

Hunter or Hunted? What Eyes Reveal



“Hunter or Hunted? What Eyes Reveal”

This is a TICA Mini Allbreed Judge, School for Breeders, Exhibitors, Judges and Trainee Judges has been created by Vickie Shields, Distinguished Judge, Approved Judging Allbreed Judge, School Instructor, and Ring Training Instructor licensed by The International Cat Association (TICA)



Completion of this “Hunter or Hunted? What Eyes Reveal” education seminar earns *1 Continuing Education Unit (CEU)* for the TICA Judging Program

The shape of an animal's pupils is a clue to its place in the food chain



Berkeley
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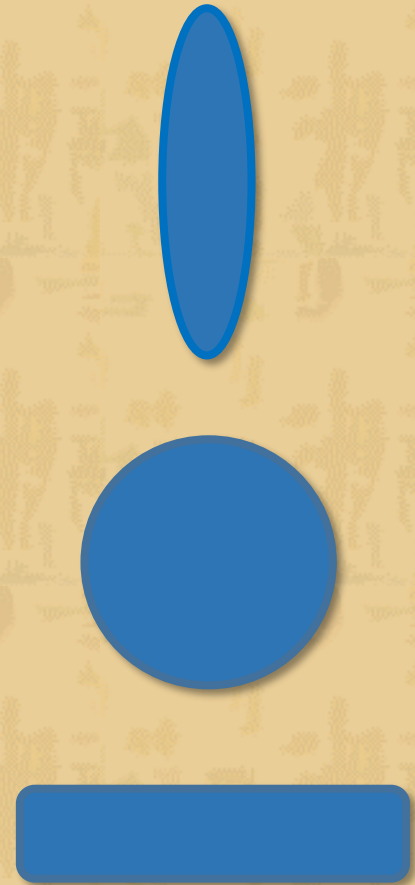
 **Durham**
University

Martin Banks
William Sprague
(UC Berkeley)
Gordon Love
Jared Parnell
Jurgen Schmoll
(Durham University)



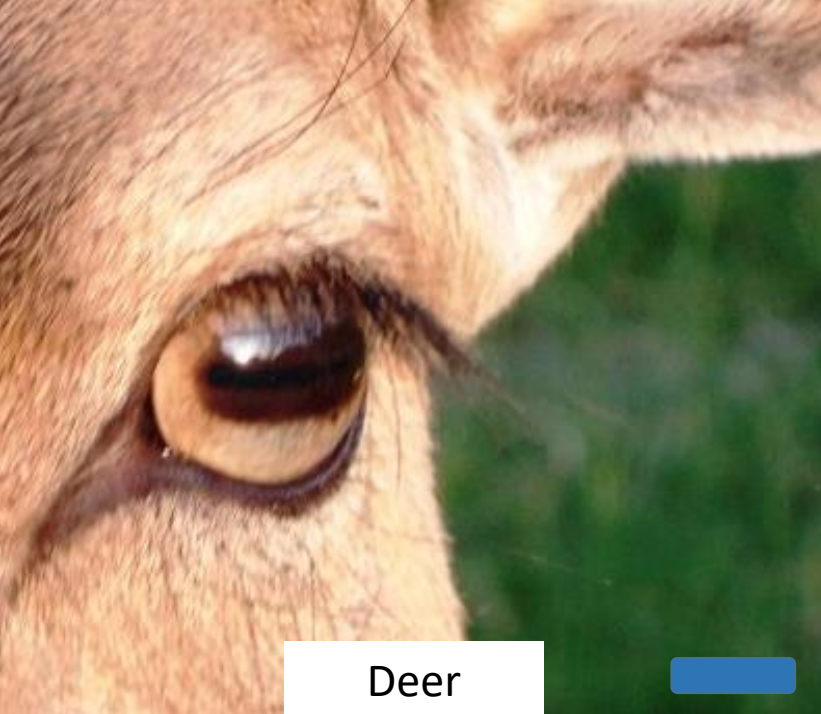
They looked at the eyes of 214 different species of land animals, and found a clear relationship between the shape of their pupils and their ecological role.

- Predatory animals that ambush their prey tend to have vertical slit pupils
- Predatory animals that chase their prey tend to have round pupils
- Herbivores that are prey for other animals usually have horizontal pupils



Can you guess
which eyes
belong to
what animal?





Deer



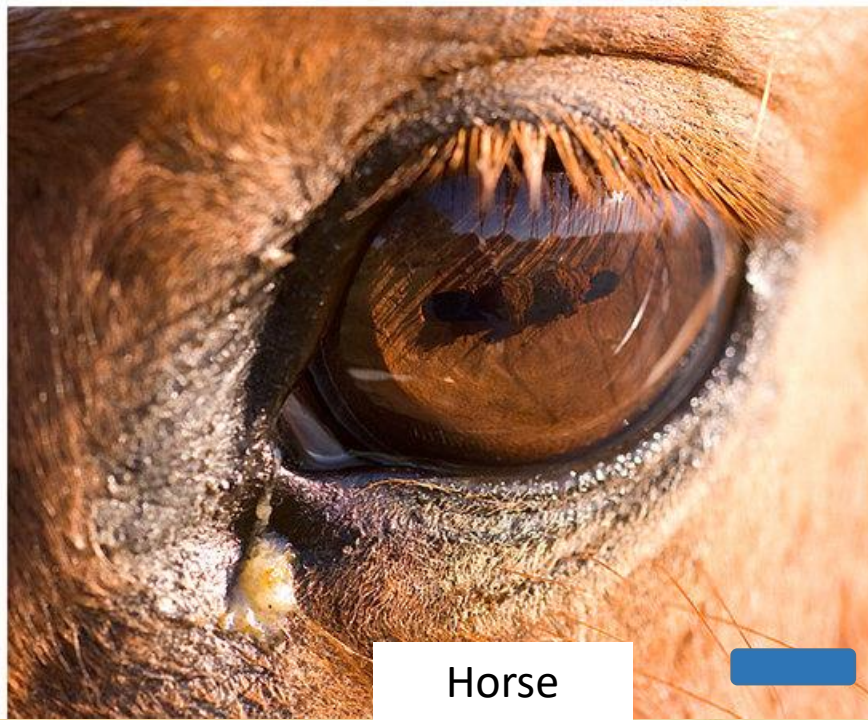
Lion



Goat



Domestic Cat



Horse



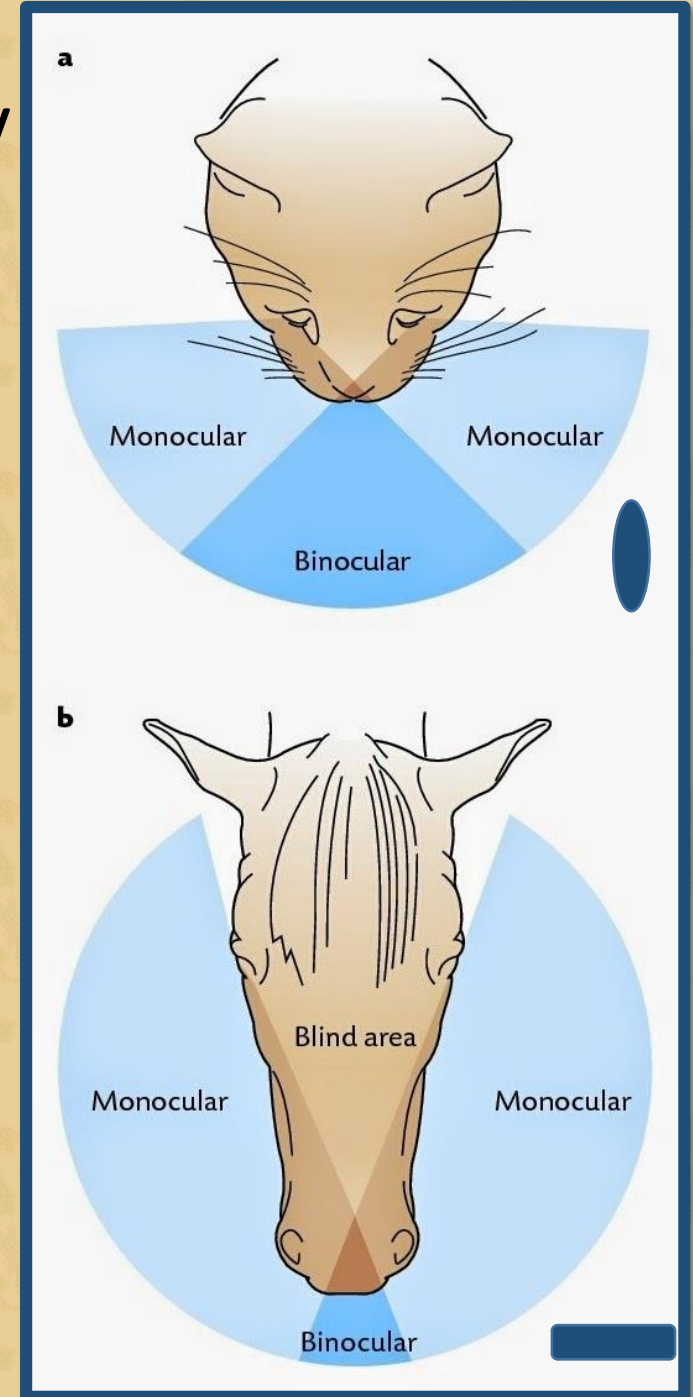
Gecko

Can you guess why
the pupils are
differently shaped?

Animals with a vertical pupil are likely to be an ambush predator, jumping on prey.

Vertical slits are great for improving depth perception.

Animals with a horizontal pupil are likely to be a prey animal who needs to watch for approaching predators.



Goats and other grazing animals (like deer, cattle and antelope) that are hunted by predators have a simple strategy for not being eaten: look out for danger and run away if they see it.

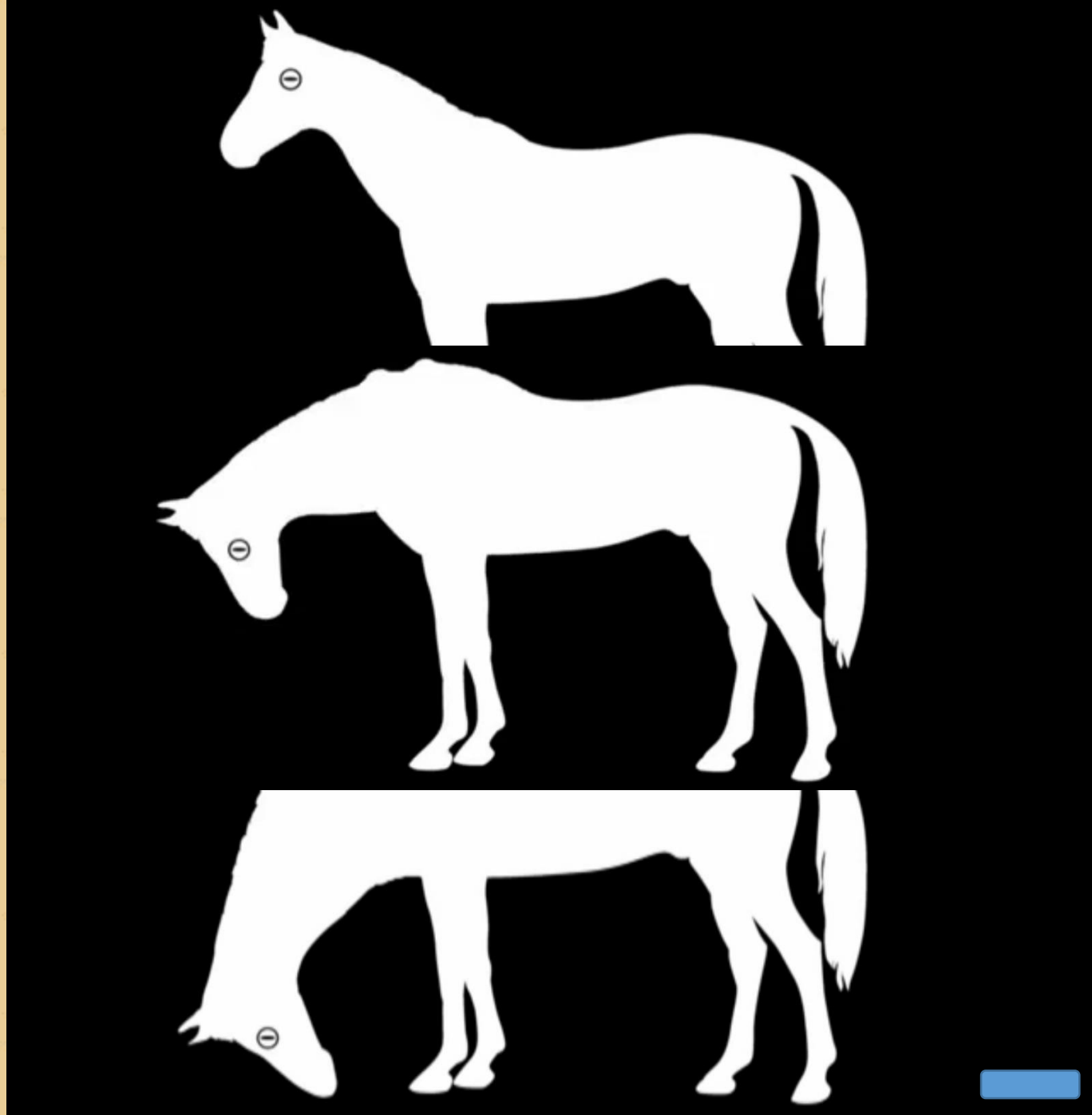
Their eyes need to be able to do two things to support that strategy:

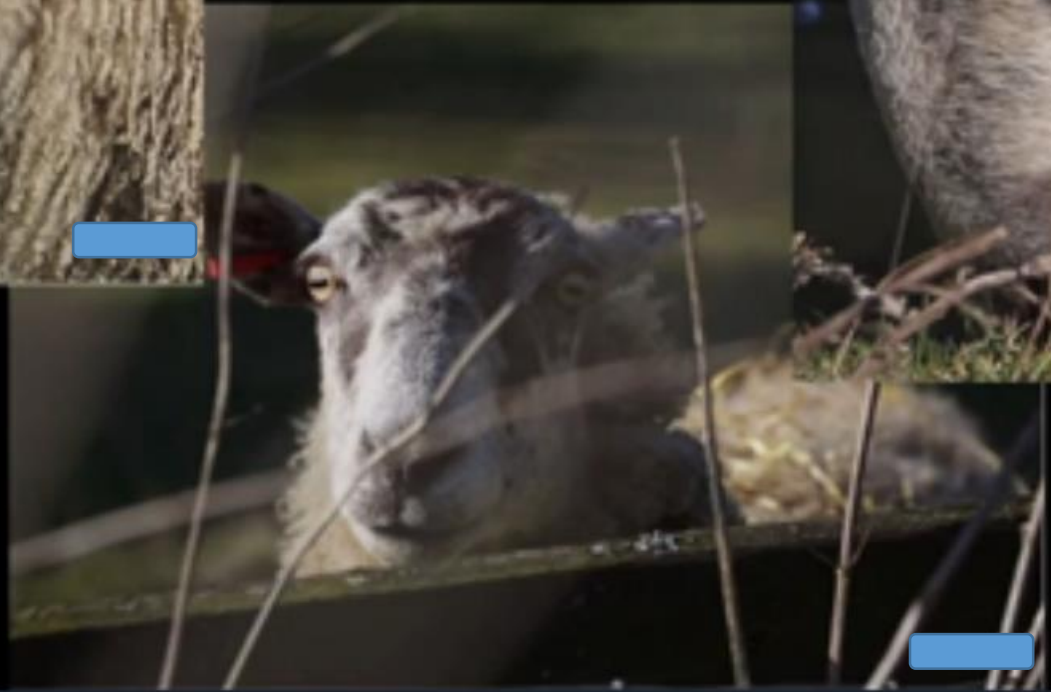
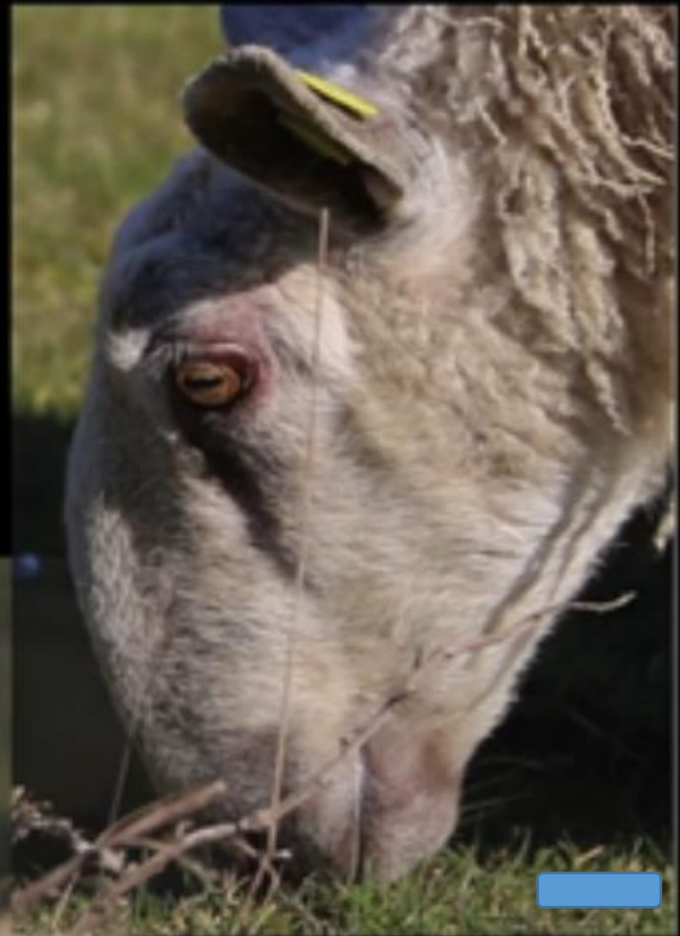
- see a panorama to detect predators that could approach from various directions
- see sufficiently clearly in the forward direction to guide rapid locomotion over potentially rough terrain



Those benefits don't apply if the pupil stays oriented the same way and becomes vertically aligned when the animal tilts its head to graze.

After watching grazing animals at the zoo, though, they found that their eyes rotate to stay horizontally aligned with the ground whether their heads are upright or face down in the grass.





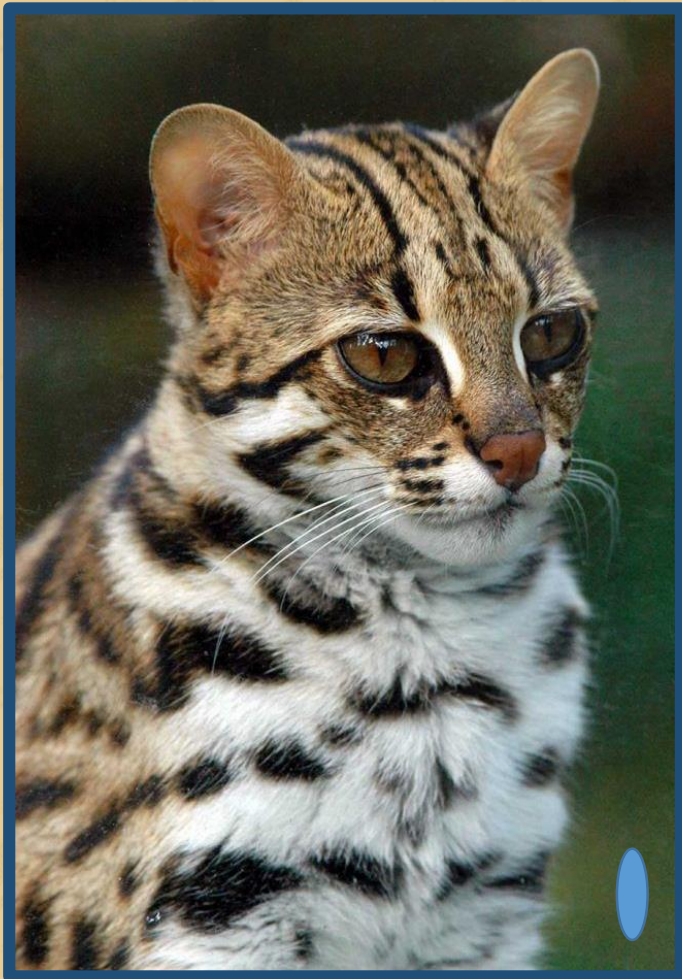


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Depth perception gained from vertical pupils diminishes as animals get higher and higher off the ground.

So while a small domestic cat has vertical slits, larger predators, like lions and tigers, have round pupils.





Asian Leopard Cat, *Prionailurus bengalensis bengalensis*, ancestor of the Bengal breed



Serval, *Leptailurus serval*,
ancestor of the Savannah breed

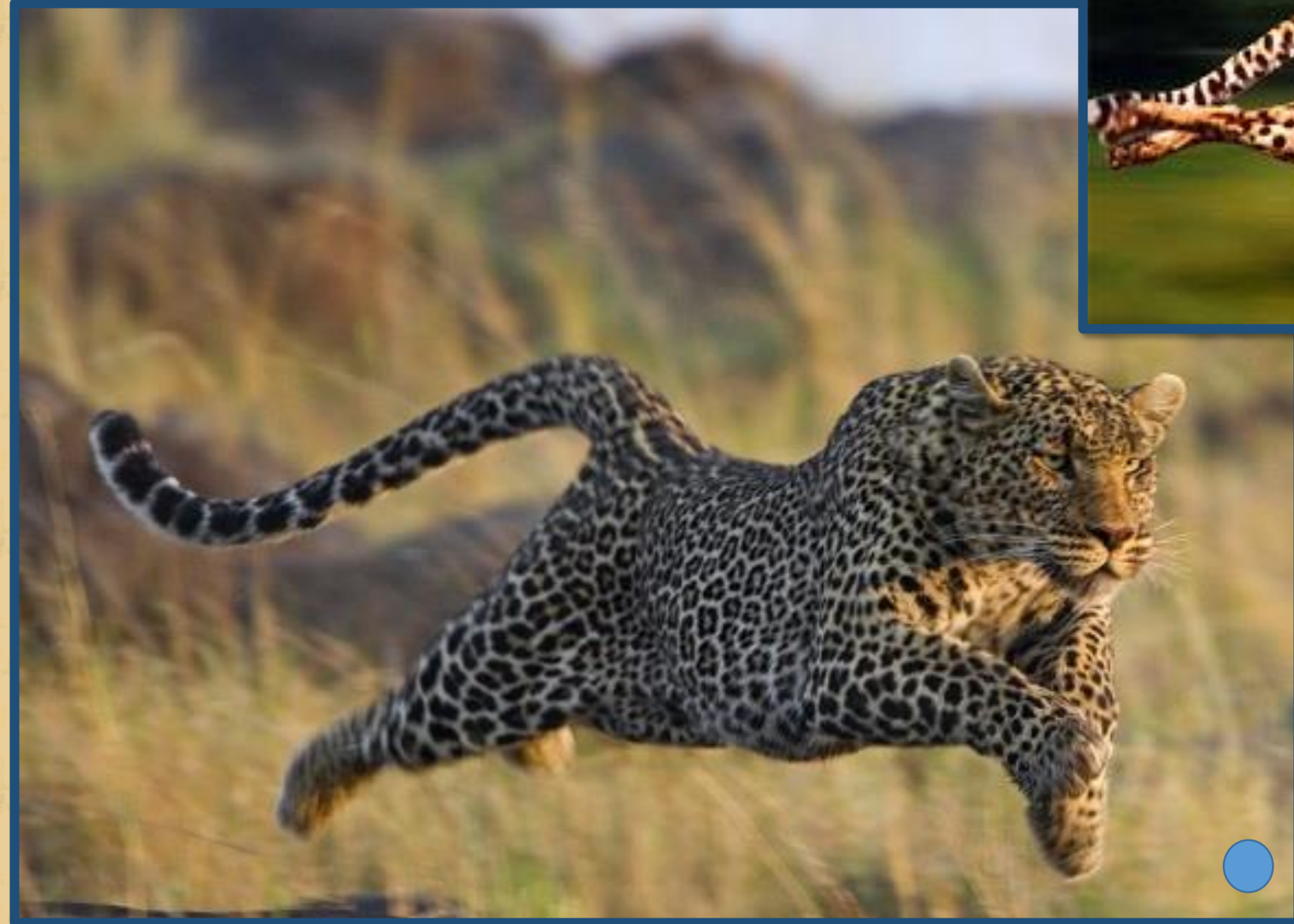


Margay, *Leopardus wiedii*



Jungle Cat, *Felis chaus*,
ancestor of the Chausie breed





Cheetah, *Acinonyx jubatus*
Leopard, *Panthera pardus*

These are examples of cats who chase their prey, and thus have round pupils

But that rule only holds if the animal is short, so its eyes aren't high off the ground.

"So for example foxes have vertical pupils, but wolves have round pupils," he says.

In general, round pupils seem to be common in taller hunters that actively chase down their prey.





Wolf



Coyote



Fox



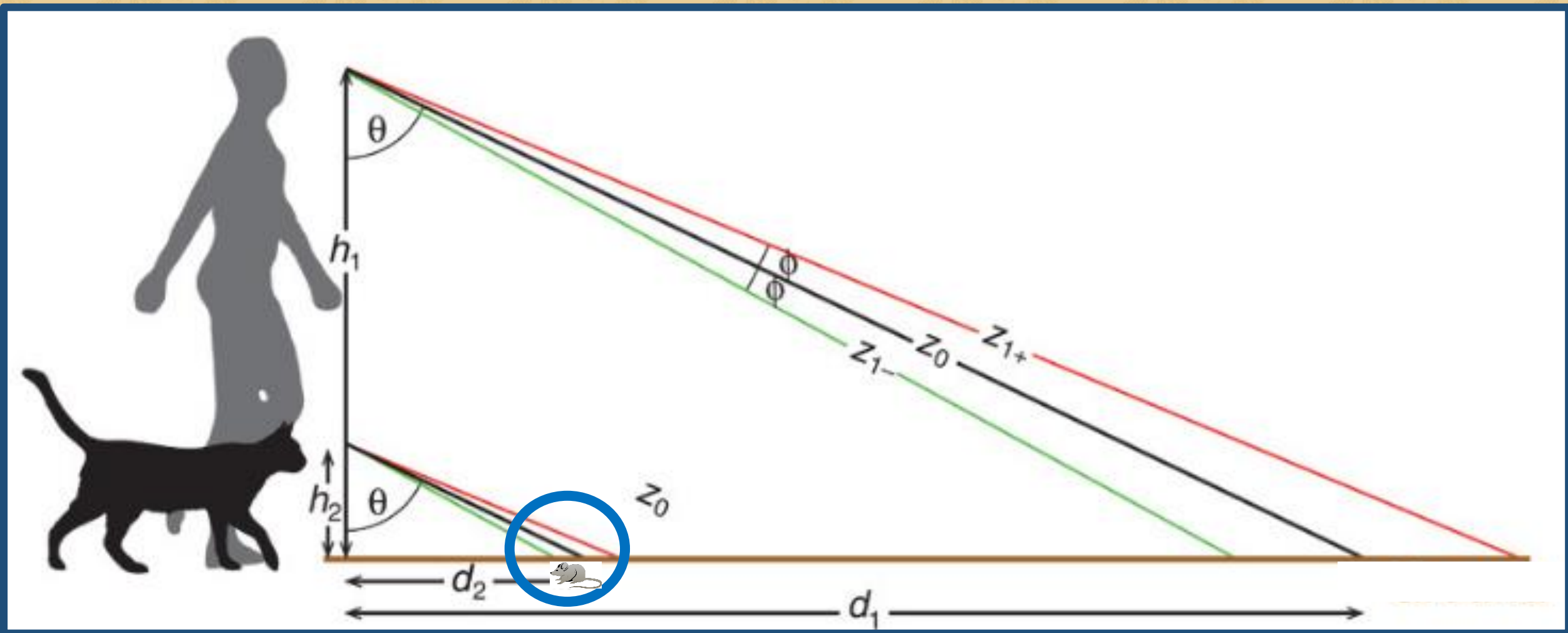
Wolf Chases Prey



Coyote Chases Prey

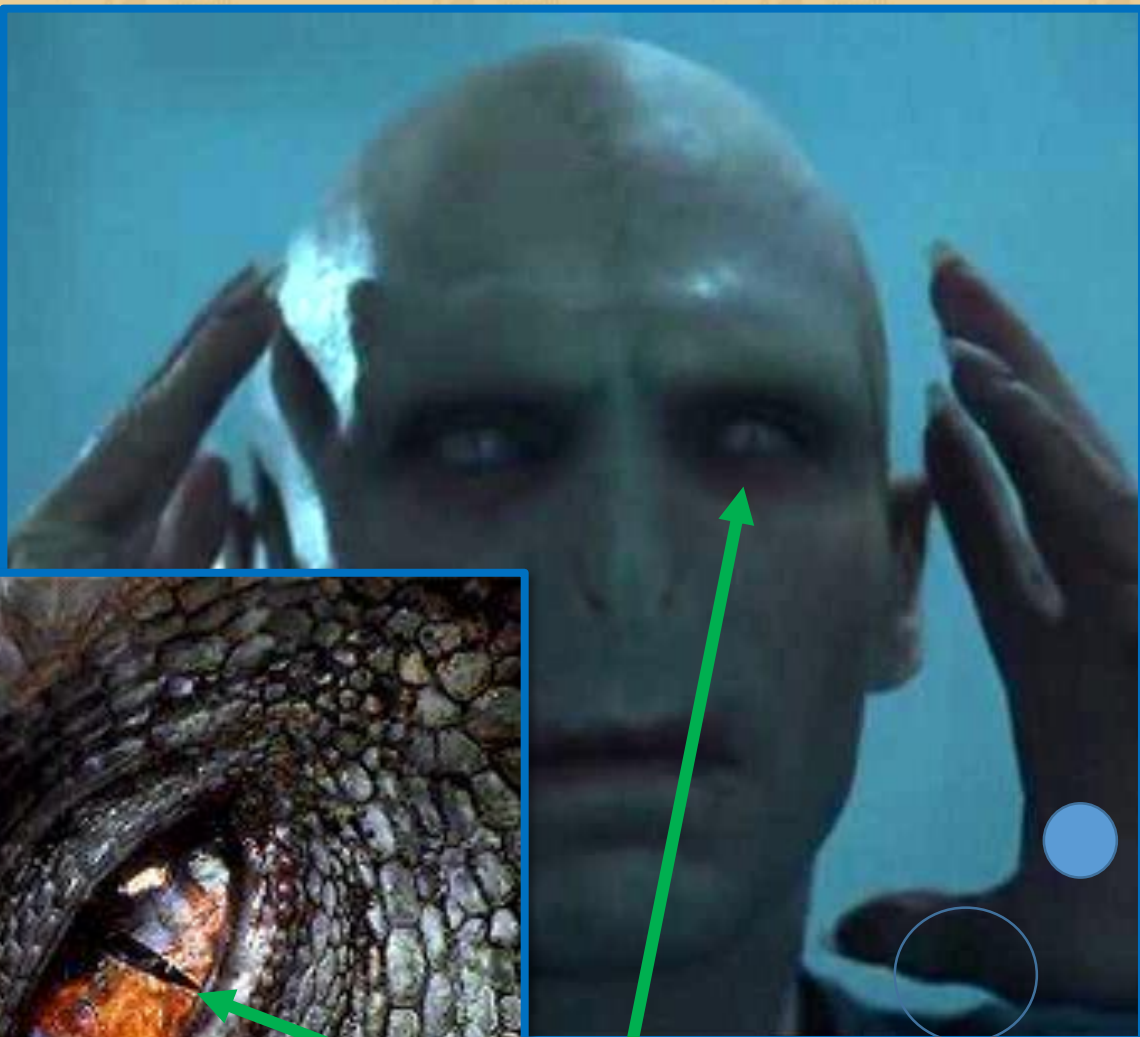


Fox Pounces on Prey

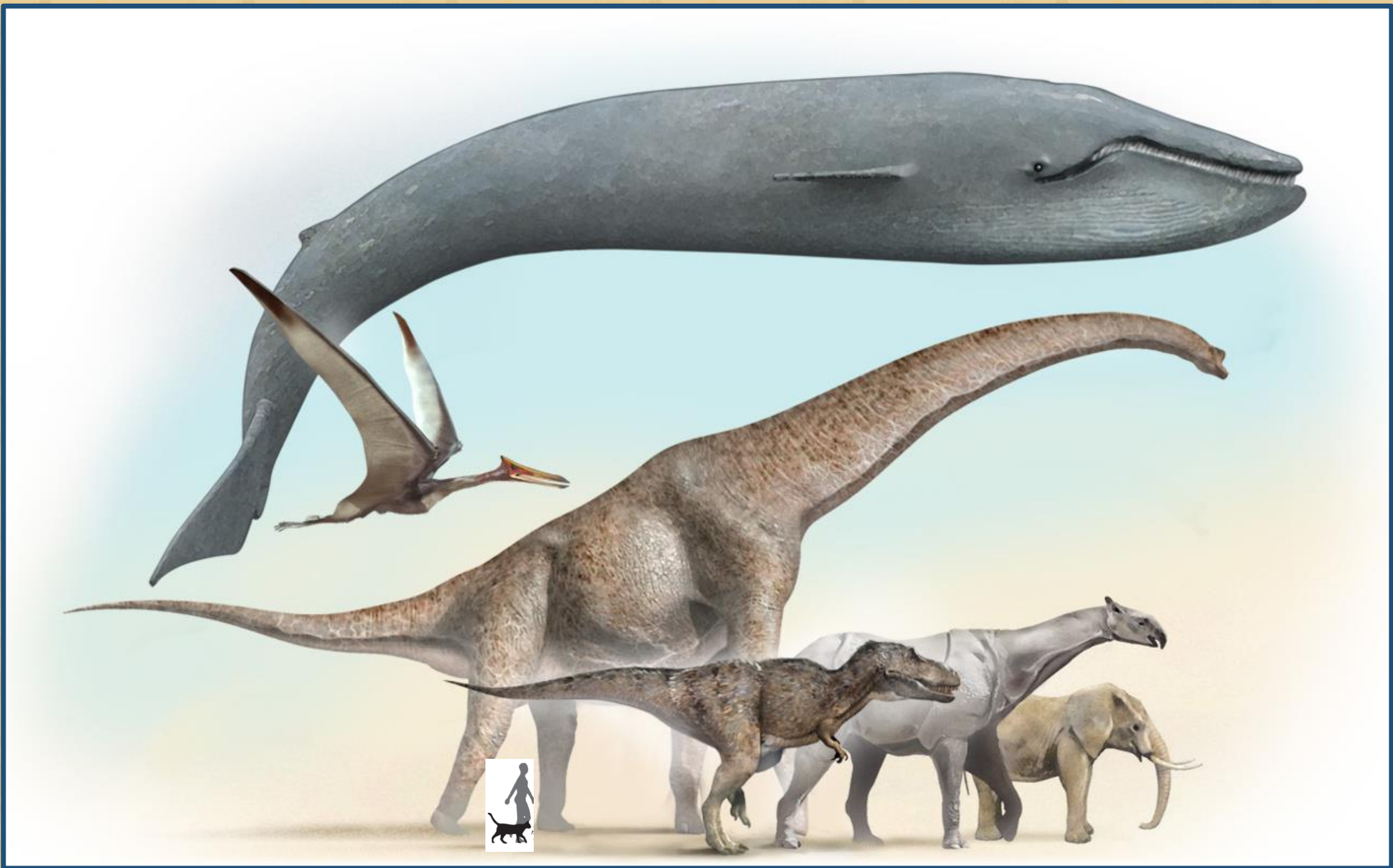


Writers and movie-makers have to imagine the pupil shape of fictional creatures like *Lord Voldemort* in Harry Potter, or the dinosaur *Indominus Rex* in Jurassic World.

Giving their eyes vertical slits may make them look strange, but that's unrealistic, because both of those creatures are sufficiently tall that they should have round pupils.



Pupils should be round, not vertical oval shaped.





The end

Philippine tarsier, nocturnal, small prey animal