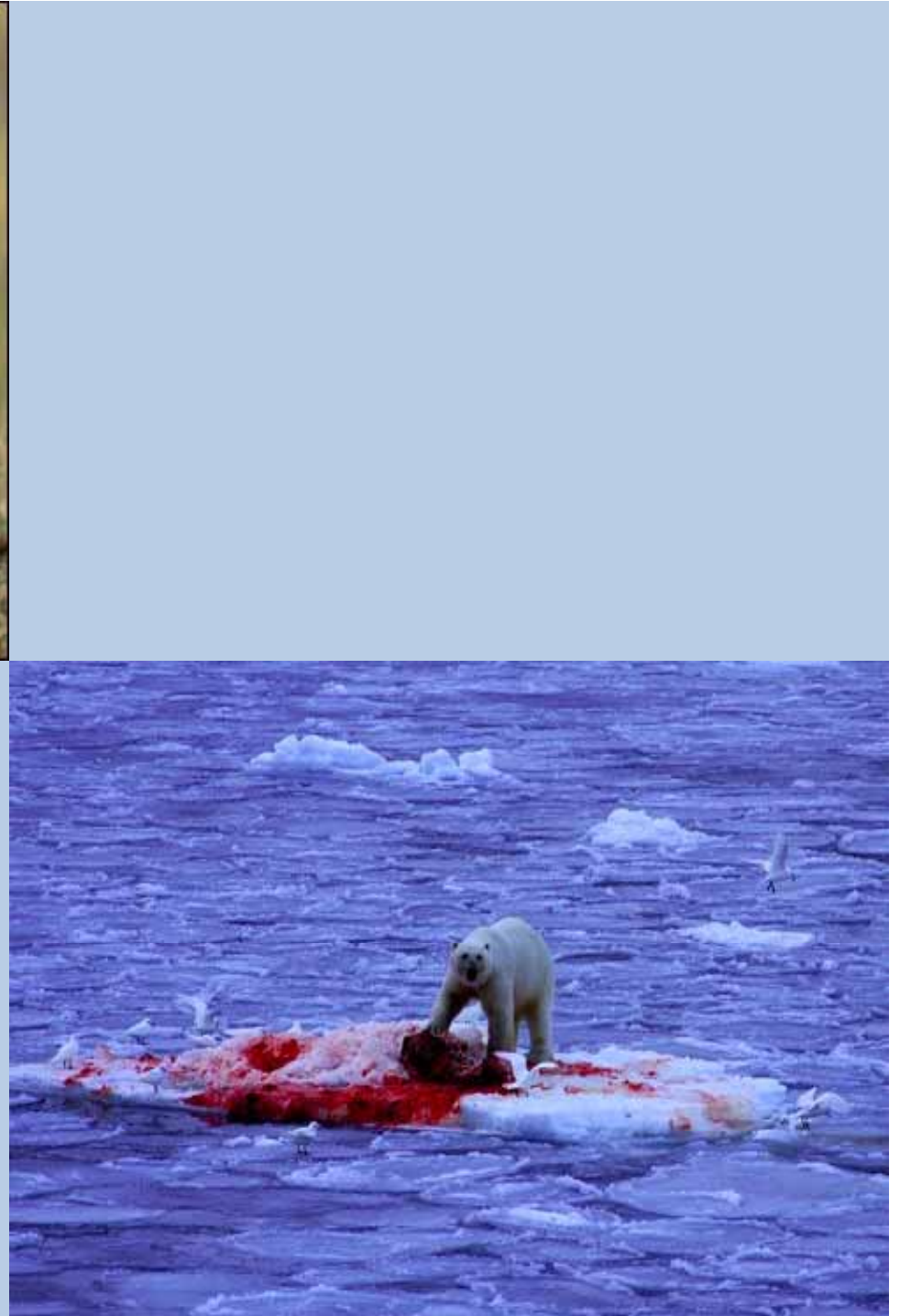


**Sexual Differentiation** refers to **primary sexual features** directly related to reproduction

**But what about other sex differences?**



**In 1859, Darwin introduces the concept of Natural Selection which explains how a species becomes better adapted to its environment**

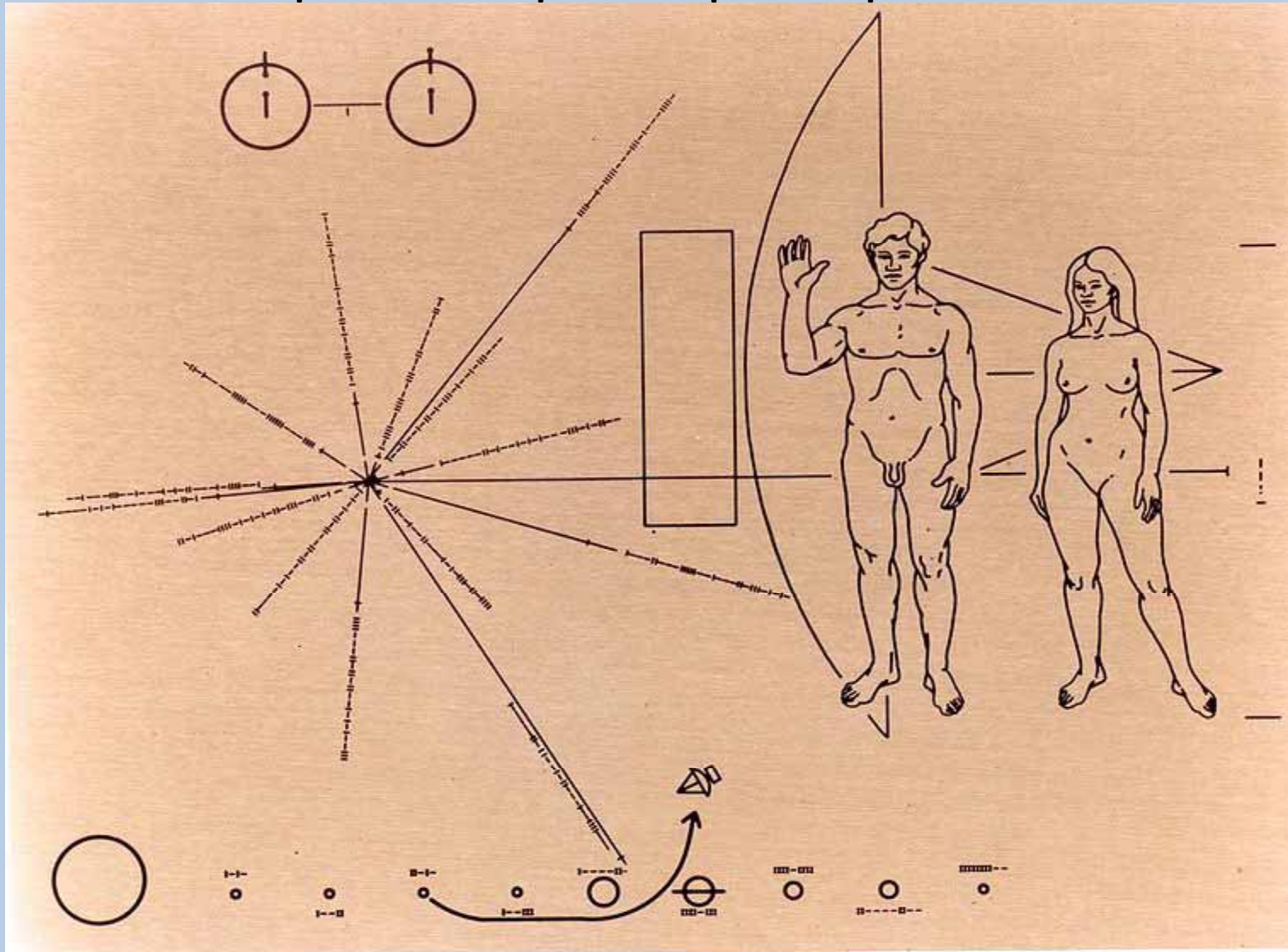


**If natural selection makes a species better adapted to its environment, why are males and females often quite different?**

***Don't males and females belong to the same species?***

For example

## Human representations placed on pioneer space craft in 1972



In U.S.A., the average adult male is about 5 inches taller than the average female.



**Uganda Kob**



Female lions often weigh 100 – 150 lbs less than males





Adult male elephant seals are about 15 ft long and weighs about 6000 lbs.  
Females are about 10 ft long and 2000 lbs.

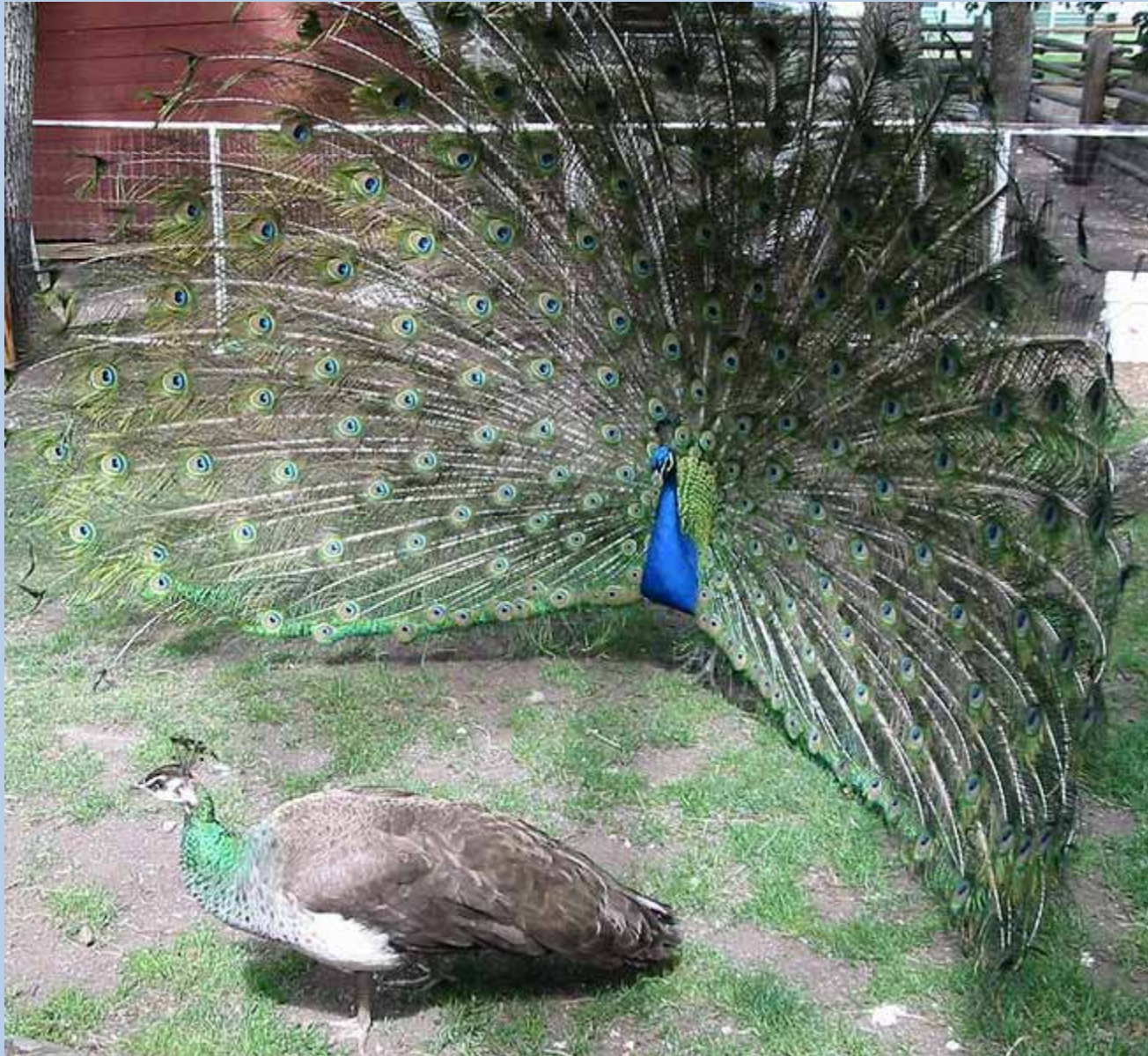




Male African antelopes, lions, and elephants seals seem to have developed these exaggerations to use against other males.

*Bigger weapons and bigger sizes are a burden for males but these things do make sense.*

*Don't they?*



**Do peacock tails make sense?**

**It's pretty clear that peacock tails are  
not used to beat-up other male  
peacocks!**

**So, why do peacocks have such  
elaborate feathers?**

In 1872, Darwin modified his notion of the evolution of traits by natural selection and introduced the concept of

## **Sexual Selection**

**Behavioral and/or Morphological Traits  
that are designed to secure matings**

**Either by beating up other males or attracting  
females**

**So, we have lots of  
observations and lots of  
speculation but  
where is the science?**



# Long Tail Widowbird



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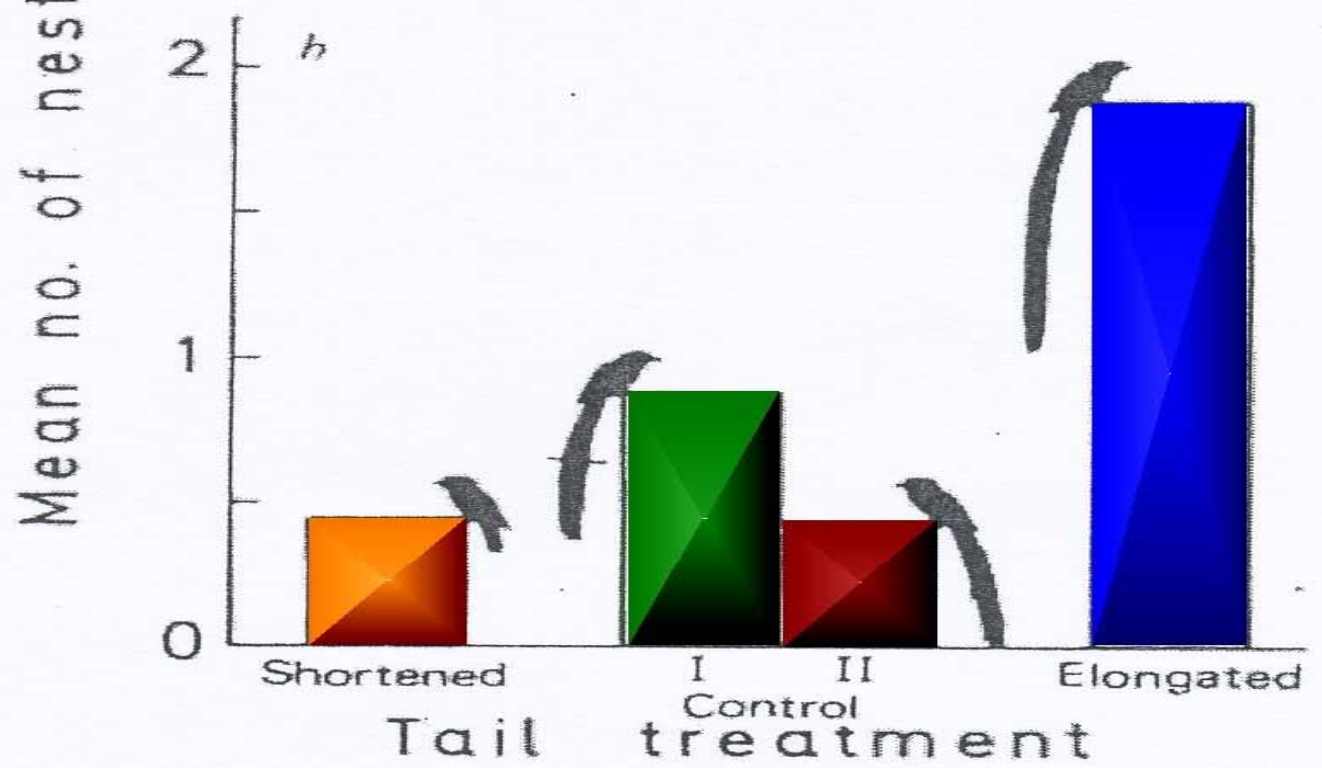
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# **An Experiment**

**Do these outrageous tails on male widowbirds  
relate to their abilities to secure matings?**



Females prefer a tail length that doesn't exist!

## Two Final Questions:

*Why do males develop the trait AND females get the choose??*

*Why would females care about such traits?*

## Why Males?

**When viewed in terms of reproductive potential:**

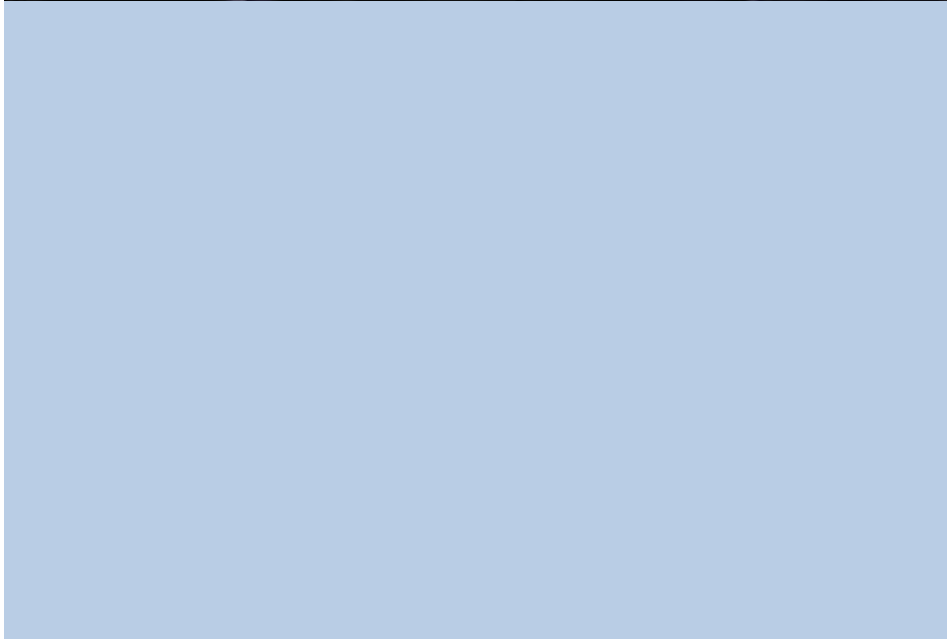
**Too much sperm competing for too few eggs.**

**Is this a testable hypothesis?**

**Too Many Males Competing Over Too Few Females**

**It sure seems like males are competing for females while females do not to compete  
but are quite selective**

**Can We Make Males More Choosey?**







# **But Why bright colors or exaggerated traits?**

**Do they have any inherent value to females?**

**What is there about males that females might value?**

**Not sure!**

**Perhaps females are using male traits, such as his ability to dominate other males or his ability to survive with such costly structures, as indicators of his inherent quality?**



## **Where are we now?**

- 1. Darwin seems to be right as to the function of these structures. Experiments support his hypotheses.**
- 2. We have a growing number of experiments illustrating why males compete and females choose.**
- 3. We have some good preliminary evidence as to how females benefit from these exaggerated structures.**