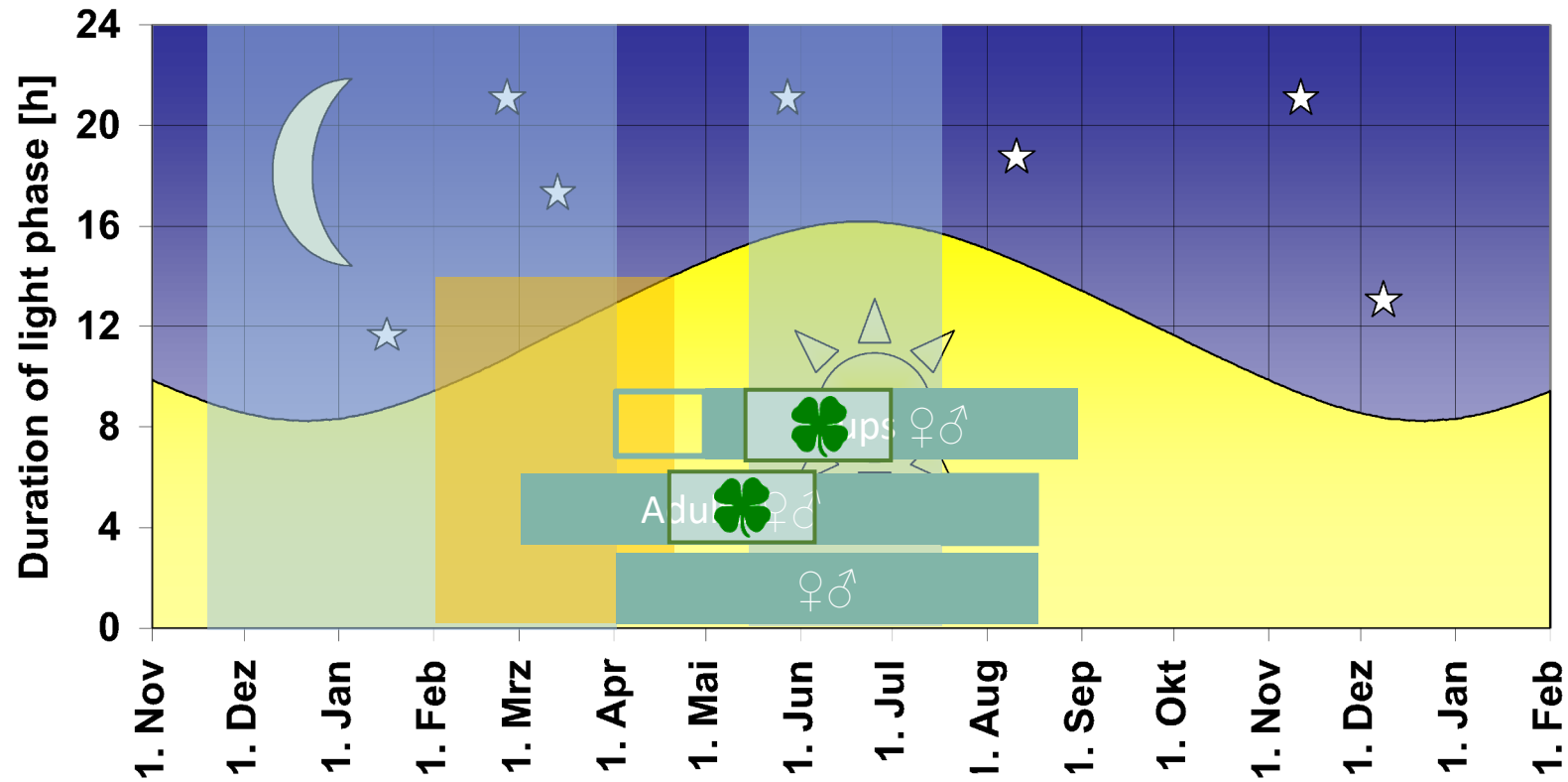
Monecke et. al 2006, 2014



# Resetting of the circannual clock

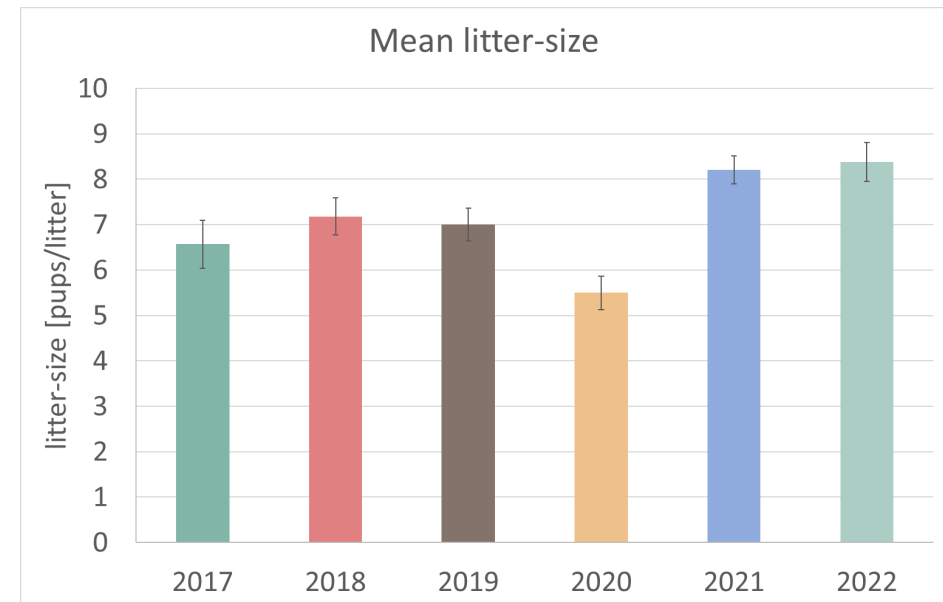
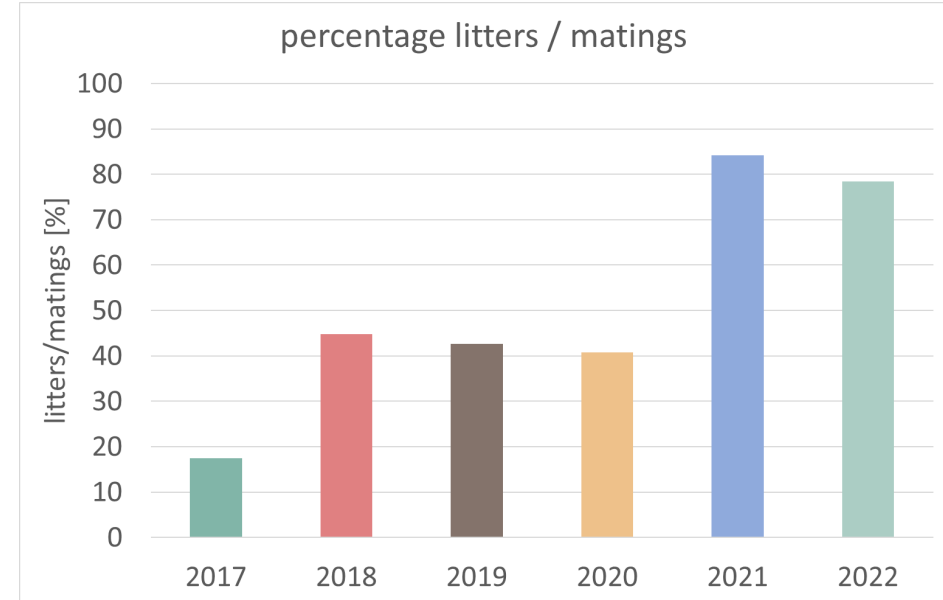
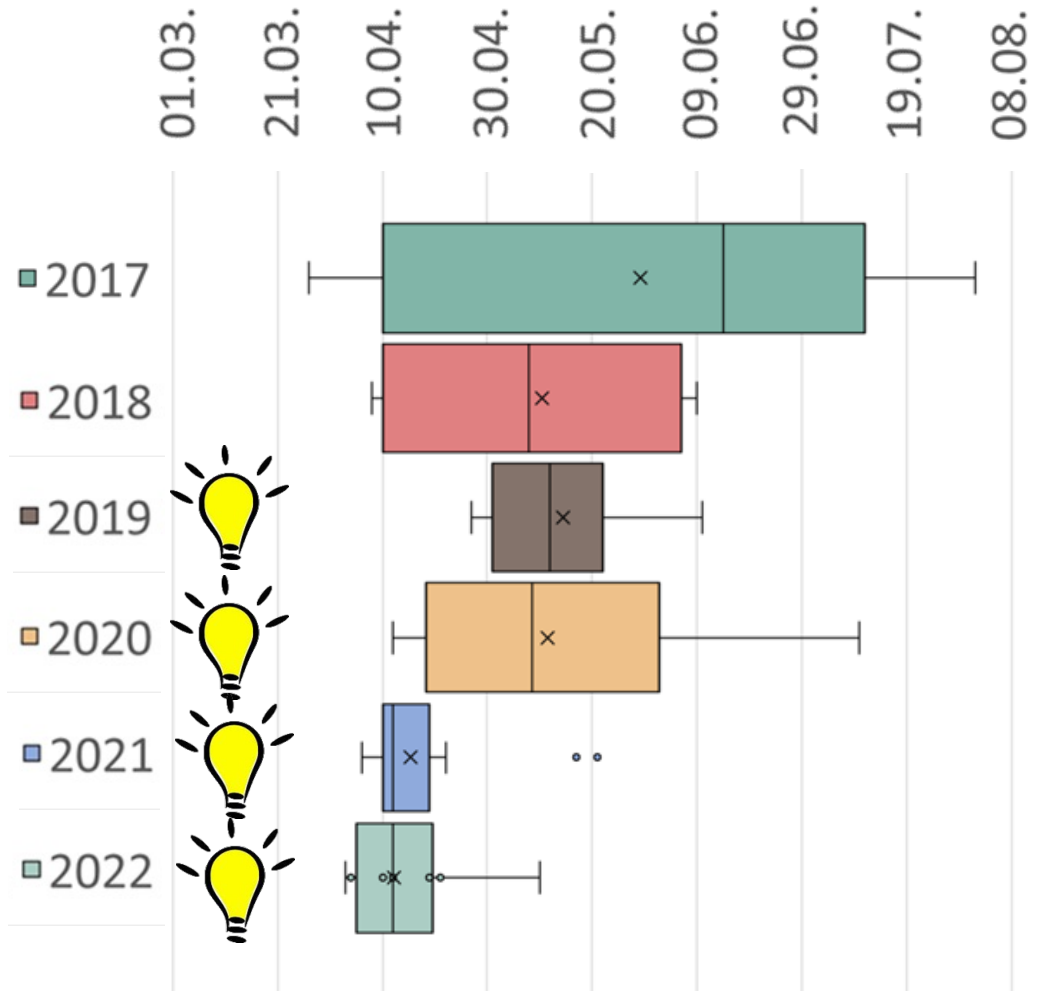


# Moderate advance in breeding $\Rightarrow$ chance



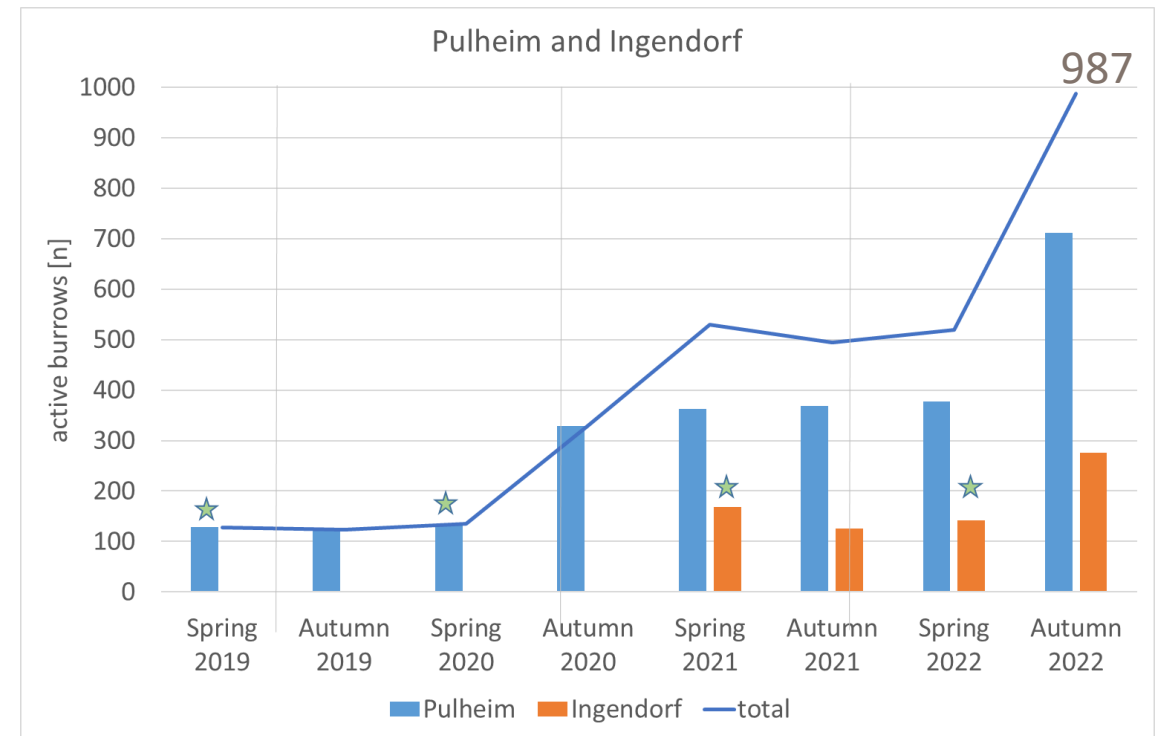
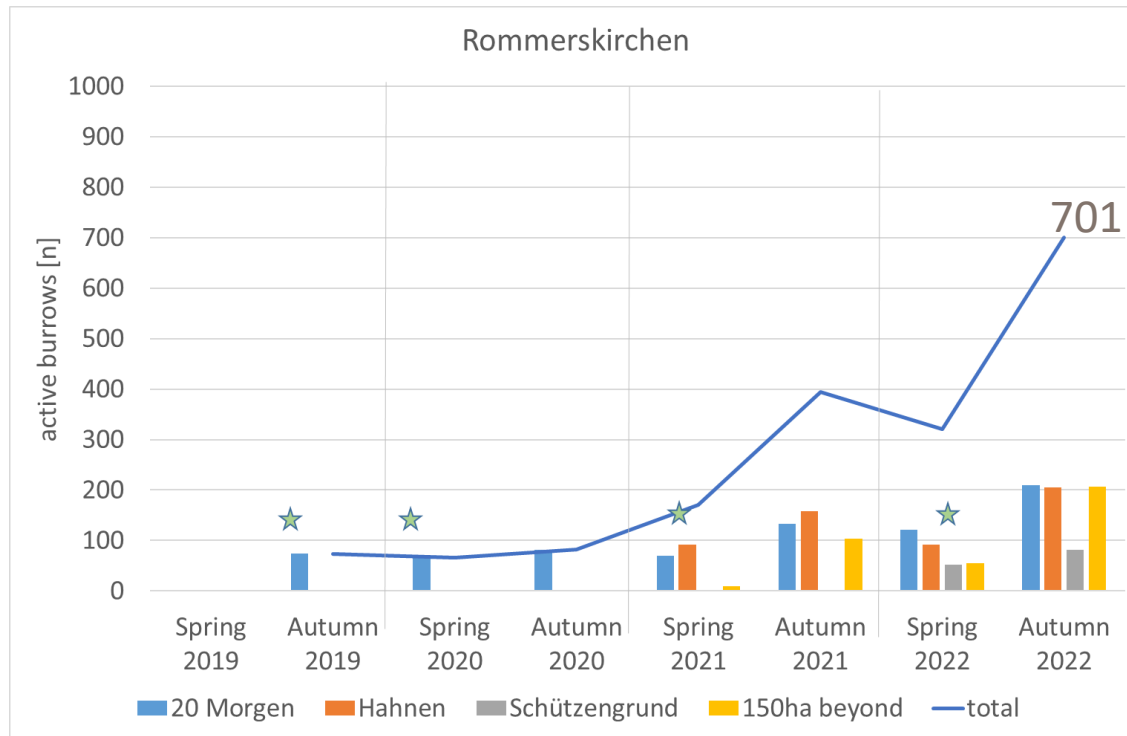
Monecke et al. 2009

# Timing of breeding



# Population development at 2 release sites

Active burrows NRW in autumn 2022: 1731

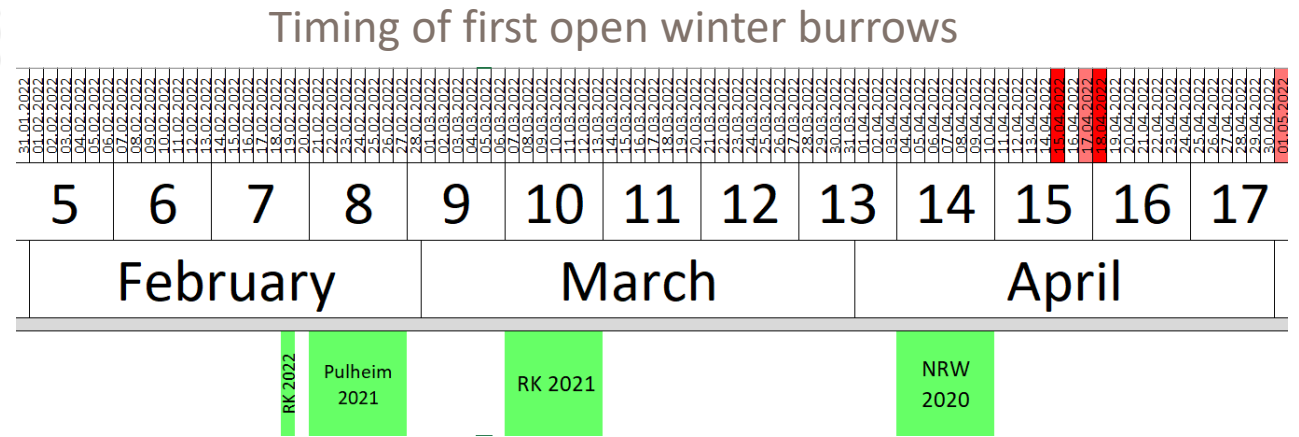
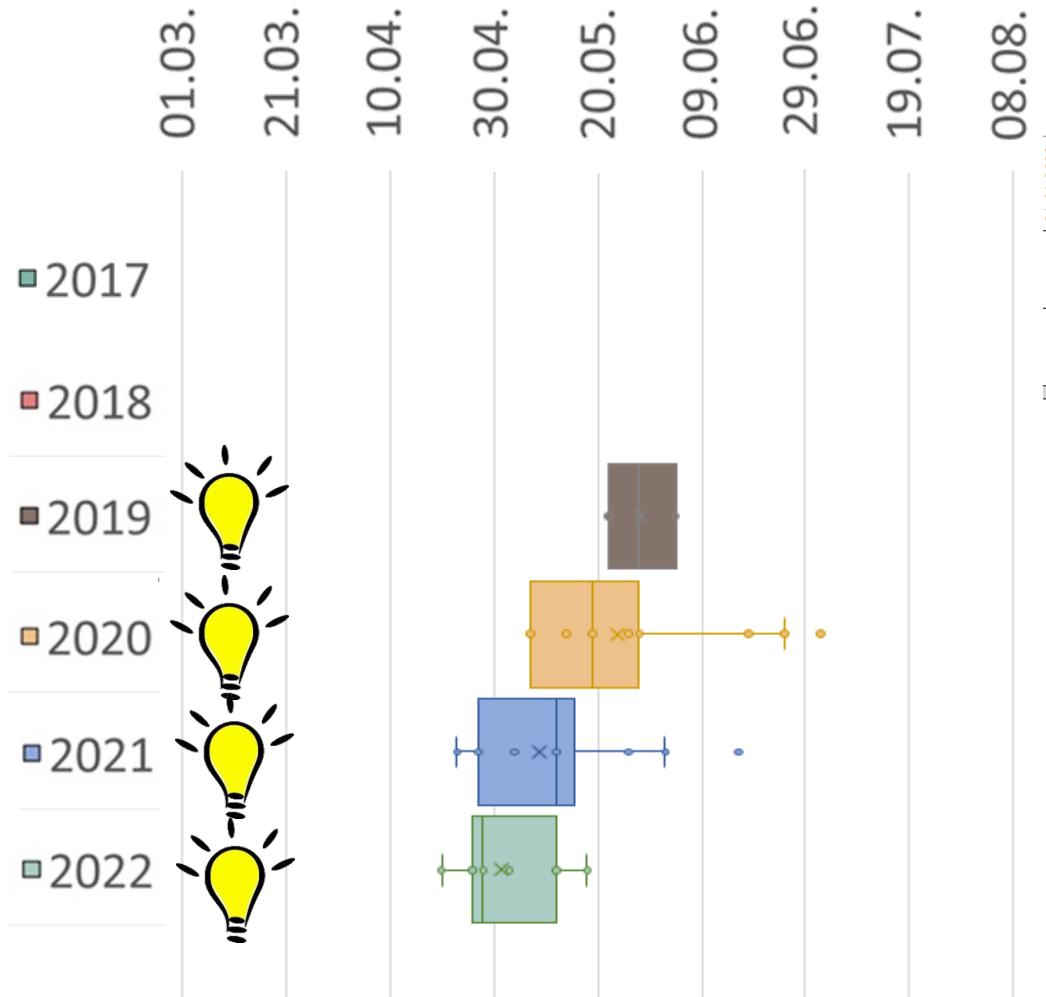


★ Incl released animals

165ha ⇒ 4.3 bu/ha

300ha 3.3 bu/ha

# Timing of spring release (adults)

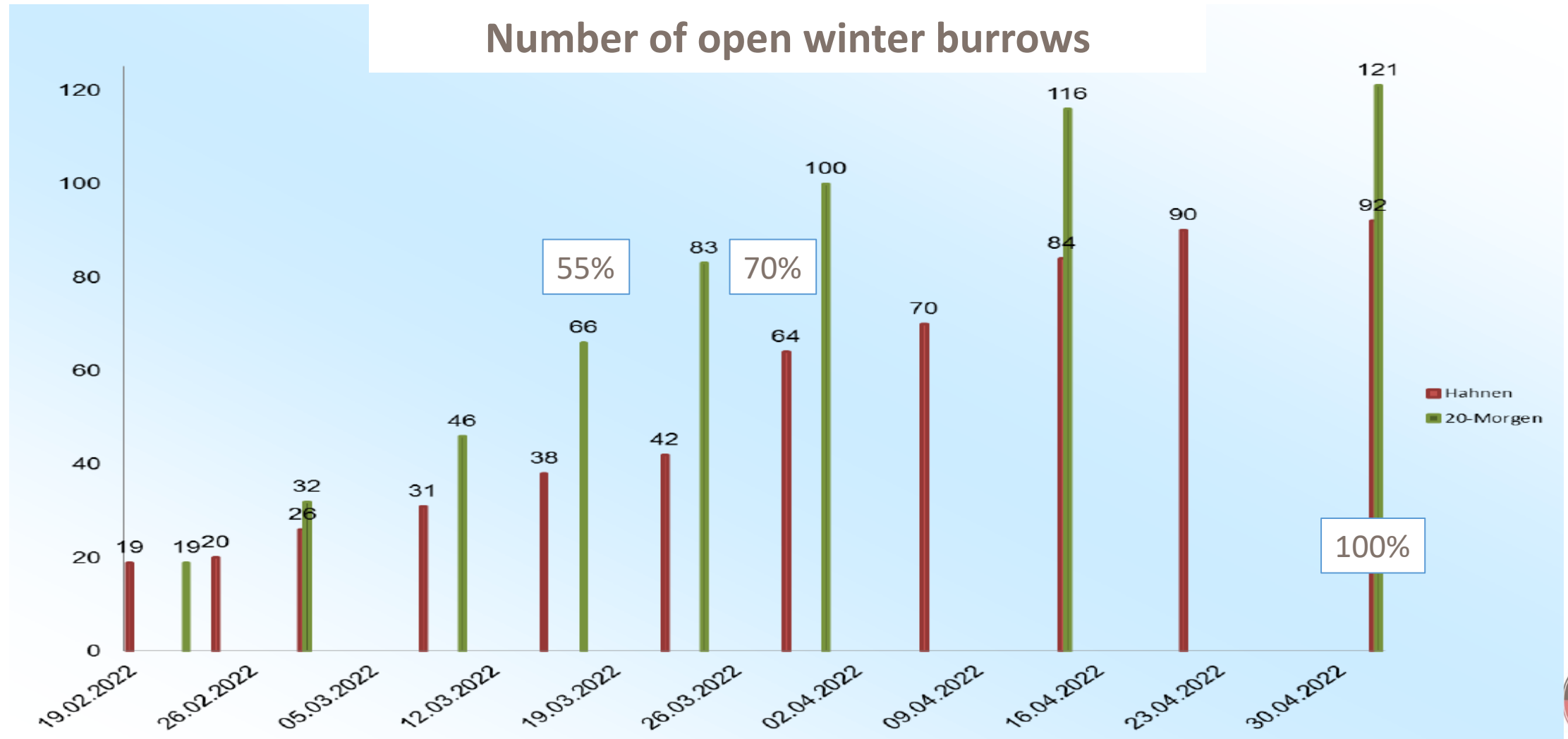


## Hypotheses

- High population densities advance breeding onset
- Early born animals reproduce early



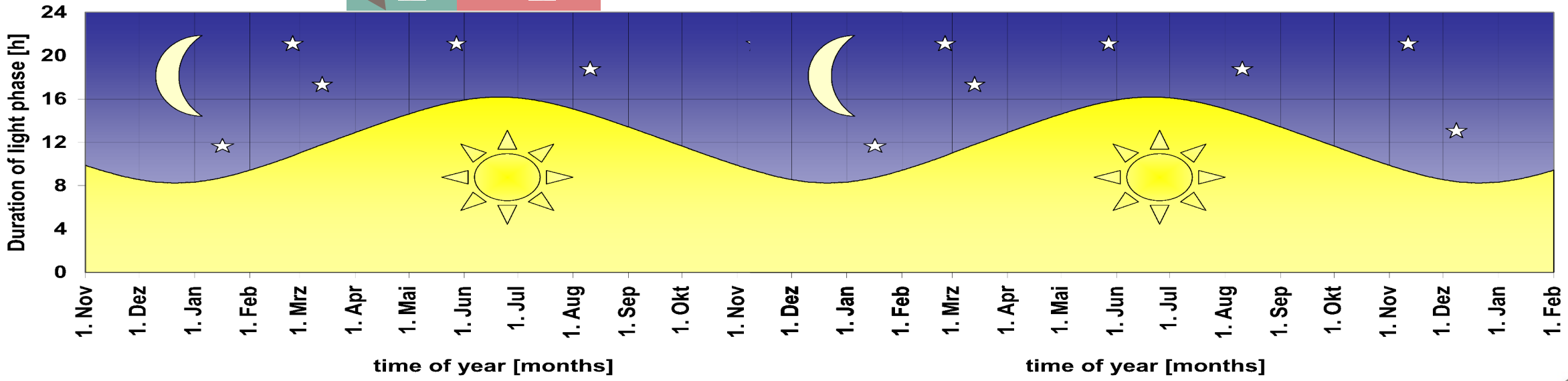
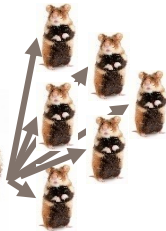
# Early opening of winter burrows



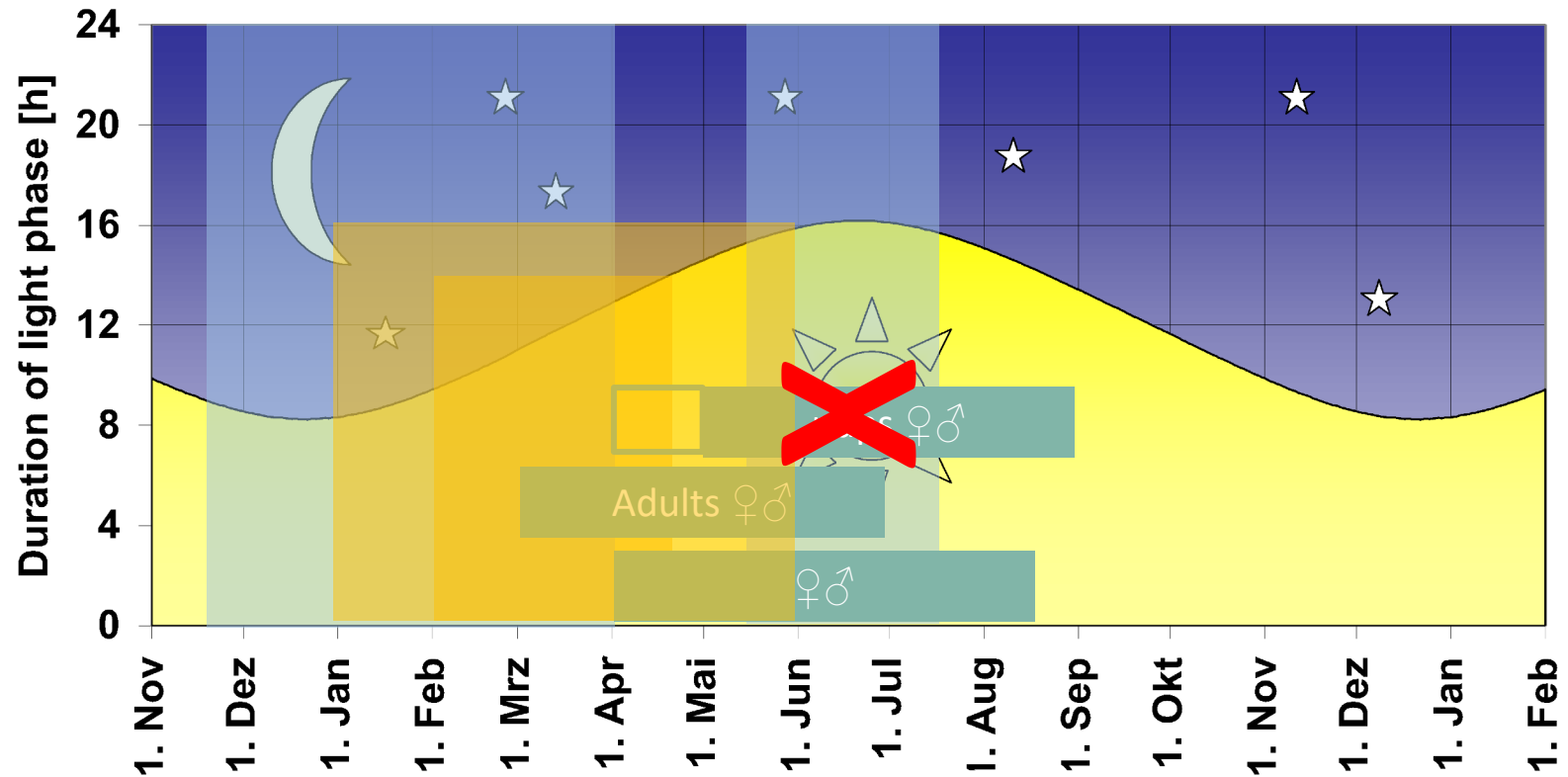
# Timing



release



# Strong advance in breeding $\Rightarrow$ pitfall

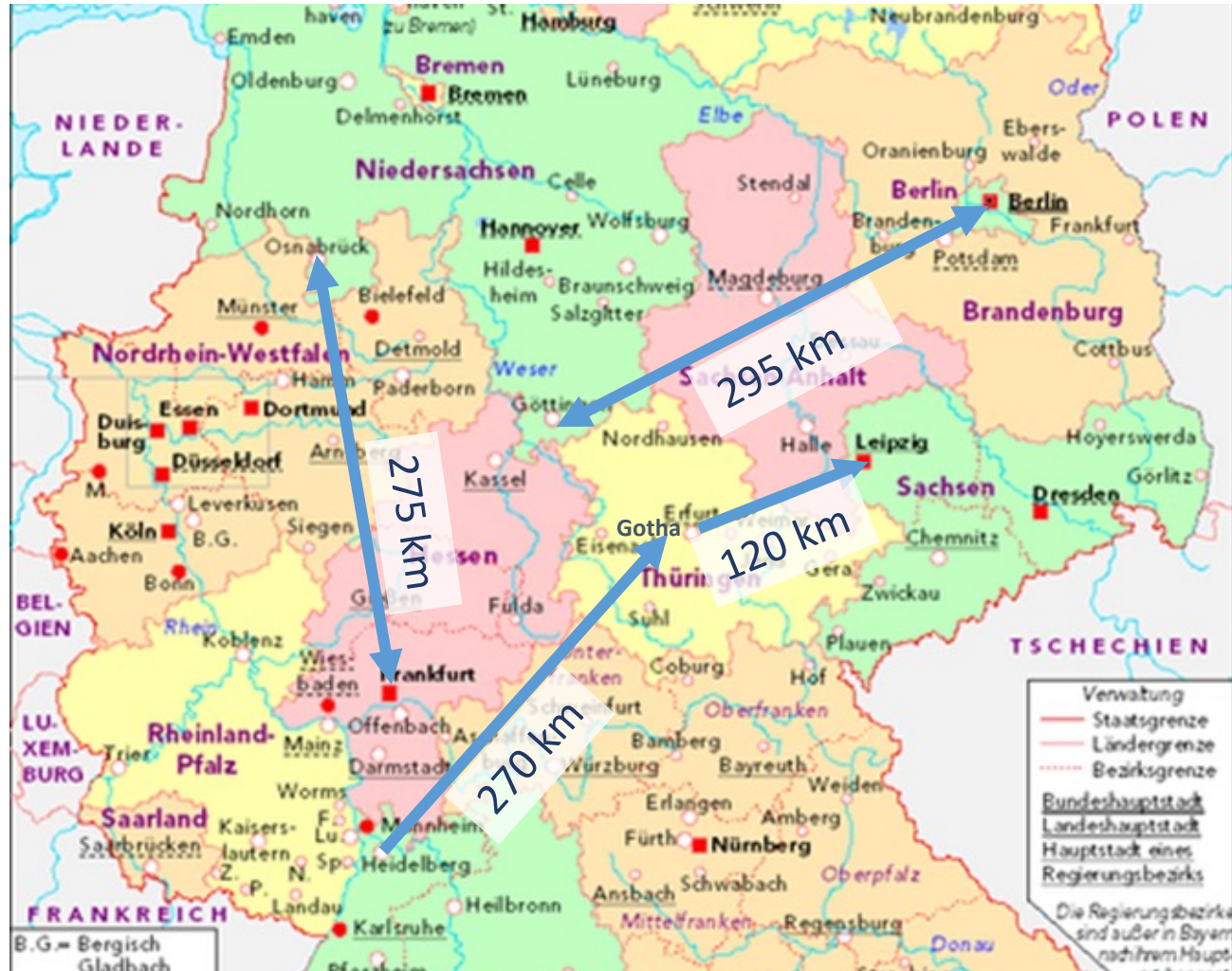


All animals will stop reproduction at release

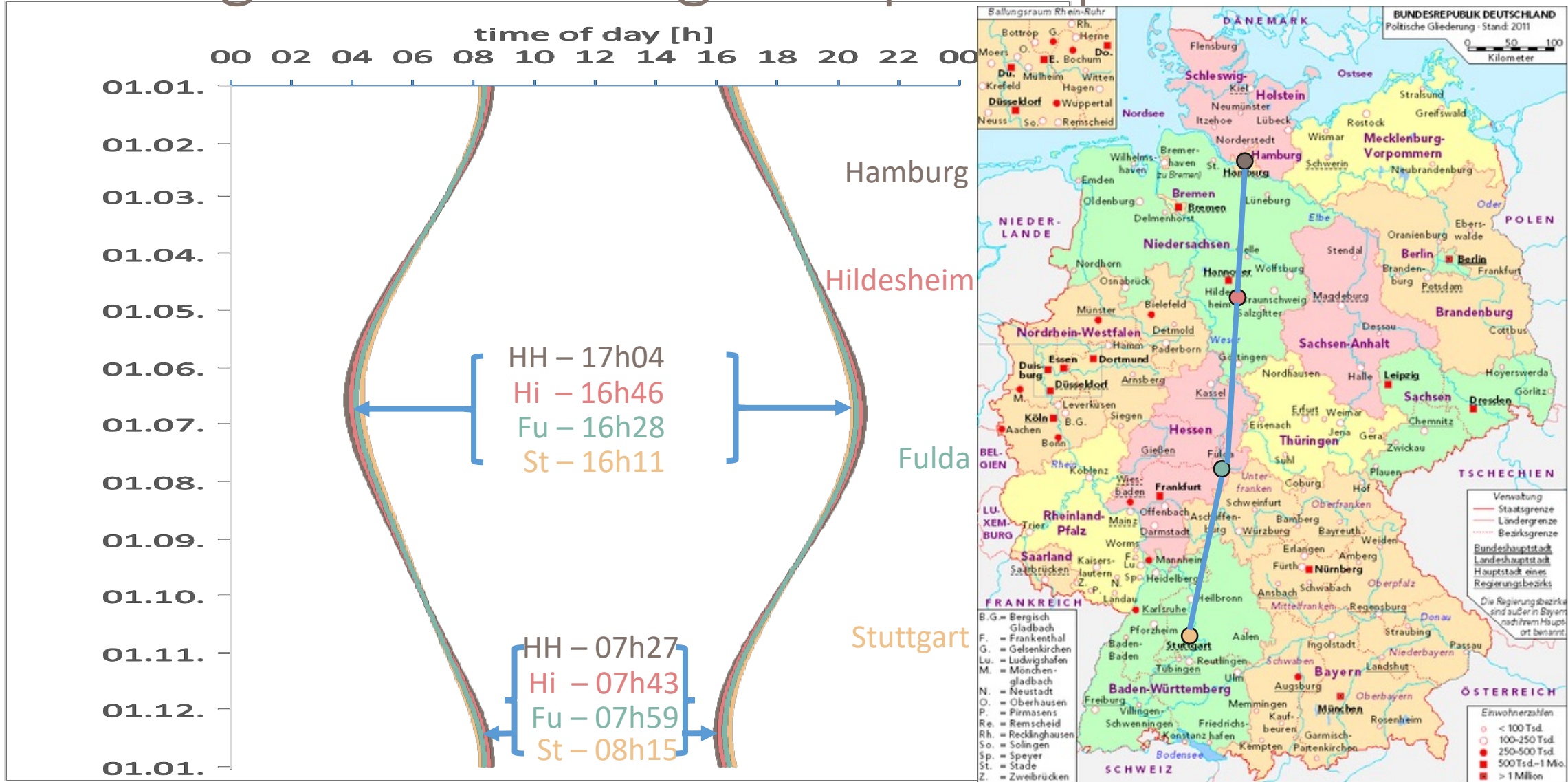
# Transport of hamsters –high risk of loosing fecundity

- Heidelberg ⇒ Gotha
- Erfurt ⇒ Leipzig
- Frankfurt ⇔ Osnabrück
- Göttingen ⇔ Berlin

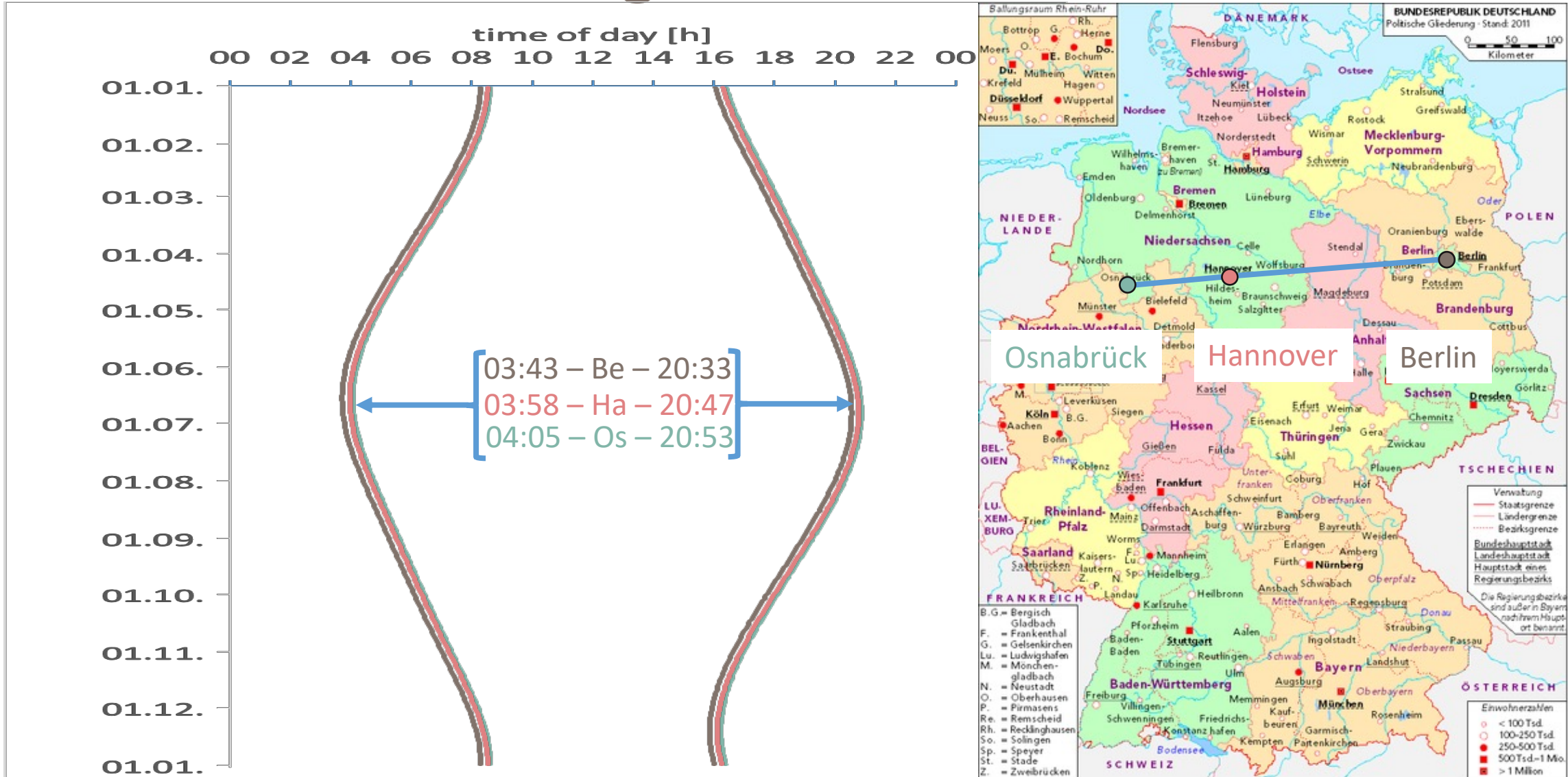
**Attention!**



# Longitudinal changes in photoperiod



# Latitudinal changes in sunrise and sunset times

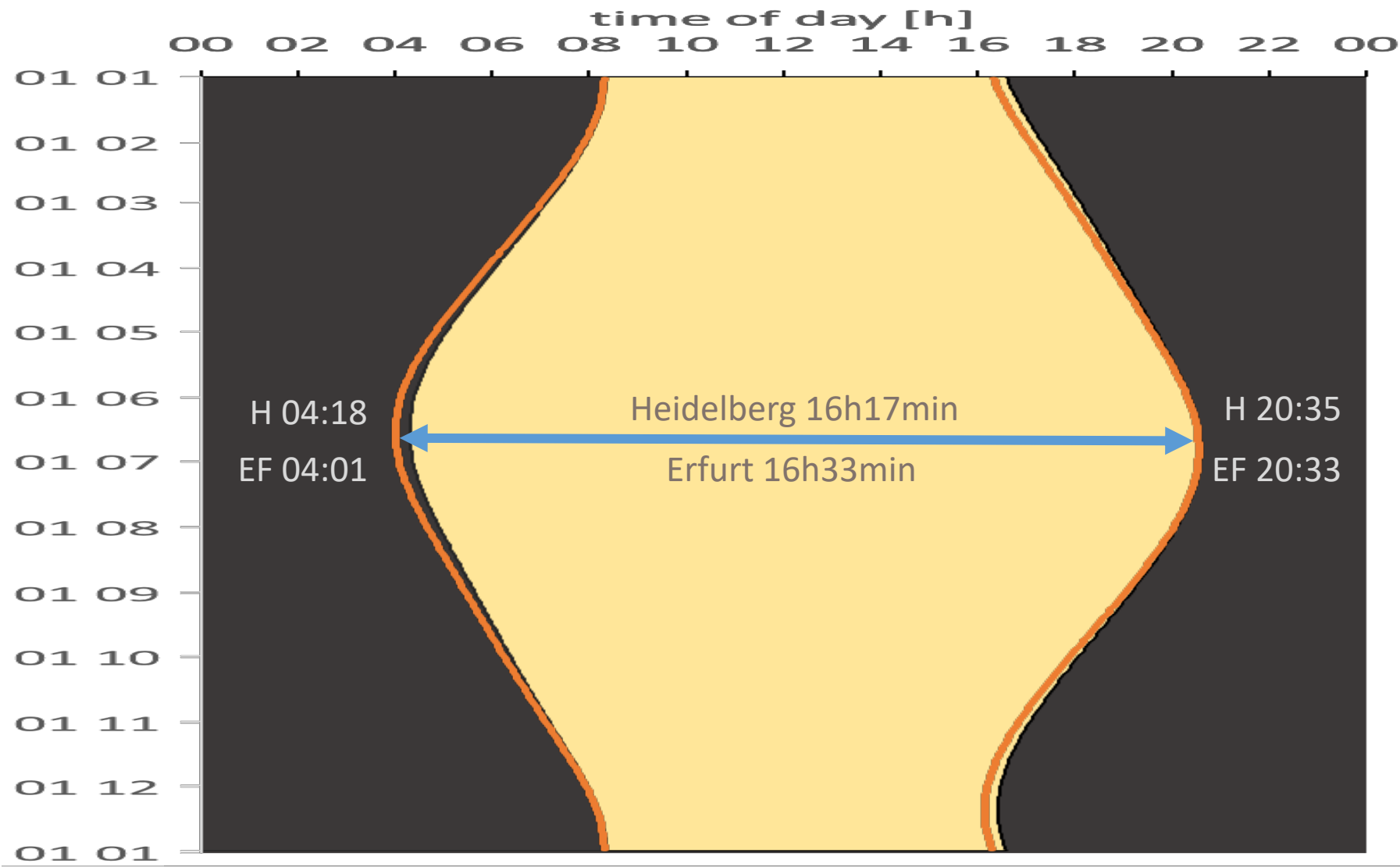




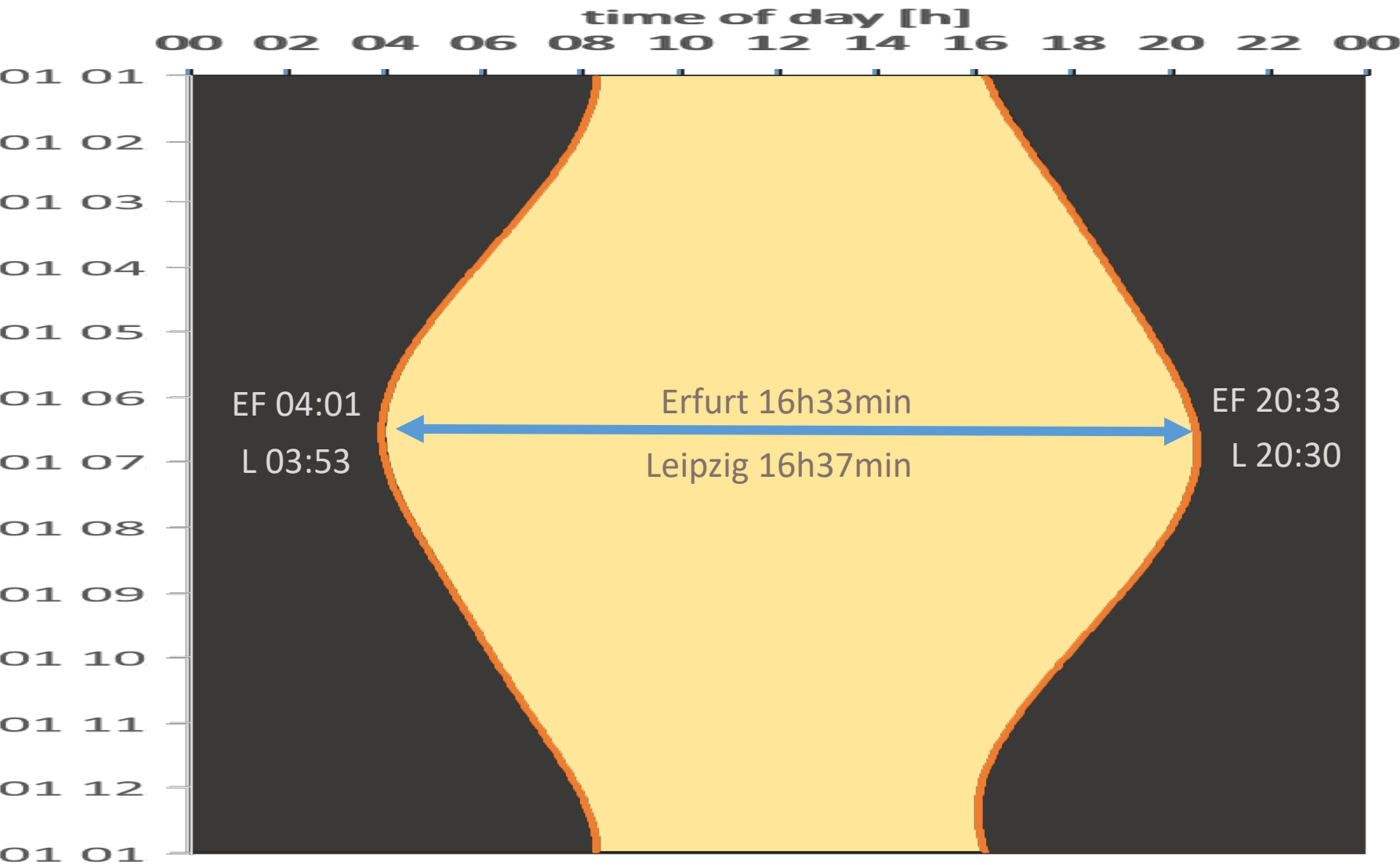
- 4 animals
  - Arrival end of June
  - Founding of a breeding station
- Thüringer Allgemeine 13.07.2022

No return planned

# Heidelberg => Gotha (near Erfurt)



# Erfurt => Leipzig



- 40 animals
- Captured in Mai?
- Founding of a breeding station

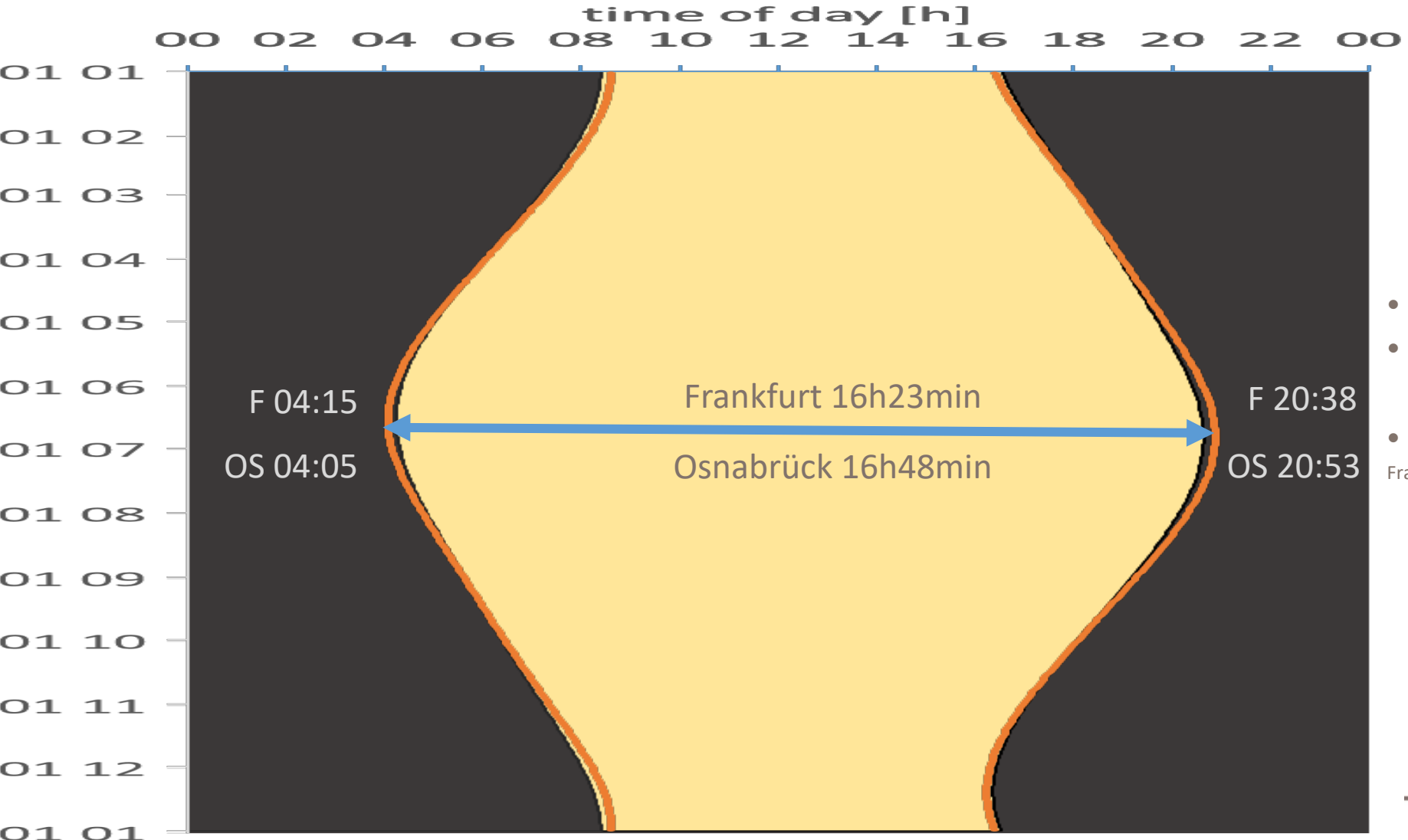
Bild 31.05.2022

No return planned



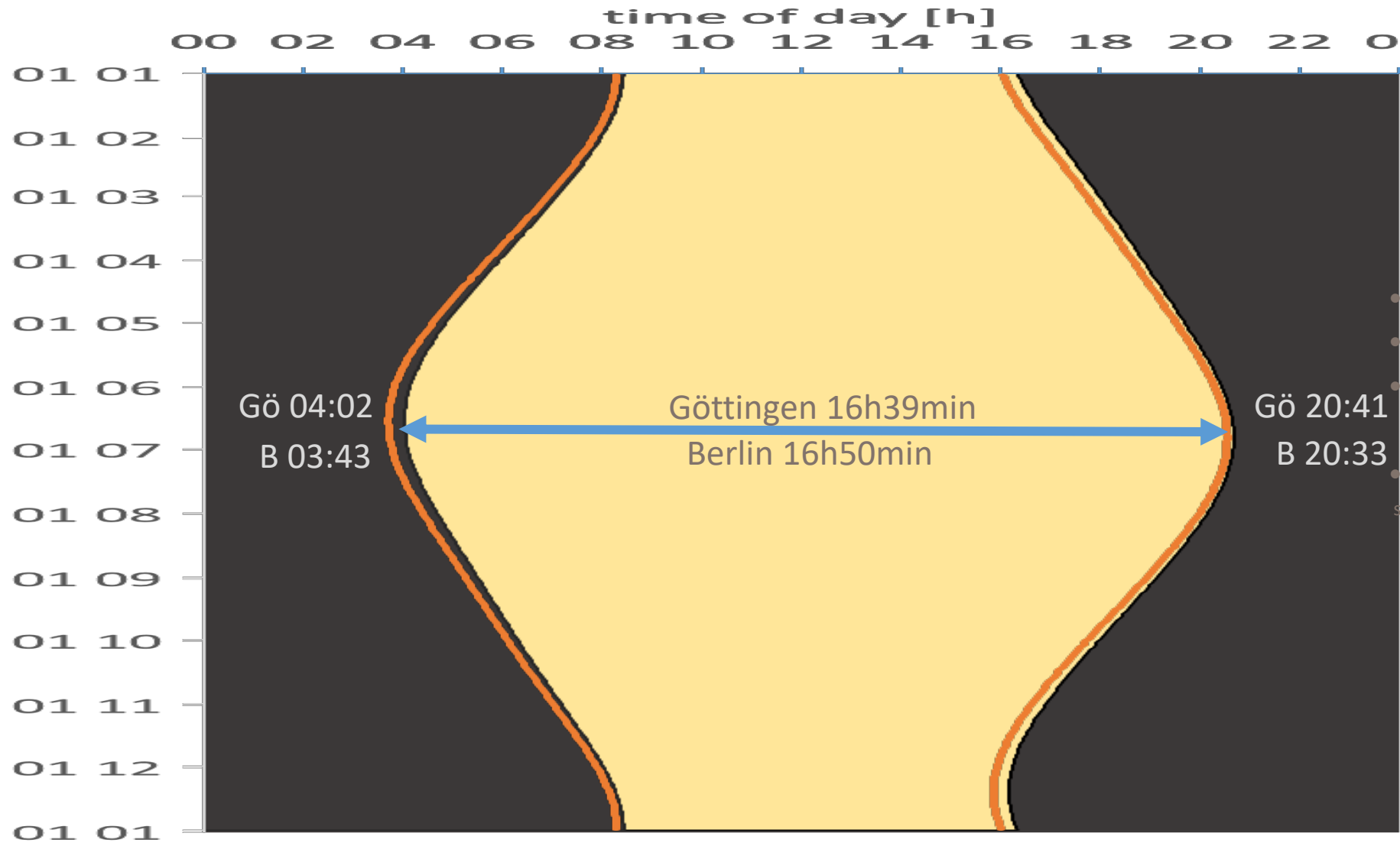
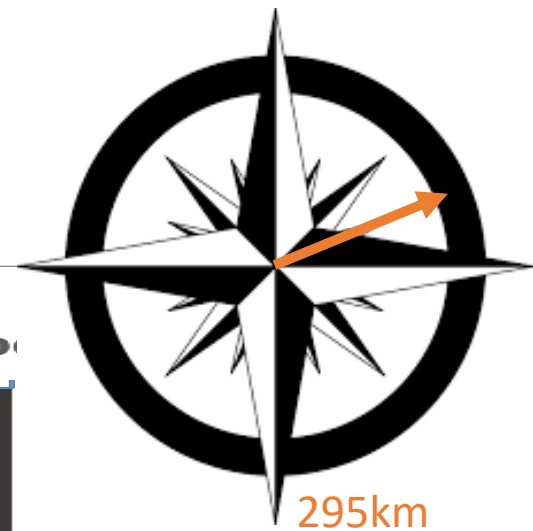


# Frankfurt => Osnabrück and back!



- 12 animals
  - Founding of a breeding station
  - Release in Frankfurt
- Frankfurter Neue Presse 11.09.2022
- Returns planned

# Göttingen => Berlin



- 7 animals
- Arrival Mai 22
- Founding of a breeding station
- Release in Göttingen
- source Unknown

Returns planned



# Conclusion

- Early breeding
  - high fecundity
  - Large litter size
- Early release
  - Higher reproductive success
  - Offspring reaches puberty in YOB
  - Leads potentially to early reproduction in next year
  - Early reproduction might be a key for a growing population
- Light regime
  - Needs to be chosen carefully
- Animal transport
  - Date, photoperiod and sunset times have to be considered
  - High risk of rendering animals unproductive => loss of genetics
  - Reproductive cycle might be messed up for the next 6months

Thank you !

