

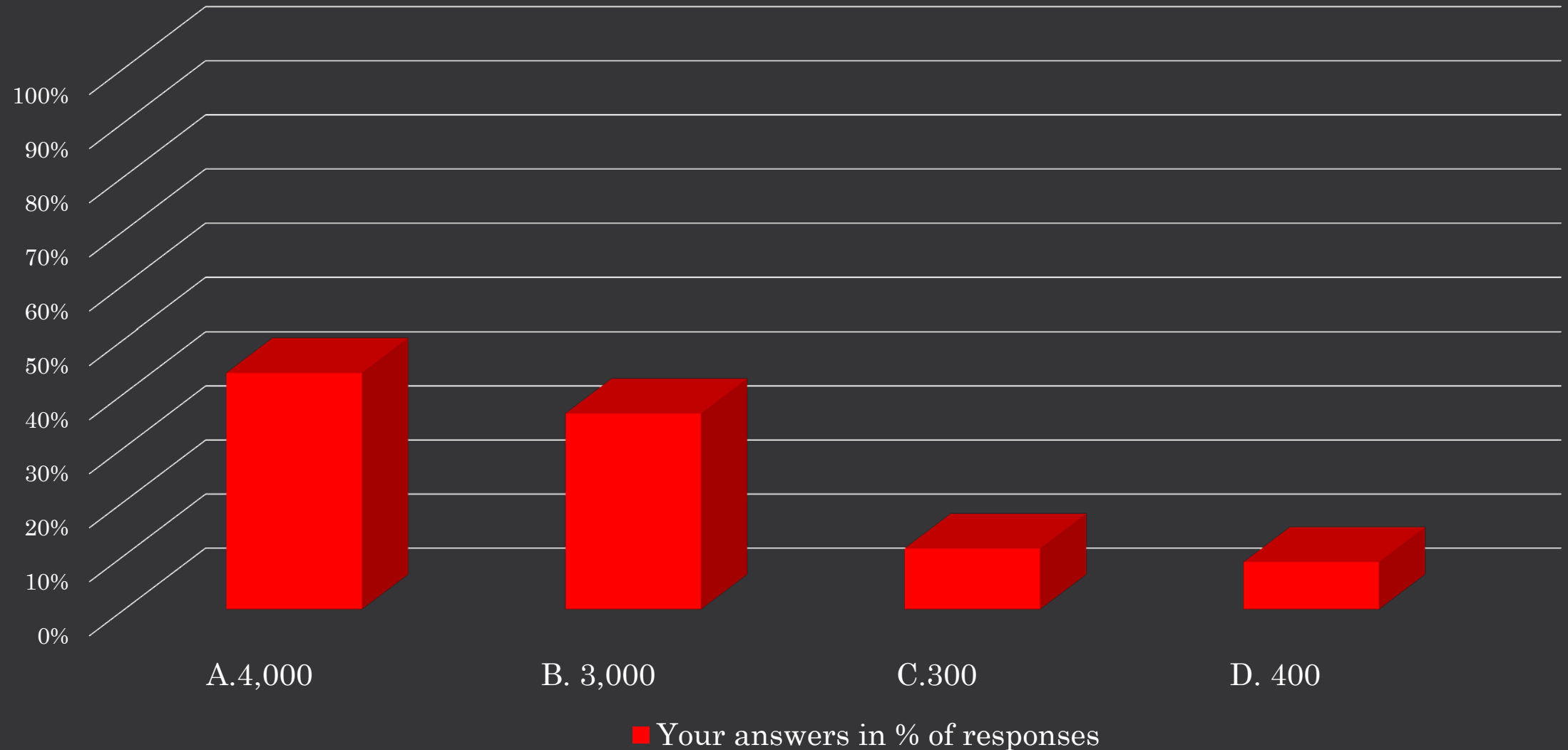
# 2020 Talking Science Trivia Poll

Let's See If Your Answers are Sound

January 11, 2020

# Poll Results:

Approximately how many species of birds  
are characterized as a “Songbird?”



# Correct Answer: A) 4,000

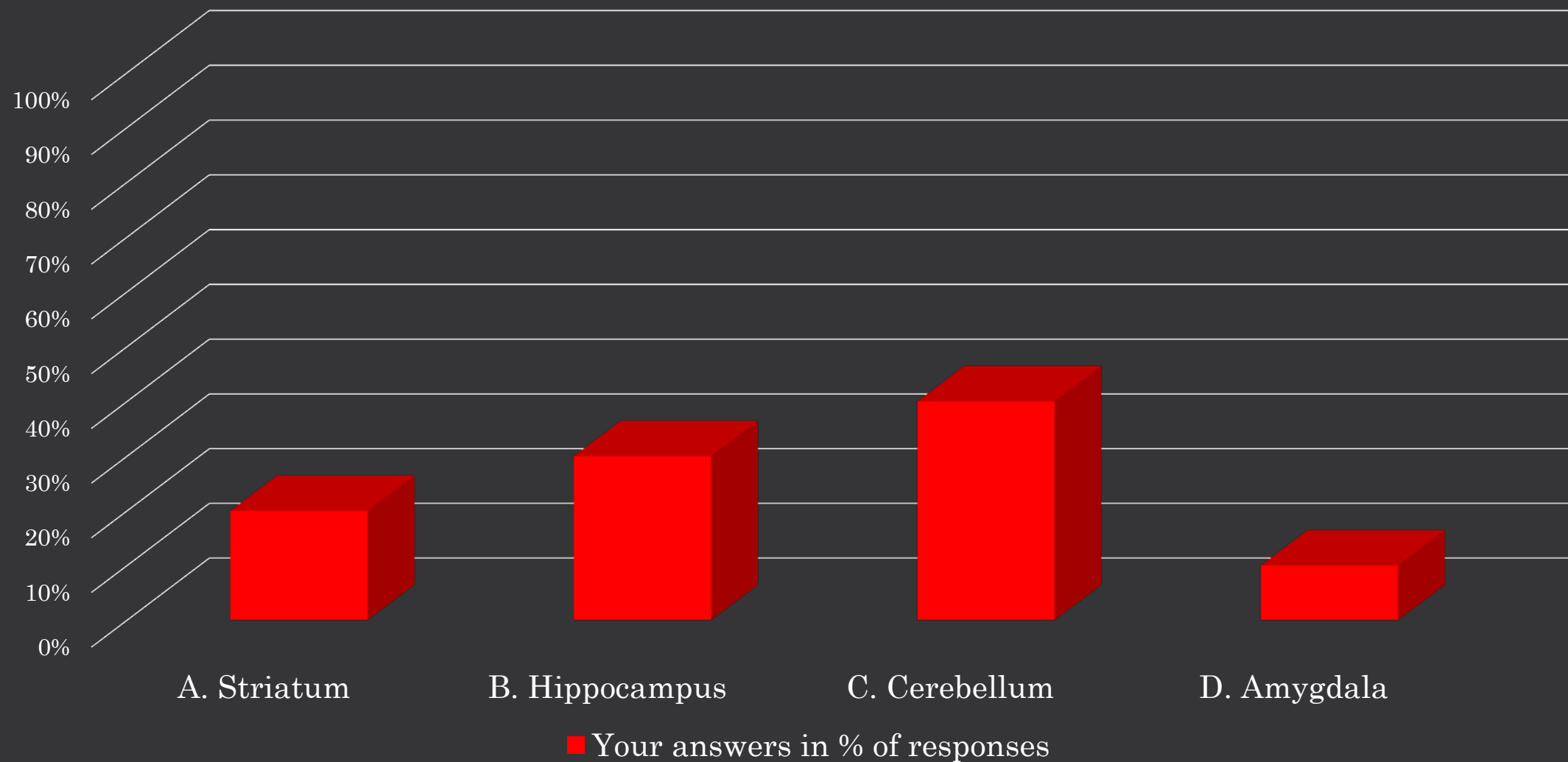


Photo Credit: William D. Griffin

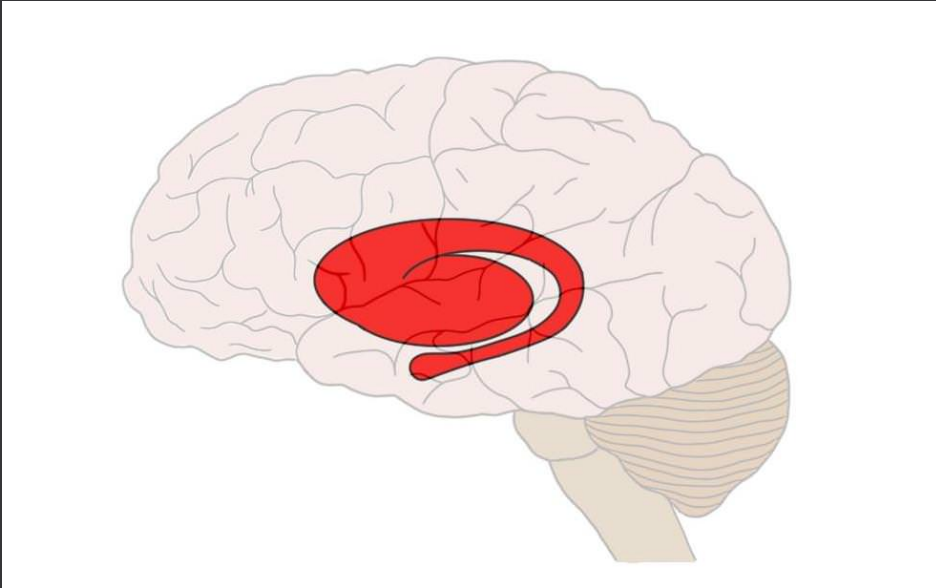
- Songbirds make up nearly half of the world's birds
- Songbirds range widely in size, from small kinglets to large crows
- In terms of animal classification, they belong to a suborder (Passeri) of the Passeriform order. Passeriform is the largest order of birds on Earth.

# Poll Results:

Which area of the human brain becomes active when people imitate the speech of others?



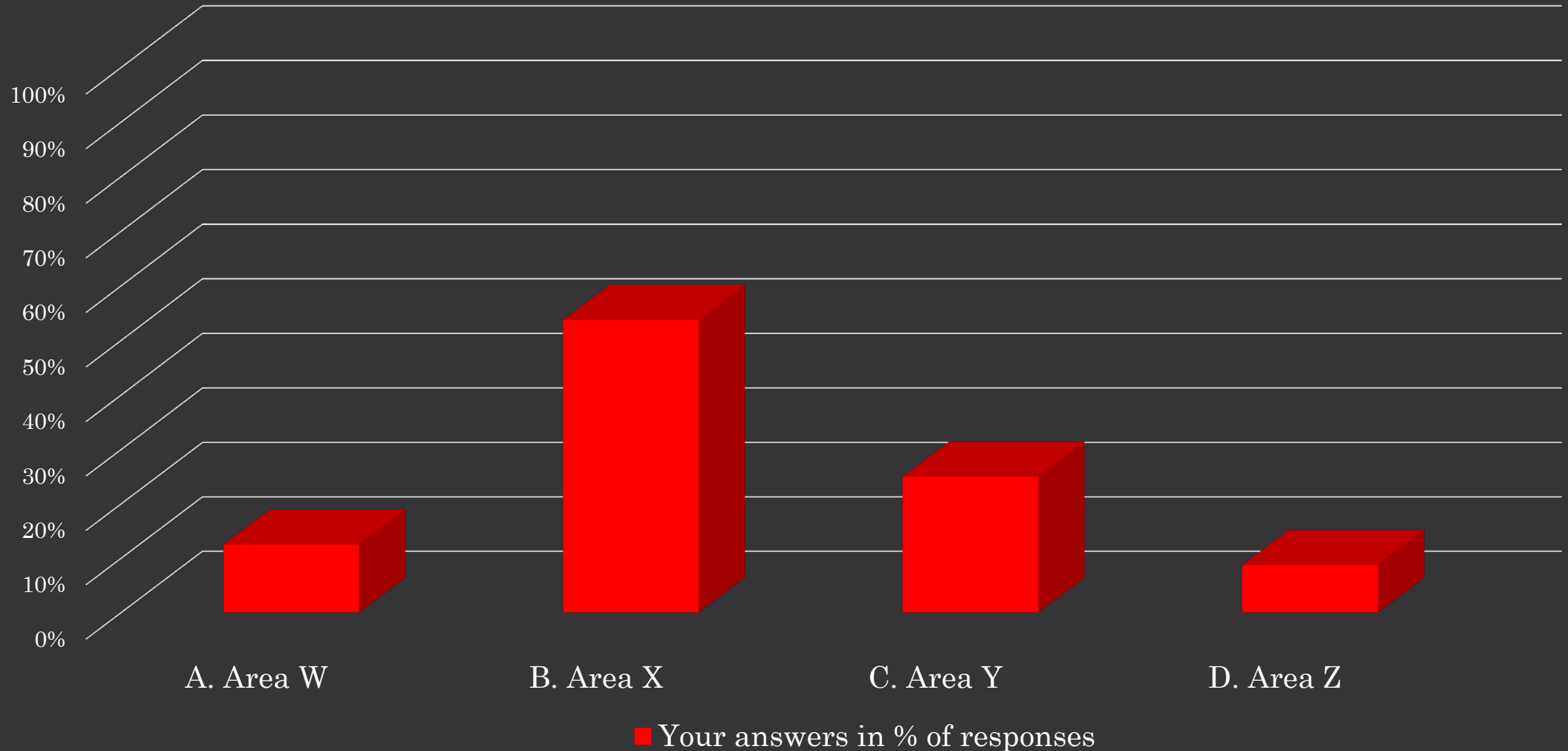
# Correct Answer: A) Striatum



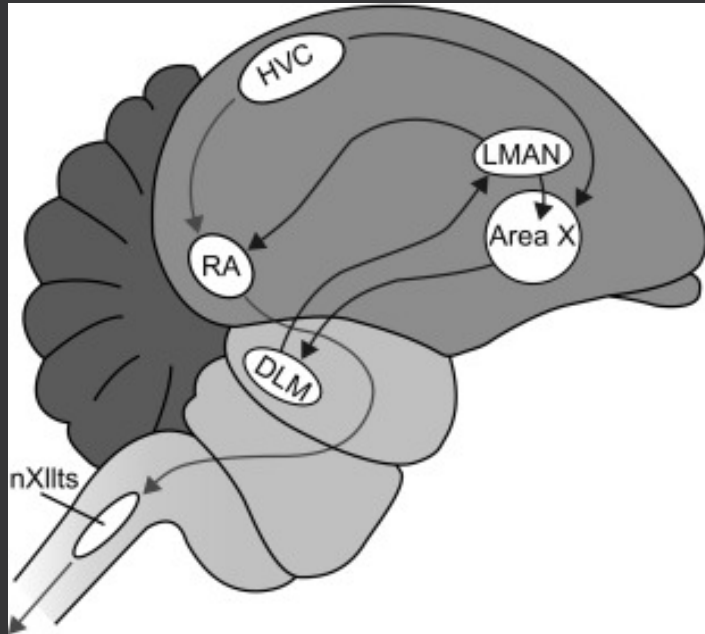
- The striatum is located within the basal ganglia in the brain and is responsible for handling inputs from other parts of the brain
- Damage to the striatum in young animals prevents the ability to imitate speech during vocal learning
- Stuttering in human speech may be caused by the brain trying to repair damage in this area of the brain

## Poll Results:

The part of the brain for songbirds that helps imitate the speech of others is known as\_\_\_\_\_?



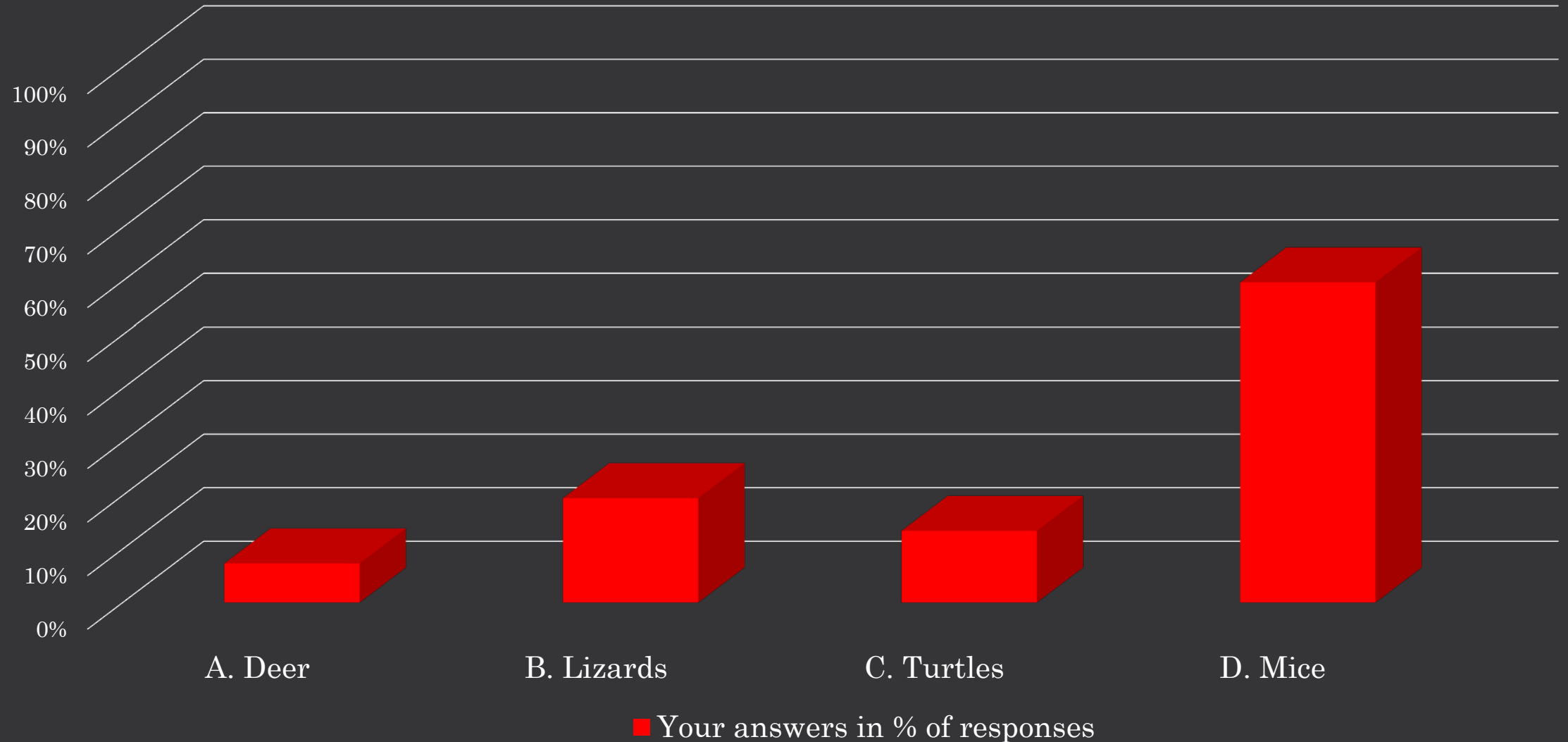
# Correct Answer: B) Area X



- Like humans' striatum, Area X in birds becomes active when attempting to imitate birdsong
- Damage to Area X can cause changes in the tempo and sequencing of syllables in birdsong and can even resemble Huntington's Disease
- Studies at Rockefeller have looked at Area X in birds to try and understand how Huntington's affects human speech

# Poll Results:

What species produces ultrasonic “song” that share similar characteristics to that of birdsong?





# Correct Answer: D) Mice

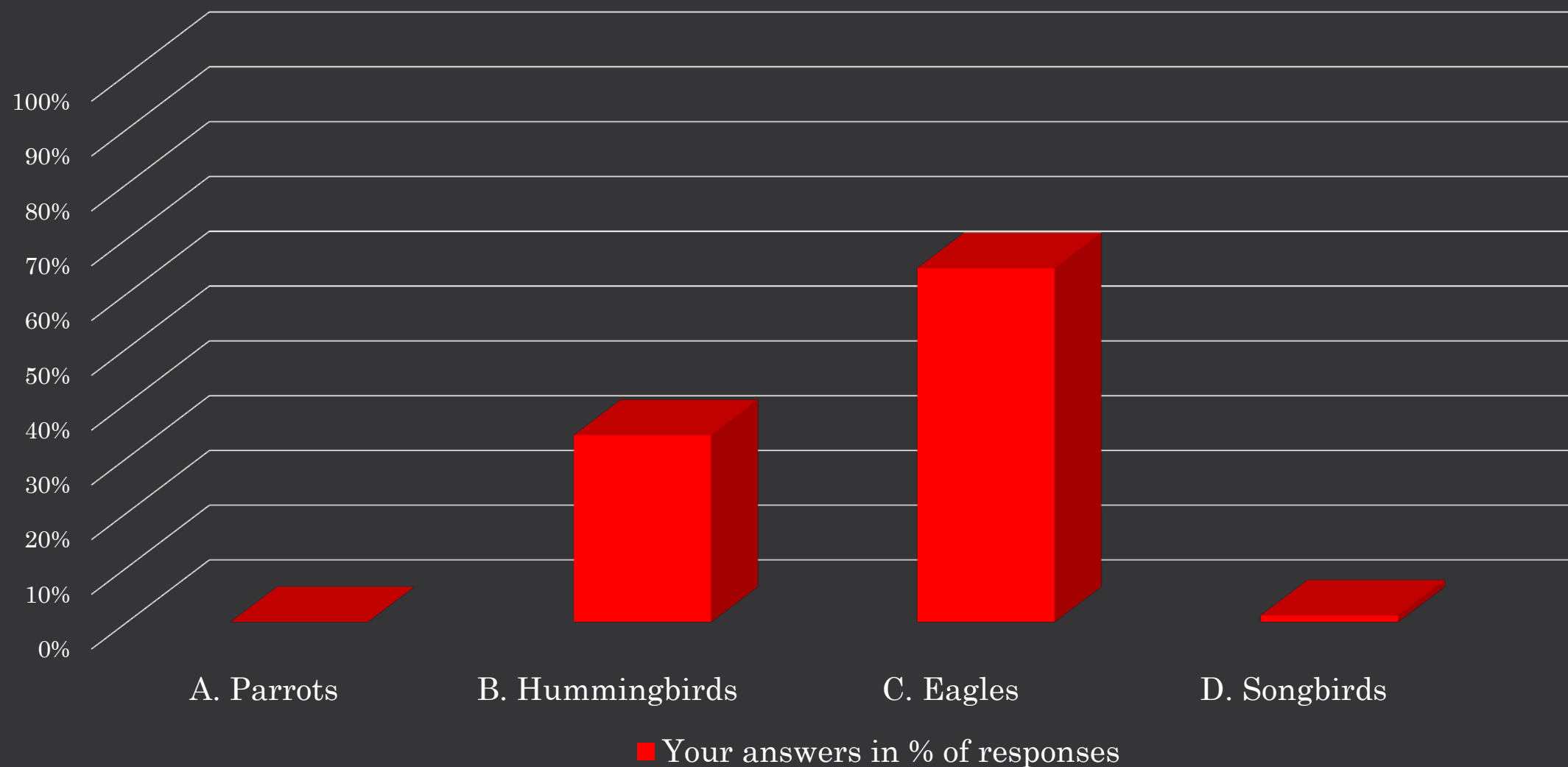


Photo Credit: Stephen Dalton

- The high-pitched squeaks of mice, while not audible to humans, consist of several types of syllables and can be arranged in a variety of ways
- In a 2012 study, Dr. Jarvis and his colleagues found that mice have a simple version of the speech circuits found in songbirds
- The connection between this circuit in the brainstem is weaker in mice than humans or birds, but works in the same way

# Poll Results:

Which of the following groups of birds  
are NOT capable of vocal learning?



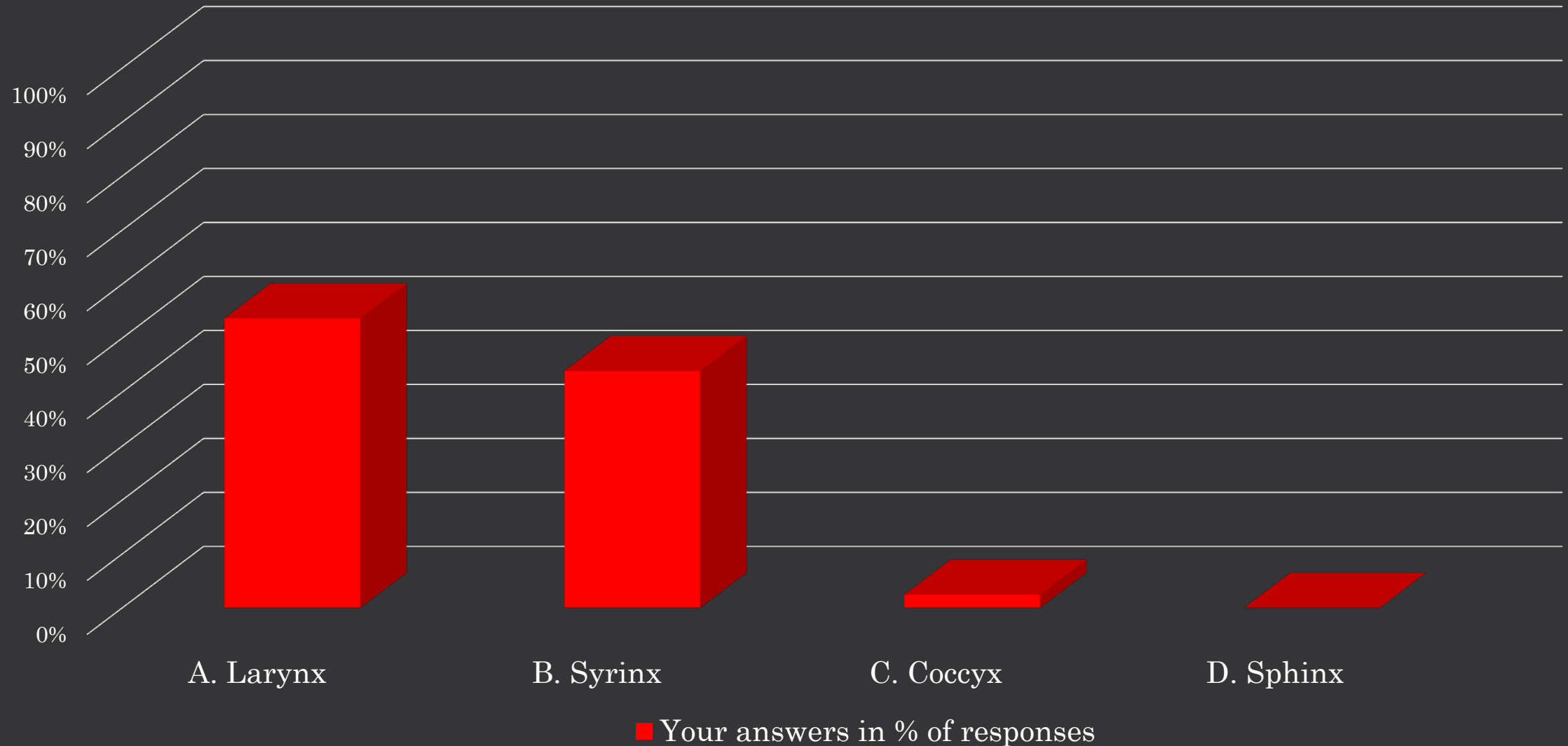
# Correct Answer: C) Eagles



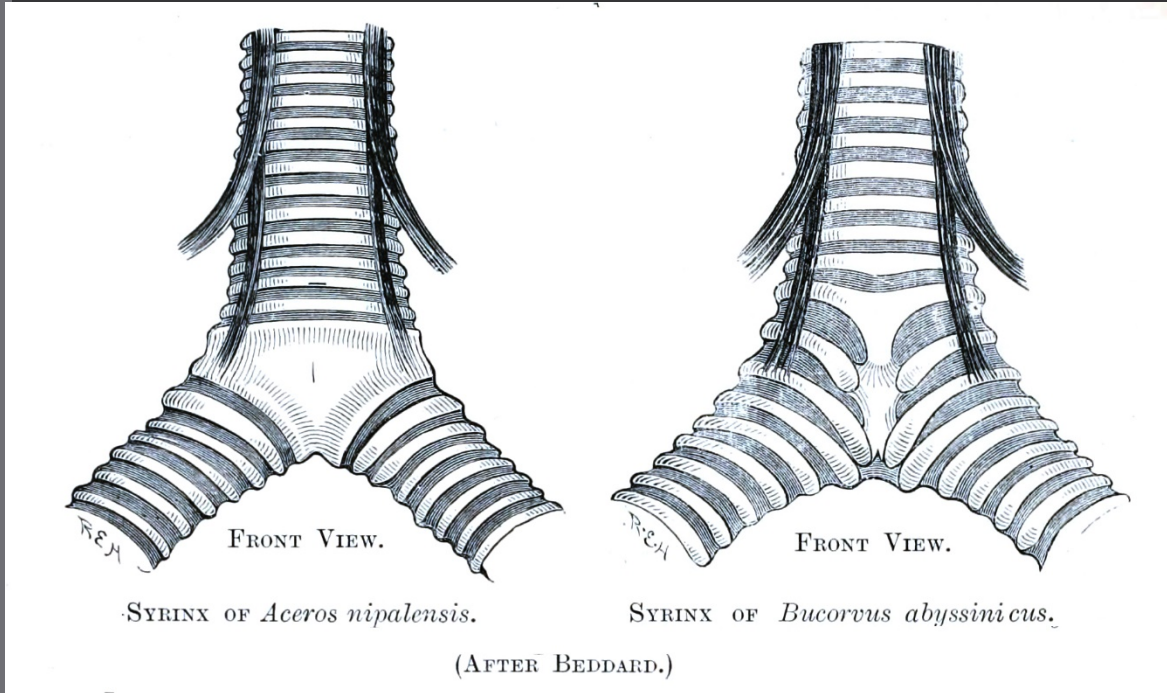
- While eagles do make vocalizations like chirps and whistles, they are not capable of vocal learning
- Hummingbirds, songbirds, and parrots have specific brain pathways for vocal learning not found in eagles
- This pathway may have been the result of a duplication during evolution of a pre-existing neural circuit that controls motor movement

## Poll Results:

The voice-producing structure in songbirds is called the \_\_\_\_\_,  
sometimes referred to as the “song box.”



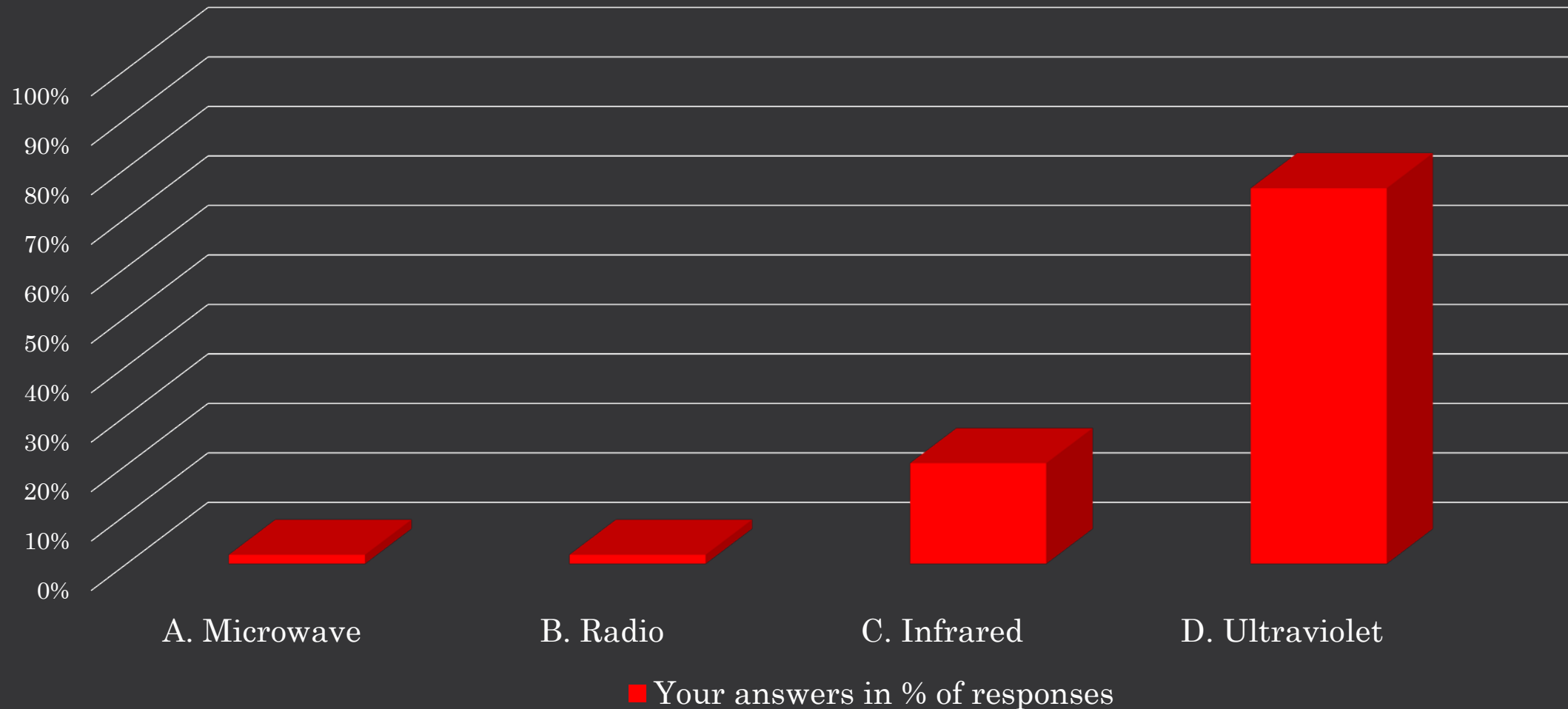
# Correct Answer: B) Syrinx



- For songbirds, the syrinx is located where the windpipe divides into the two bronchial tubes to the lungs
- It is a complex organ composed of bones and filmlike internal membranes
- When air passes over the syrinx during exhalation, it allows songbirds to make a variety of sounds and songs

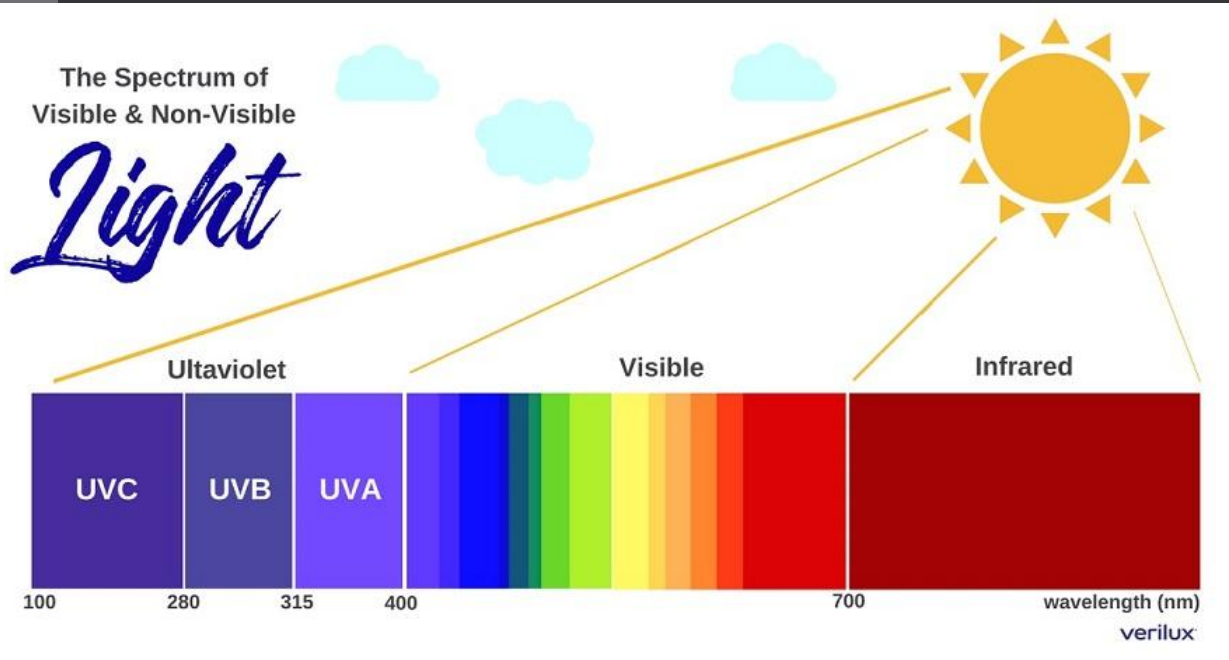
## Poll Results:

Birds can see some wavelengths of \_\_\_\_\_ waves,  
a type of light that has a higher frequency  
than light that is visible to humans.





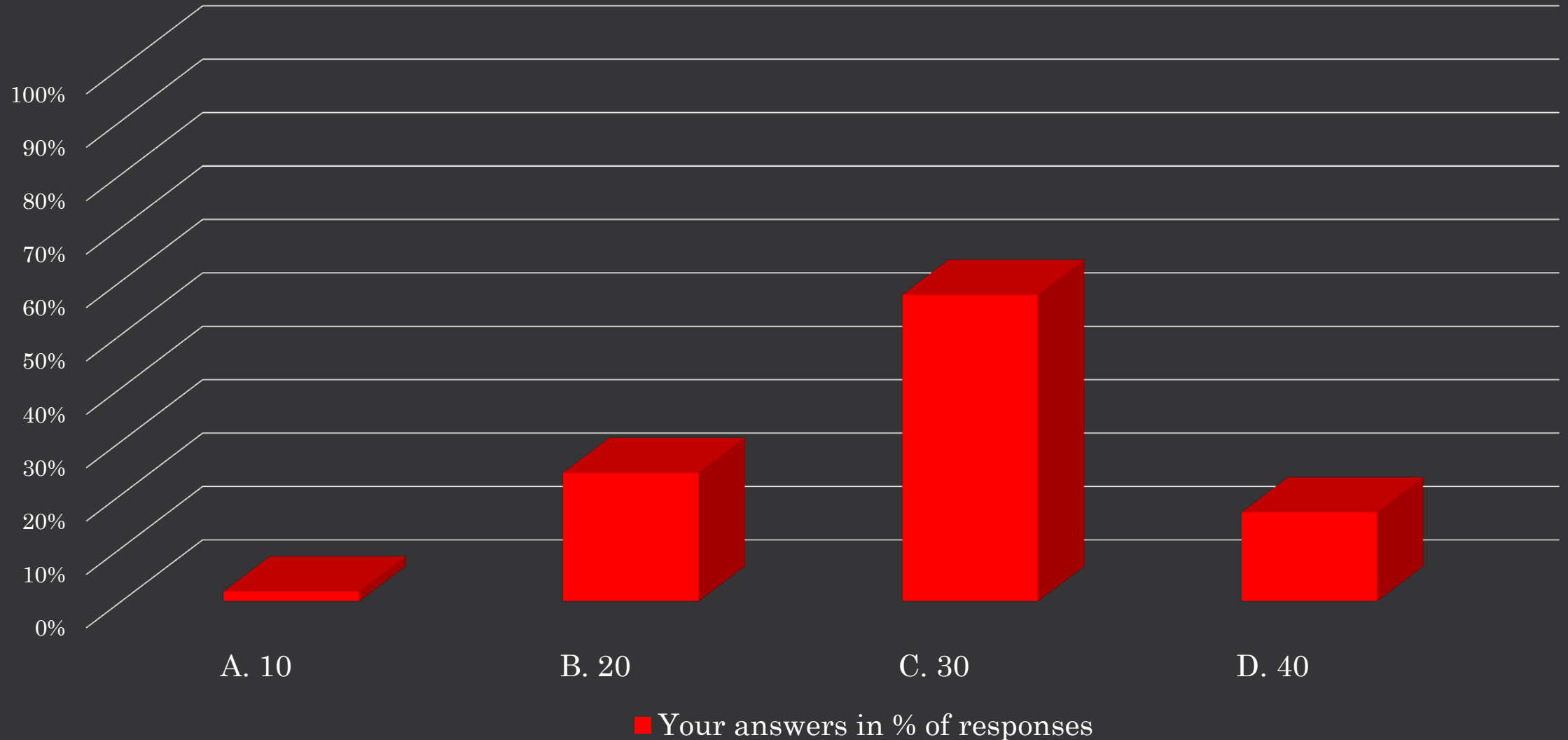
# Correct Answer: D) Ultraviolet



- Ultraviolet light has a shorter wavelength than what is visible light to humans
- Much of the ultraviolet light on Earth comes from the sun and is harmful to humans, though most UV rays are absorbed by the Earth's atmosphere
- Birds can distinguish more colors than the human eye, including some ultraviolet light

# Poll Results:

Songbirds may take as many as \_\_\_\_\_  
mini breaths per second to keep a tune.





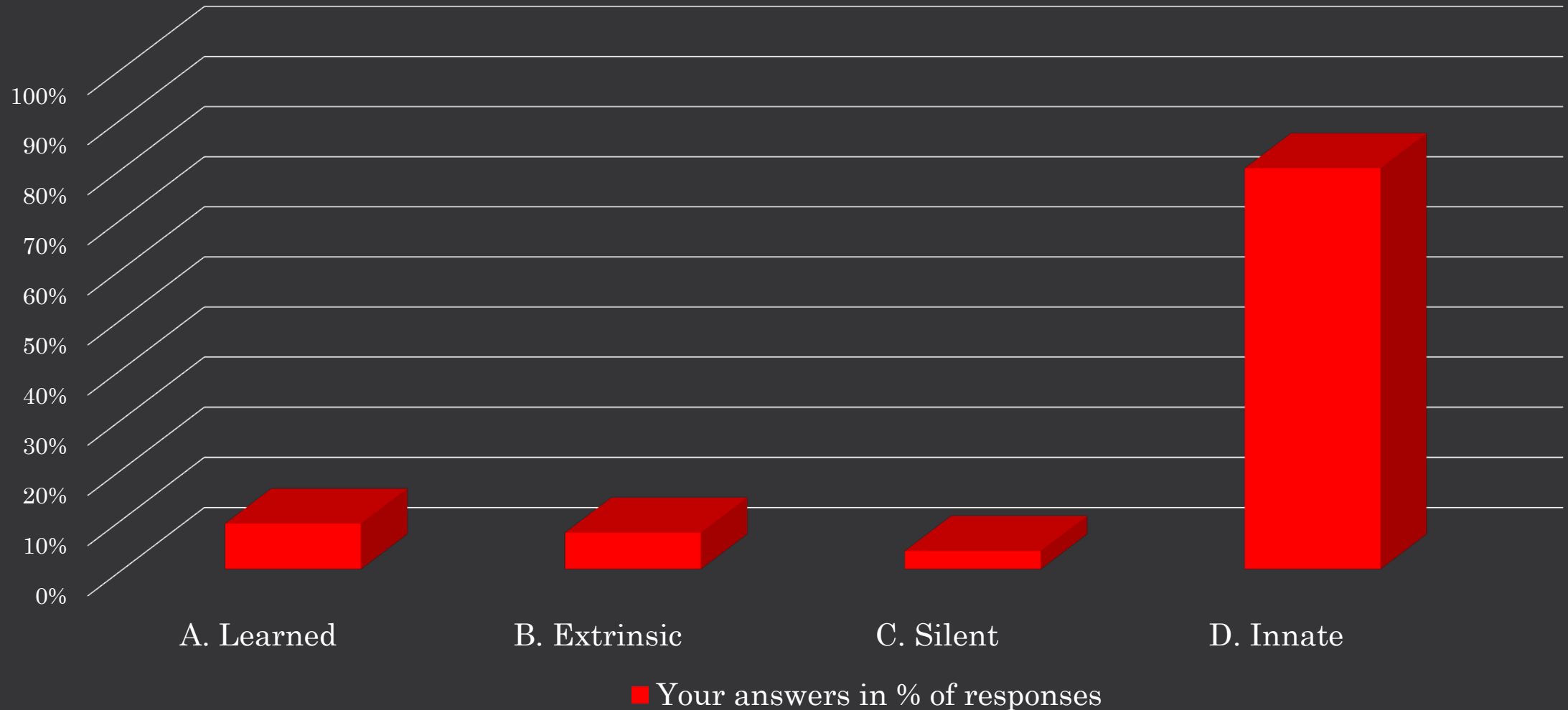
# Correct Answer: C) 30



- Birdsong can contain dozens of notes per second, so they take many small breaths to keep up
- The breaths are synchronized with each syllable the birds sing
- Because a bird's syrinx sits at the junction of its two bronchi to the lungs, each bronchus can produce separate sounds. These are then mixed higher up in the vocal tract.

## Poll Results:

In contrast to humans and songbirds who require experience to correctly produce vocalizations, most other animal vocalizations are \_\_\_\_\_.



# Correct Answer: D) Innate

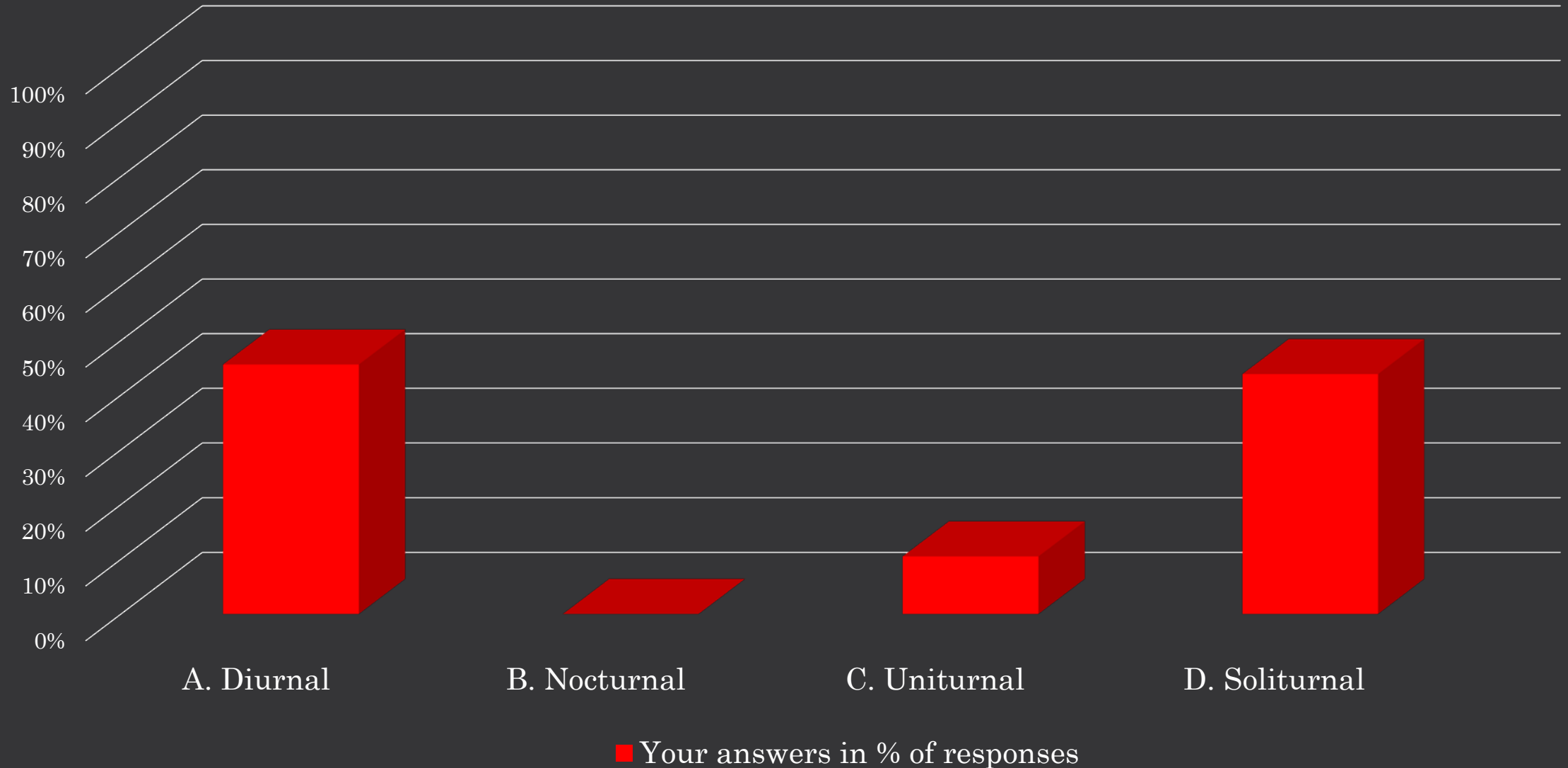


Photo Credit: Brian Stansberry

- While most animals communicate by means of sound, the sounds are generally not learned behavior
- Rather, they are innate, meaning that the animals instinctively know how to do them and need no teaching
- For example, quails that are raised in isolation or deaf at birth will still produce the full set of vocalizations that quails normally produce

# Poll Results:

Birds that sing during the daytime  
are known as what type of birds?





# Correct Answer: A) Diurnal

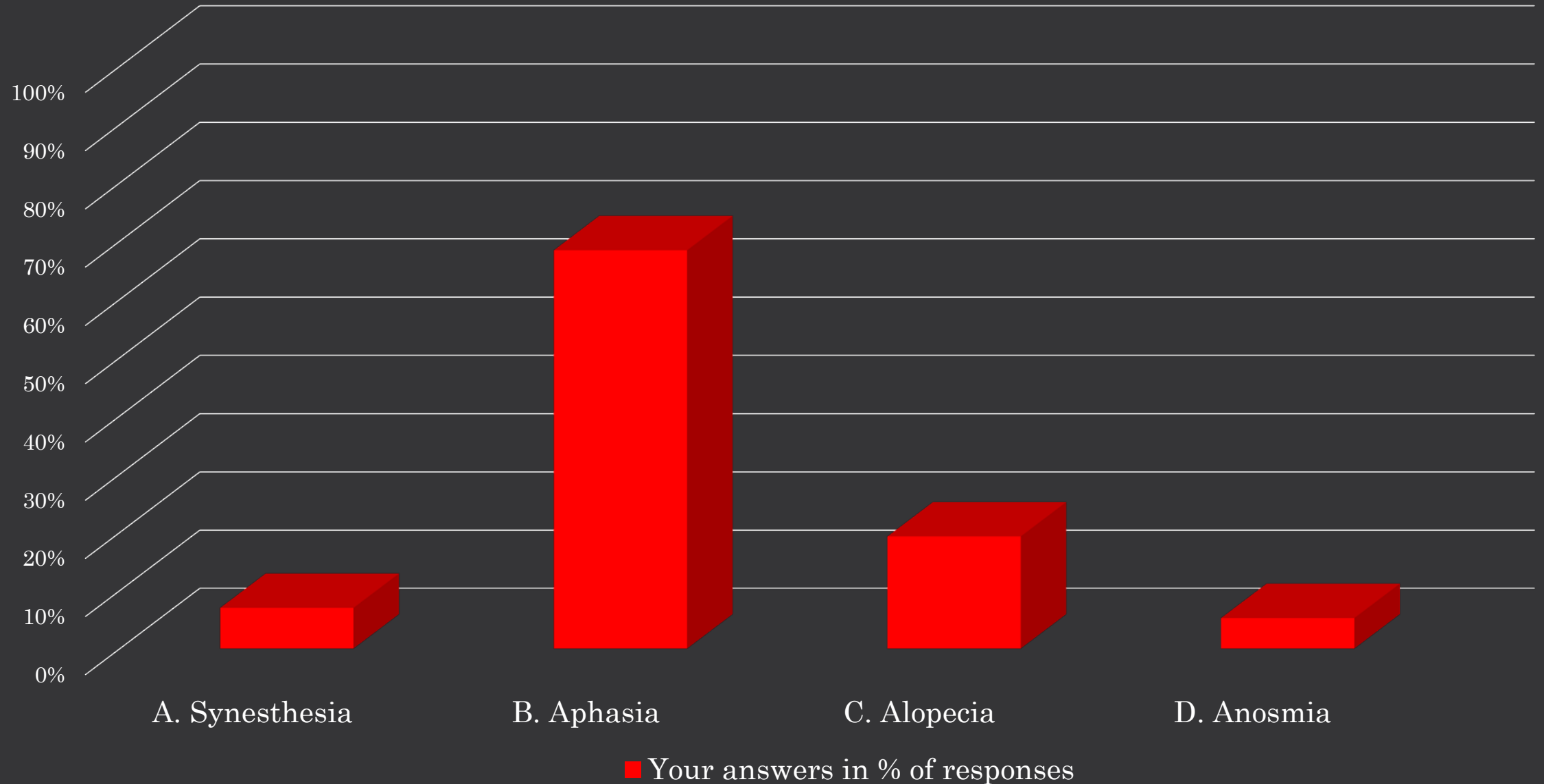


Photo Credit: Brian Kushner

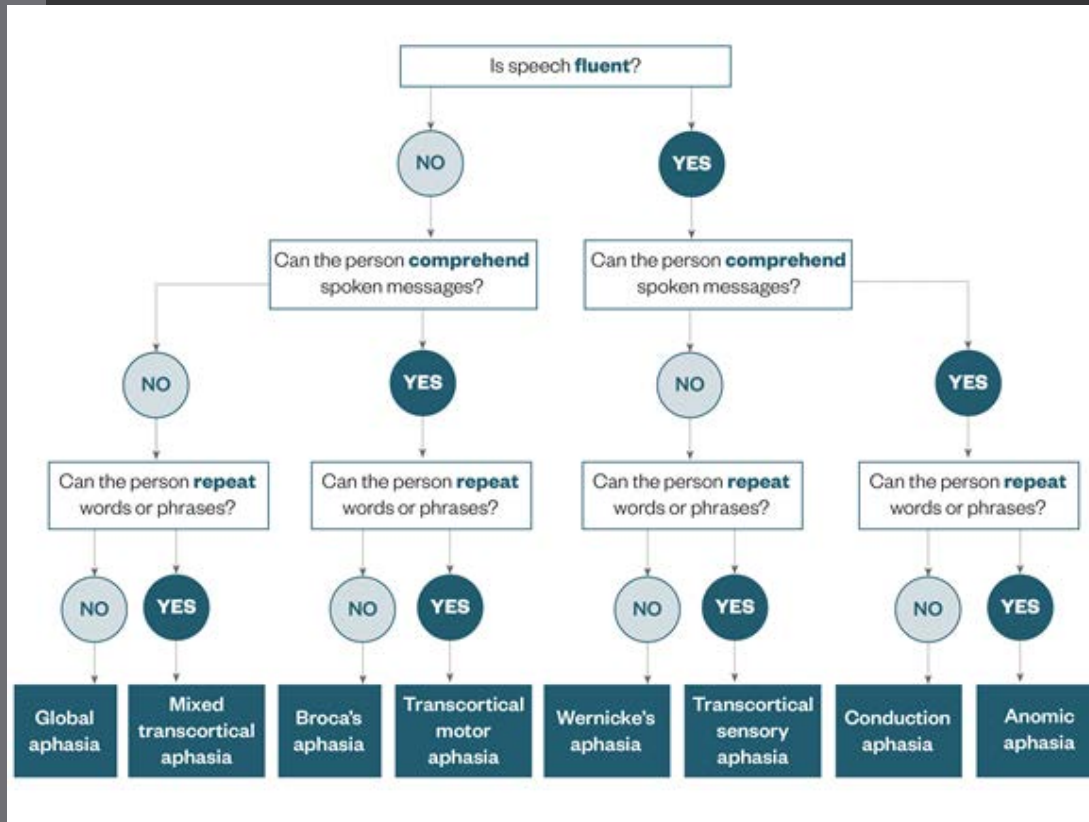
- Diurnal birds sing during the daytime, as opposed to nocturnal birds, which sing at night
- Both diurnal and nocturnal birds' songs are dictated by the daily rhythm of light and dark
- Diurnal birds' songs, such as the robin's, are triggered by a mix of circadian rhythm and morning light

# Poll Results:

The loss of the ability to speak is called \_\_\_\_\_.



# Correct Answer: B) Aphasia



- Aphasia occurs often when parts of the brain associated with speech are damaged
- There are different kinds of aphasia in humans, depending on which part of the brain is damaged
- Aphasia can affect the ability to understand speech, produce words, and/or put words together into understandable speech patterns