

# BEHAVIOUR & NATURAL HISTORY

What we can learn from the birds and the bats!

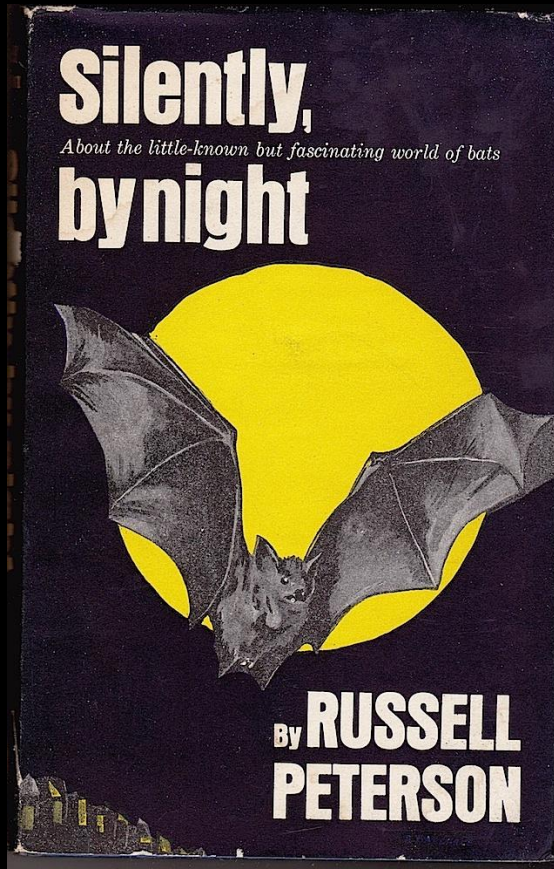


**Rohit Chakravarty and  
Anand Krishnan, IISER  
Pune**



**GREEN HUMOUR**  
www.greenhumour.com





"The bat is more than just an animal. He is a vision to the mind. From man's earliest times the bat has been woven into a tapestry of fable and fact and has been distorted to grotesque proportions... He has become more of a thing than an idea."



CARD  
21

Nightmares of Nature

# VAMPIRE BAT

## Creature Features

**SPECIES:** *Desmodus rotundus*

**SIZE:** Length up to 3.5 in.;  
Weight up to 1.8 ozs.

**HABITAT:** From caves to farmland  
in Central and South America

**FOOD:** The blood of cattle, goats  
and occasionally humans

**LIFESPAN:** Up to 9 years

### ALL ABOUT THE TEETH:

The bat's sharp front teeth cut like scissors while the longer fangs poke into soft flesh.

**SUCK IT UP:** The vampire bat's lower lip is split so blood can flow through it into the mouth while the tongue laps it up.

After the sun sets, the deadly vampire bat crawls from its daytime dwelling and takes to the skies. Old World legends fuel fear of this creature, but one thing is certain—it needs to feed





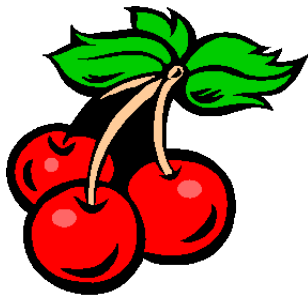




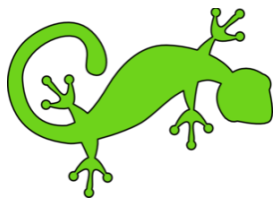


# Bats: General facts

- Only mammals that can truly fly
- 1100+ species globally!
- Diet:



itratio





# What do bats look like?



# What do bats look like?



© Rohan & Rohit Chakravarty, 2007

# What do bats look like?





# What do bats look like?

Eastern Barbastelle  
(*Barbastella leucomelas*)



Photograph by Ram Mohan



# What do bats look like?



# What do bats look like?



© MerlinTuttle.org

Photo: Merlin Tuttle



# What do bats look like?



Photo: Antton Alberdi

# What do bats look like?



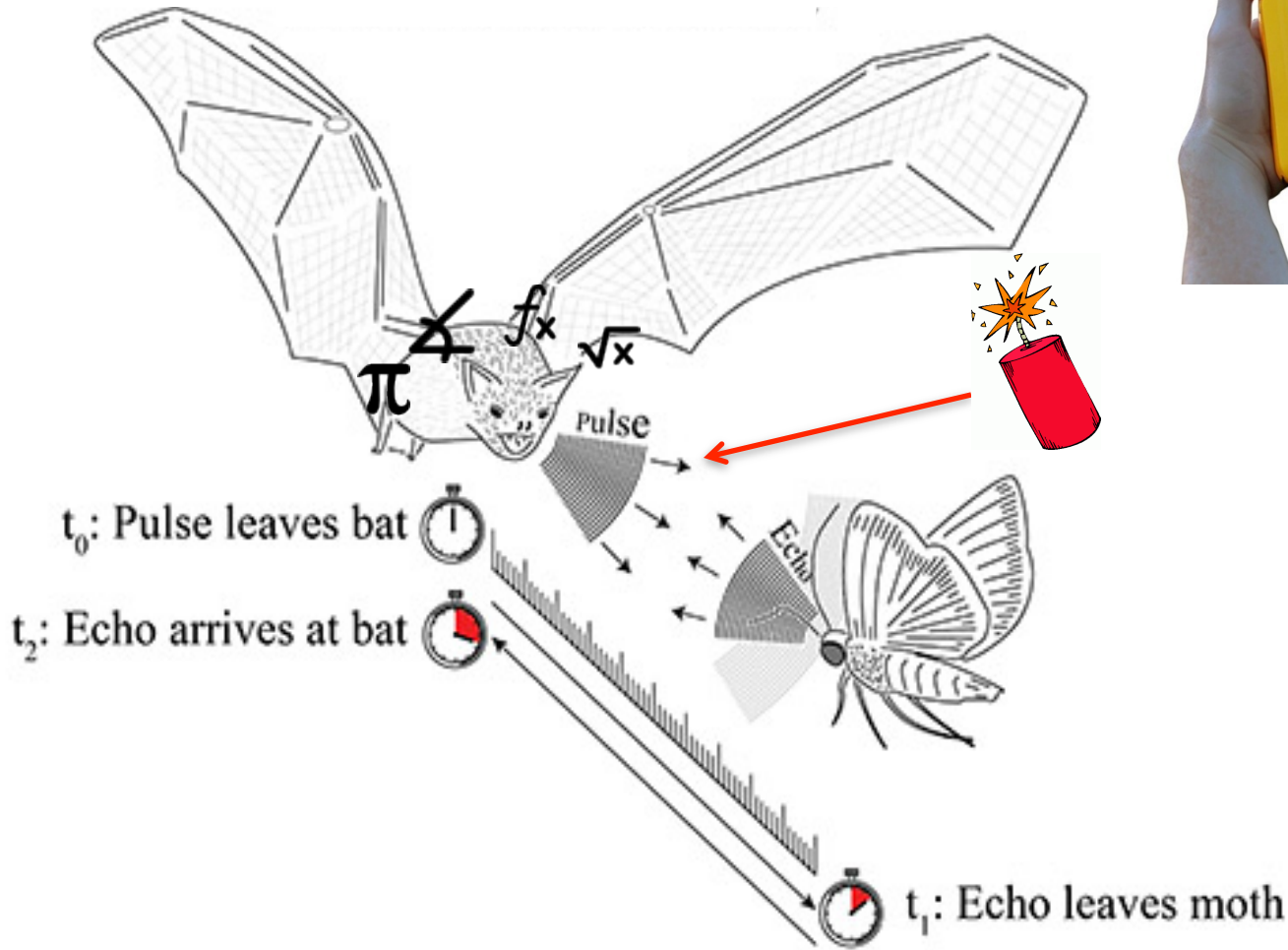
2012 © Merlin D. Tuttle

Photo: Merlin Tuttle



# How do bats hunt insects?

## SONAR / Echolocation





# Bats sing songs that we can't hear!



**Common Pipistrelle**



**Leisler's Bat**

WHY SHOULD WE CARE  
ABOUT BATS?



# Echolocation: a way of life for the blind?



**Daniel Kish**



# Bats pollinate our favourite plants...



**Cave Nectar Bat sucking nectar from durian flowers**



**Durian: The King of Fruits**

**Photo: Merlin Tuttle**



...and kill harmful pest insects



**Bats provide services worth \$1 billion to corn growers in the USA!**

Photo: Merlin Tuttle

# Bat droppings: excellent fertilizer



© MerlinTuttle.org

Photo: Merlin Tuttle | Inset: Allstate Animal Control





**Photo: Hul Vibol**

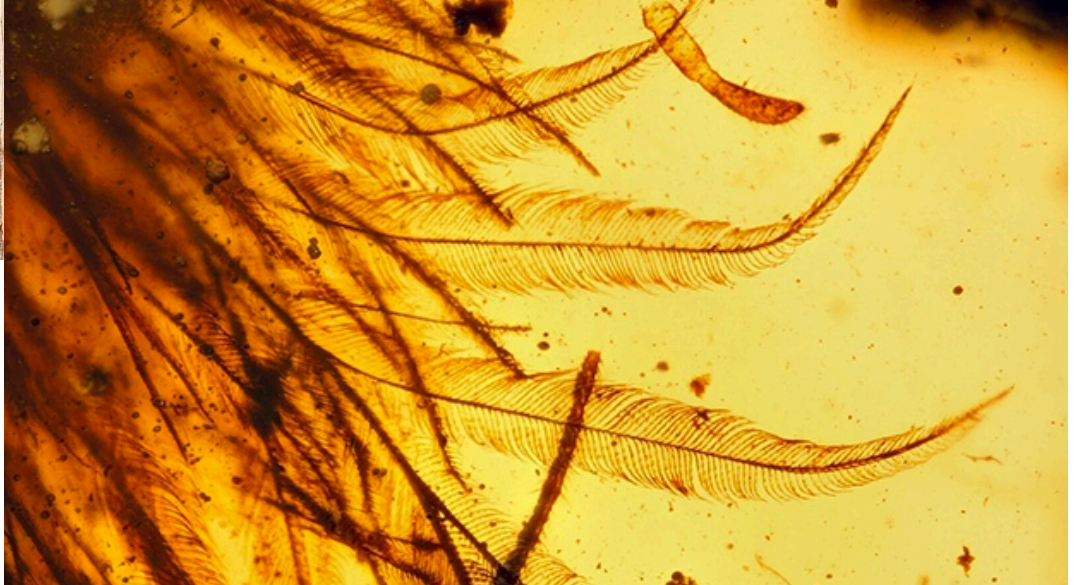




Image sourced from  
the internet



# What is a bird?



Sources: Sciencemag.org,  
The Verge

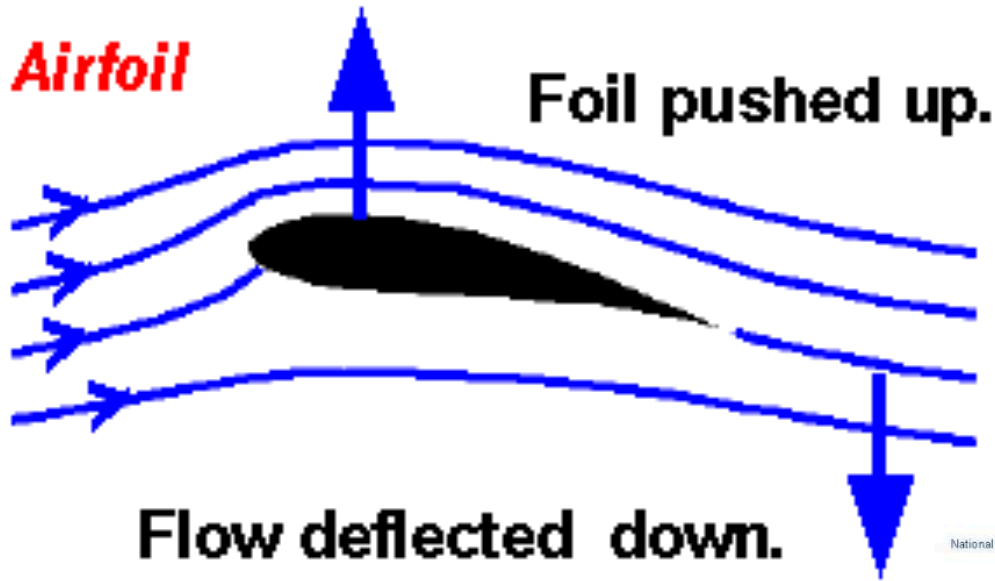




Tim Laman



# How does flight work?

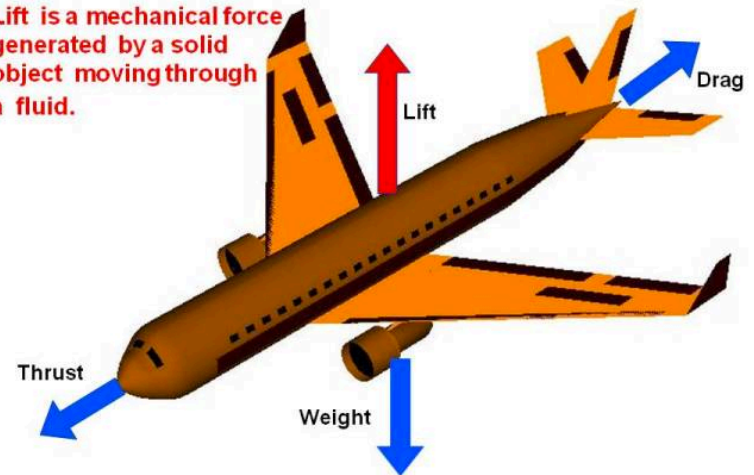


National Aeronautics and Space Administration

## What is Lift ?

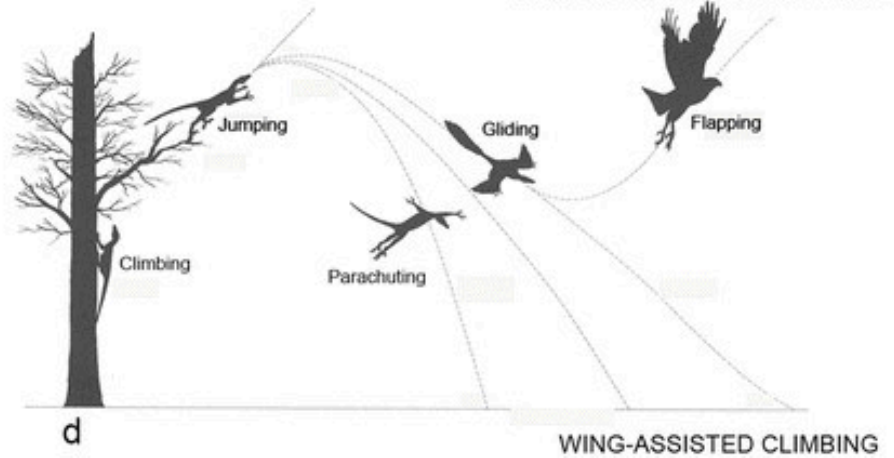
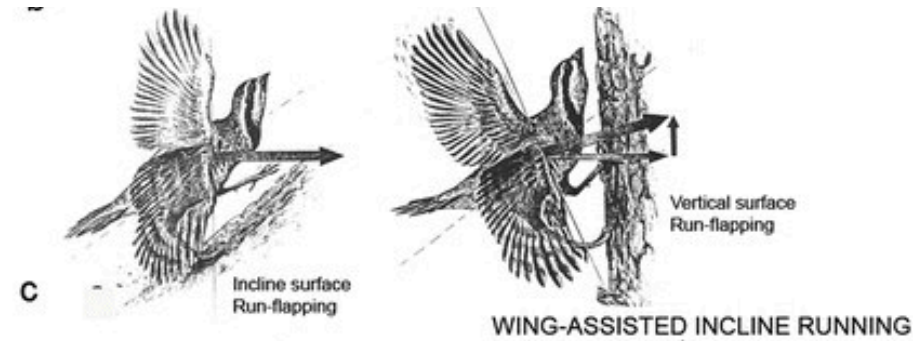
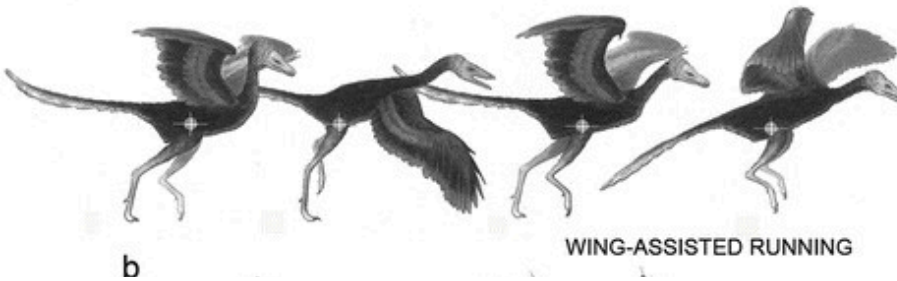
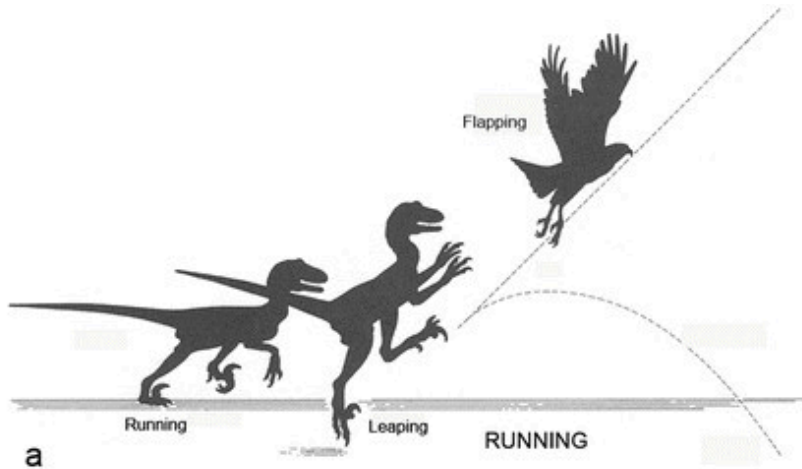


Lift is a mechanical force generated by a solid object moving through a fluid.



NASA research centre

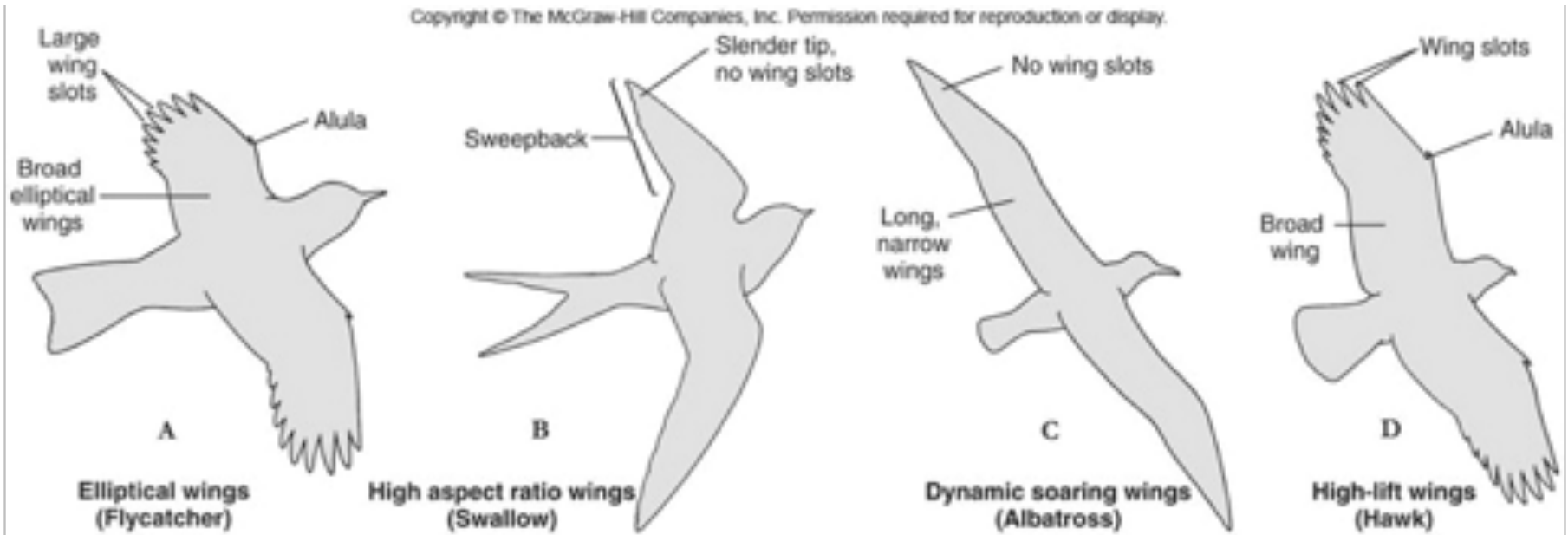
# How might birds have begun flying?



Source: "Earth and Life"

# The capabilities of flying birds

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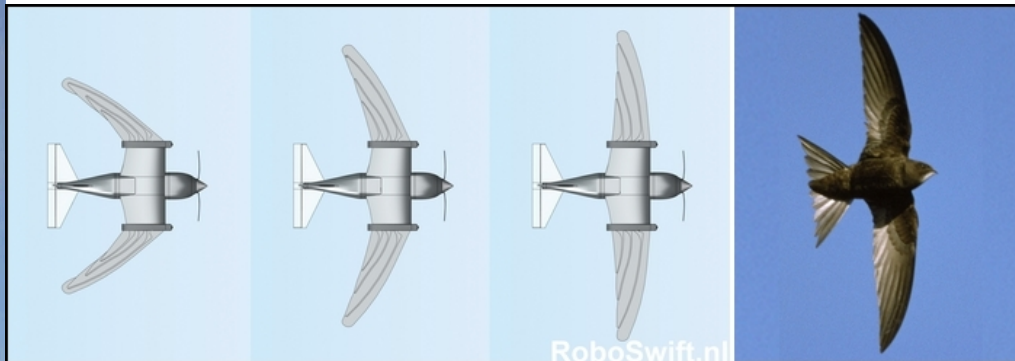
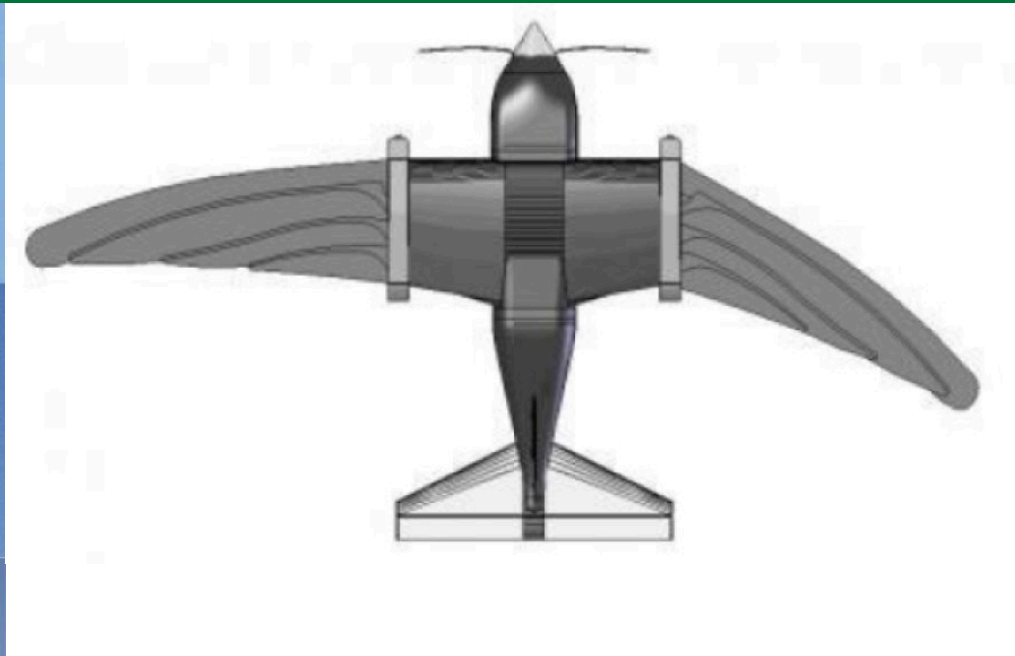








# What can we learn from a bird?



Science Daily etc.





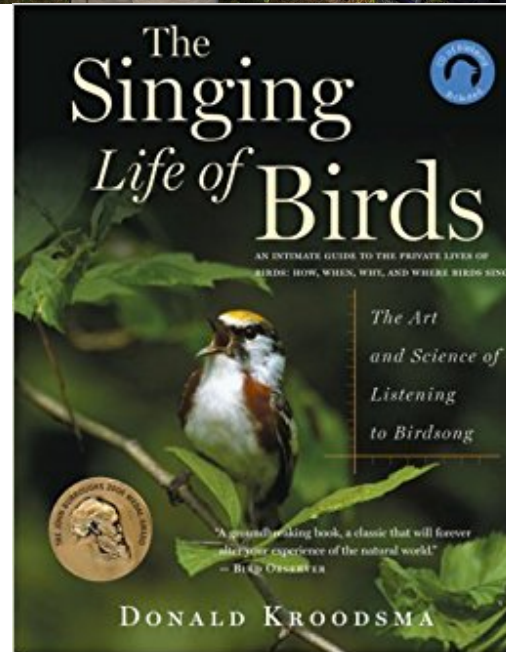
Image source:  
Youtube



YouTube



# Birds communicate using sound



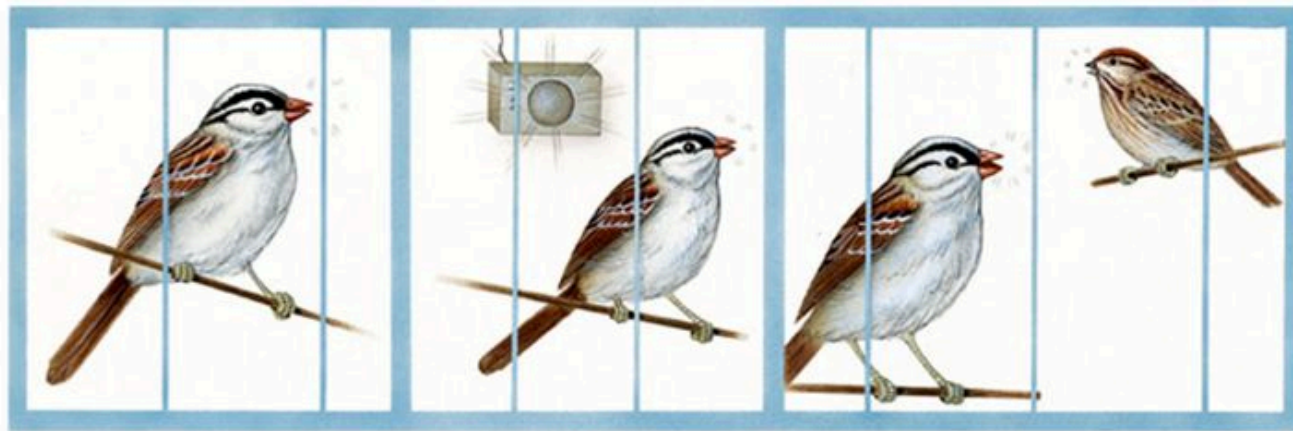




# Many birds learn their songs!

## Song-learning by white-crowned sparrows

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Photos  
from  
Wikimedia

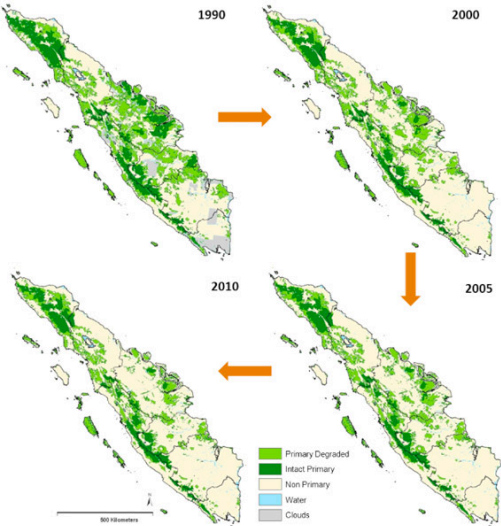




# What can we learn from birds?

- Human speech
- Learning disorders
- Acoustics: Loud sounds from small animals!
- Physics of communication
- Studying how we learn, recognize and produce patterns of behavior

# Biodiversity Loss



Introduced predators/competitors



Habitat Loss and Pollution



Anthropogenic Hunting



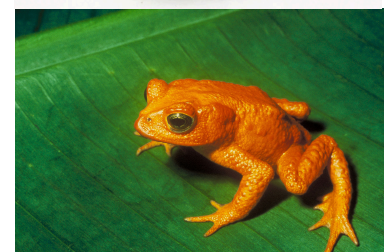
Islands versus continents



Alternatively, in some cases, wildlife may also be resilient! (whales and bats compensate for noise, adapting to man-made habitats)



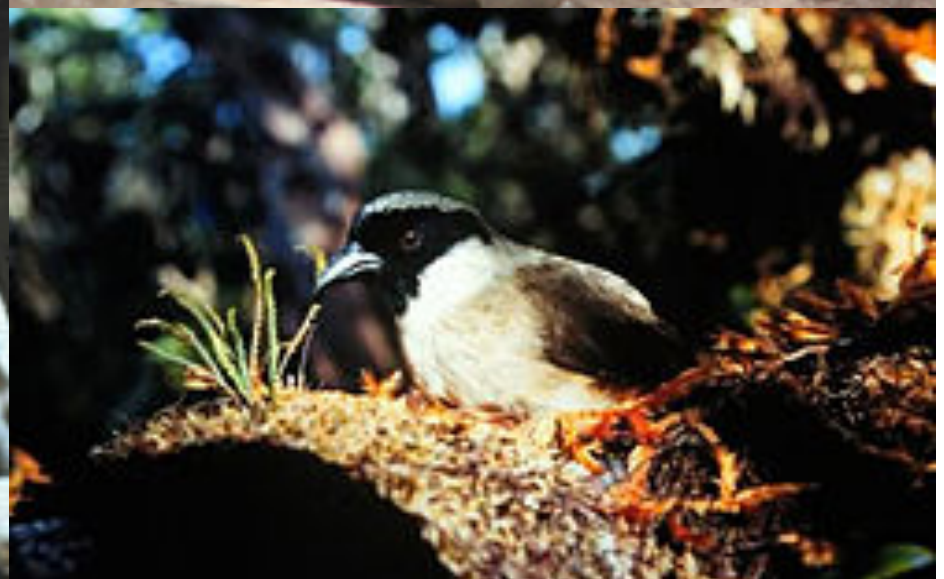
Climate change



Disease/Poisoning



# Extinction in the last 35 years





# Some species are very threatened



Both threatened species, and those that live with us, act as indicators of how we ourselves may respond to changes in our environment!





# Animals in a changing world!





# Animals in a changing world!

