

# Biogeography. Lecture 17

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# Outline

Questions and answers

Taxonomy  
Birds



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Taxonomy  
Birds



# Results of Exam 2: statistic summary

## Summary:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
42.00	54.00	59.00	60.36	68.50	76.00	11

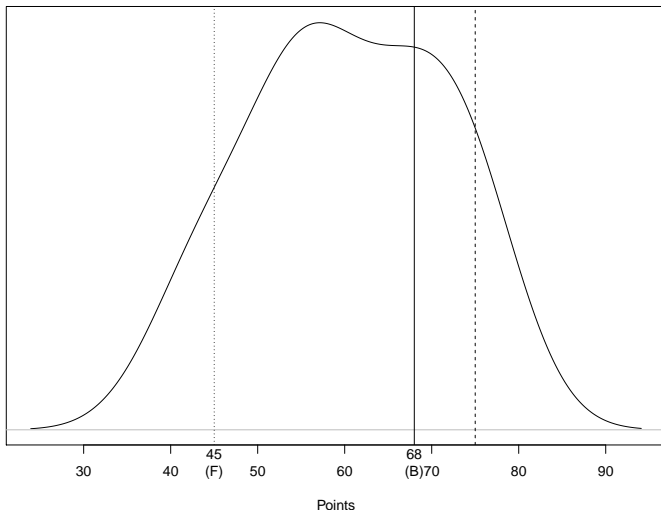
## Grades:

F	D	C	B	max
45	52	60	68	75



# Results of Exam 2: the curve

Density estimation for Exam 2 (Biol 154)



23. Which of the following plant is “ruderal”?
- A. **Brome grass**
  - B. Oak
  - C. Prairie rose
25. Herbivore is:
- A. Consumer I
  - B. Phytophagic organism
  - C. **Both of above**
28. Inside the energy pyramid, the numbers of individuals on lower layers is \_ higher than on upper layers:
- A. always
  - B. **mostly**
  - C. never



45. What is this (“black”) group?



- A. Monophyletic
- B. **Paraphyletic**
- C. Polyphyletic

# Taxonomy

## Birds



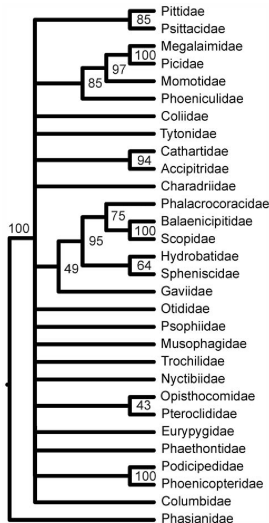


# Birds phylogeny

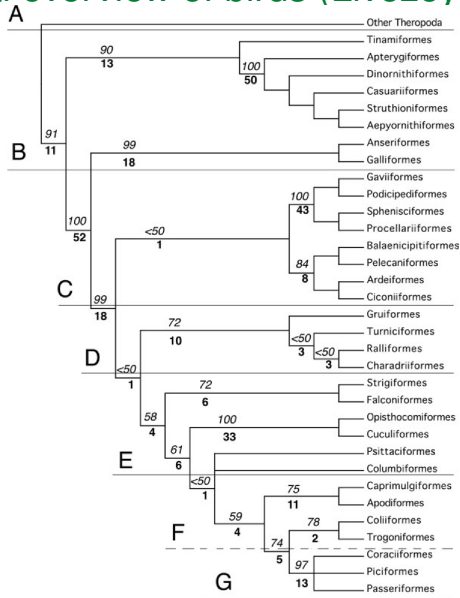
- ▶ Phylogenetically, birds are subgroup of theropod dinosaurs
- ▶ Molecular phylogeny is not yet stable, morphological trees are much better



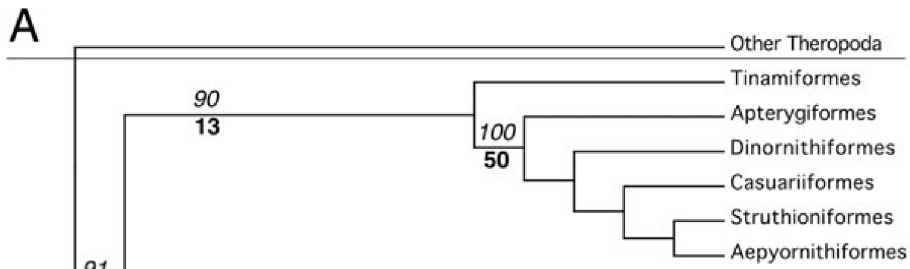
# One of recent molecular trees (McKormack et al., 2013)



# Morphological overview of birds (Livezey et al., 2007)



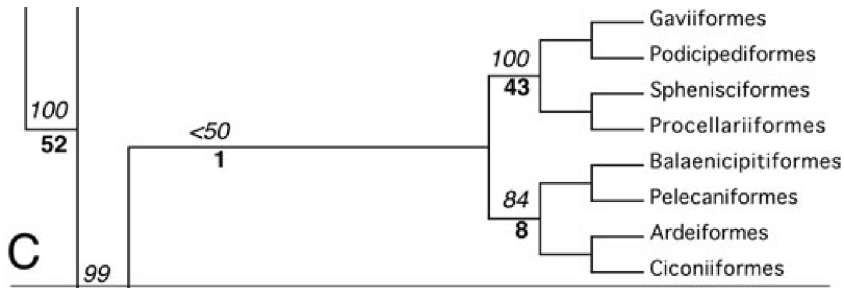
# A: non-flying birds, ostrich and others



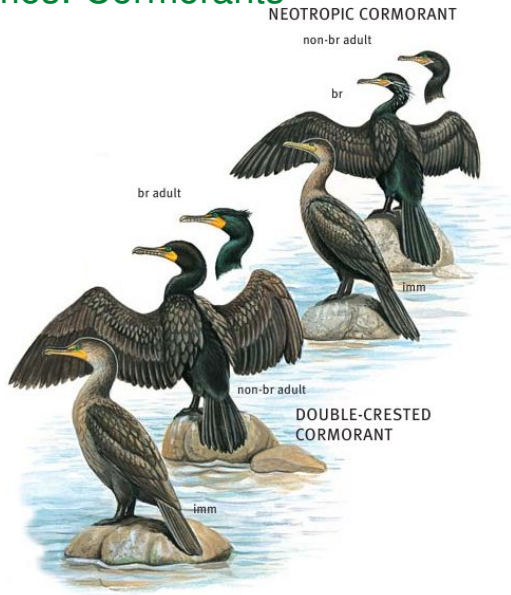
## B: Galloanseres, chicken and ducks



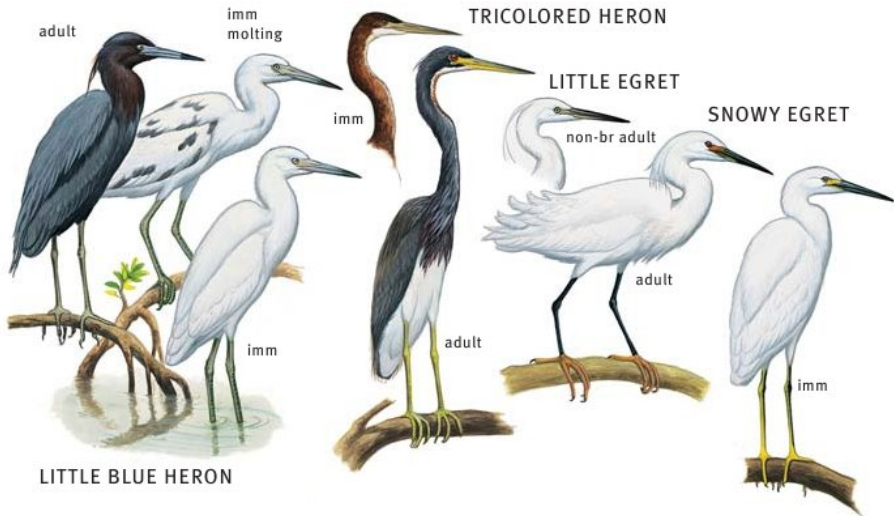
## C: seabirds



# Pelecaniformes: Cormorants

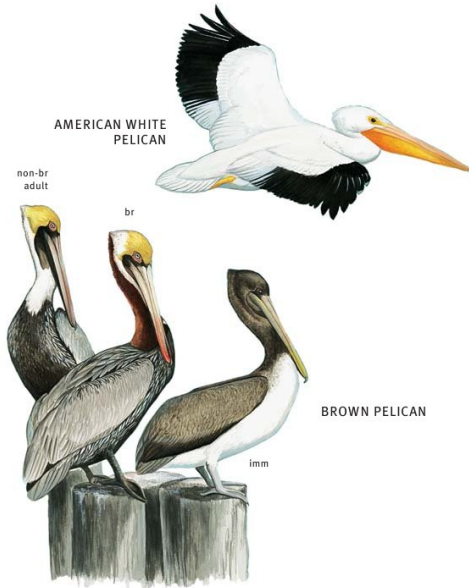


# Pelecaniformes: Herons



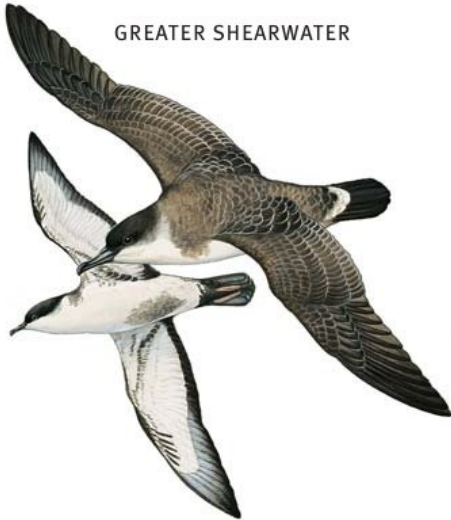


# Pelecaniformes: Pelicans

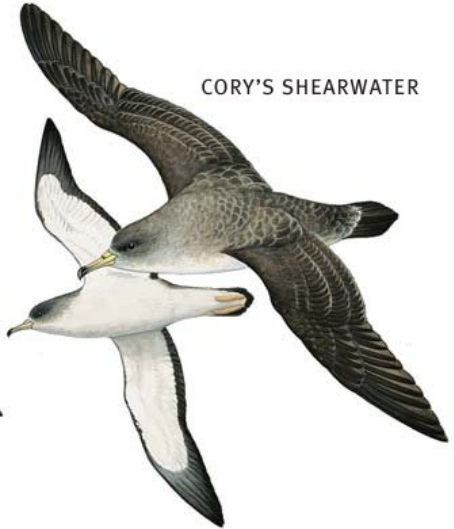


# Procellariiformes: Shearwaters

GREATER SHEARWATER



CORY'S SHEARWATER



# For Further Reading



A. Shipunov.

*Biogeography* [Electronic resource].

2014—onwards.

Mode of access:

[http://ashipunov.info/shipunov/school/biol\\_330](http://ashipunov.info/shipunov/school/biol_330)



Birds.

<http://en.wikipedia.org/wiki/Bird>

