

Creation and Intelligent Design



Weeks 6-7

Wonders of
God's Design
Parts I & II

Greg Nordstrom
Bruce Zupa

*Nature is too thin a screen; the
glory of the omnipresent God
bursts through everywhere.*

- Ralph Waldo Emerson

Flying Creatures

- Simply amazing (but extremely complex!)
- Efficient **flight-capable hardware**
 - Blackbird jet@2000mph: 32 body-lengths/sec
 - Pidgeon@50mph: 75 body-lengths/sec
 - Navy A-4 Skyhawk: 720 degree/sec roll rate
 - Barn swallow: 5000+ degrees/sec roll rate
- Extraordinary **navigational abilities**
 - Manx Shearwater Boston-to-Wales test flight
 - 3200 miles; 12.5 days (250 miles/day)
 - Straight line from a place it had never been before!
 - Manx Shearwater Venice-to-Wales test flight
 - 1200 miles direct route (5-day direct flight)
 - Bird arrived fourteen days later...

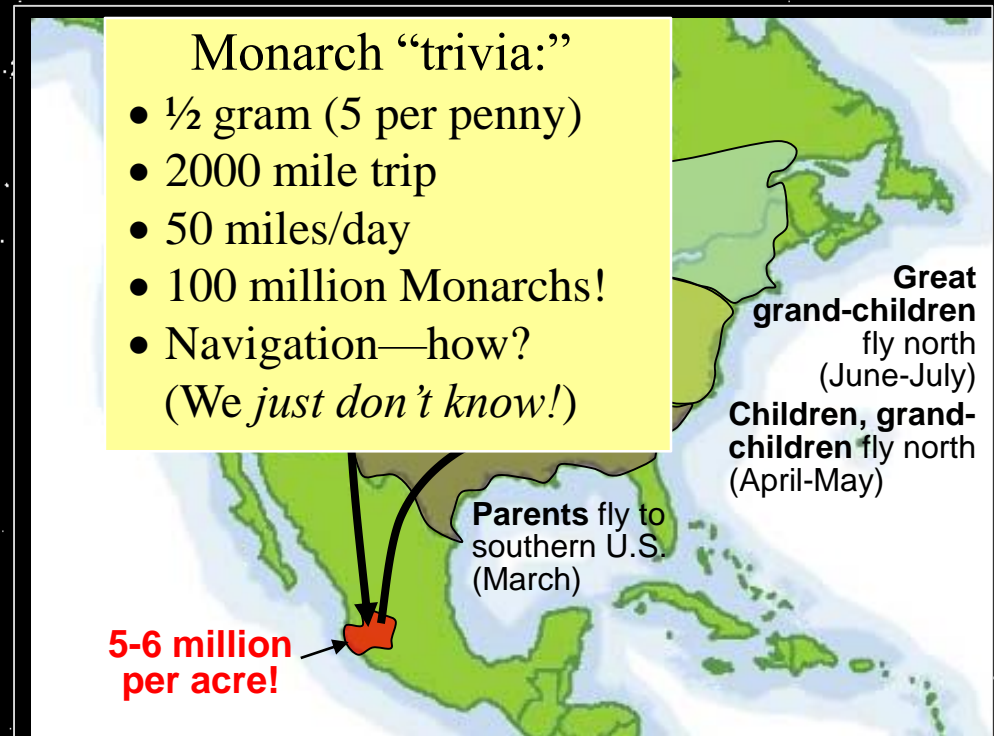


Monarch Butterflies

- Found in Southern U.S. in early spring
- Follow the milkweed north
- Summer in Canada, winter in Mexico
- 4-6 week lifespan (*usually...*)



Very complex behavior!
Fly thousands of miles **alone** to a spot they've **never been to**, and it's the **same spot** their great-great grandparents flew to! **Wow!**



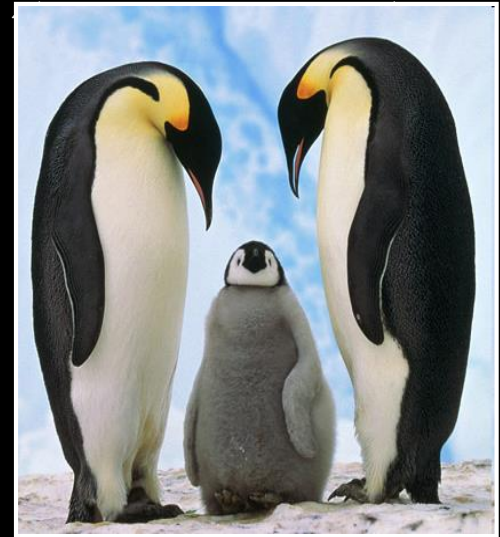
Bats

- The only flying **mammal**
- 1,000,000-bat colony eats **20,000 lbs** of insects **per night**—in the **dark!**
 - 1.5 mil live under the Congress Avenue bridge in downtown Austin
- Fly, navigate, hunt using sophisticated **sonar echolocation**
 - Ultrasonic 50kHz-200kHz “clicks” (>140dB)
- Can determine an object’s **size, speed, direction**, even its **texture** from the echoes
 - Can identify **different types of insects**, choosing the **particular kinds** they like to eat!
 - Can distinguish **fish ripples** from **falling leaf ripples**
- Amazing **collision avoidance** capabilities, too!
 - Avoid walls and each other even when **swarming**
 - Each recognizes it’s own voice. We don’t know how they do it!



Penguins

- 17 species of penguins
- They're **birds**
 - Lay **eggs**, have **feathers**, breathe **air**, have **clawed feet** and **beaks**
- Perfect for life in **Antarctica**
 - **Wings** function like short **flippers**
 - **Feet** (at *end* of body; not middle!) for **waddling** on ice and **steering** in water
 - **Feathers** with **special tufts** at base to form a wind- and water-resistant mat
 - Thick layer of **blubber**
- Cycle of life
 - Courtship and pregnancy take **two months** (no food!)
 - Female lays her **single egg**, heads out to sea to feed.
 - Male incubates egg on top of his **feet** with **no food or water for two more months**
 - Female returns **just in time** to feed the newborn chick



Salmon

- Born in **freshwater** mountain streams
 - Live there up to 3 years
- One spring evening, they head for the ocean (never been there before!)
 - Special biology allows living in **salty sea**
- Live in ocean 1-4 years
 - Swim **thousands of miles** in migration circles
- Finally, they journey back to **birthplace** (their **exact birthplace**) to spawn and die
 - Once they start, back to “freshwater mode”
 - **No food**—all done on instinct and desire
 - All arrive within a few weeks of each other
 - Happens in mid-October
- Highly developed sense of **smell** (1 part per *billion*)
 - One tablespoon of salt 18 Olympic swimming pools away
- Even juveniles caught and released in a different place before beginning the journey find their way home
 - The **Prairie Creek Hatchery...**



An Incredible Journey

On December 2nd, 1964, a two year old salmon was found in a rearing tank of the Prairie Creek Fish Hatchery in Northern California. Attached to his back was the metal clip of the hatchery.

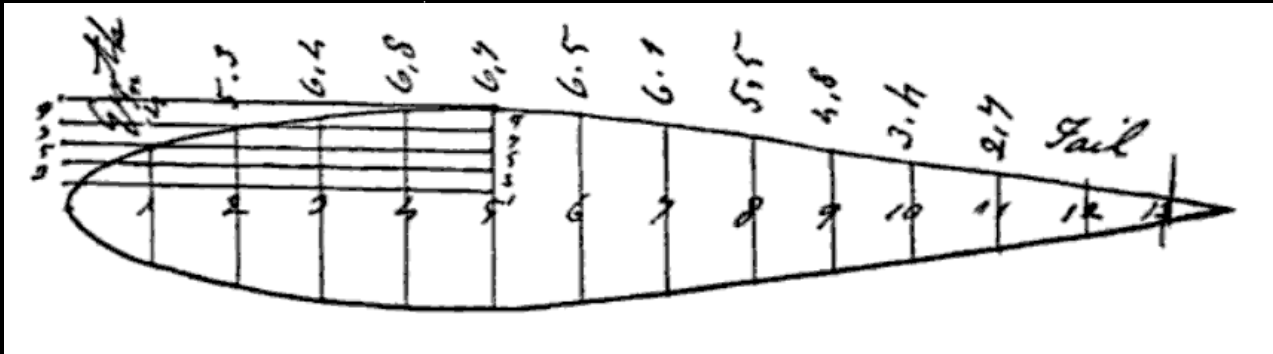
To reach the tank, he had to travel from the Pacific Ocean up Redwood Creek, turn into Lost Man Creek, run up a ditch, through a small culvert under Highway 101, through a storm sewer, and up the hatchery waste water flume

through a 4 inch drainage pipe, making a 90 degree turn and a 2½ foot vertical jump inside the pipe. Finally, he rammed through an overhead wire mesh screen, probably by jumping, to get into the rearing pond.

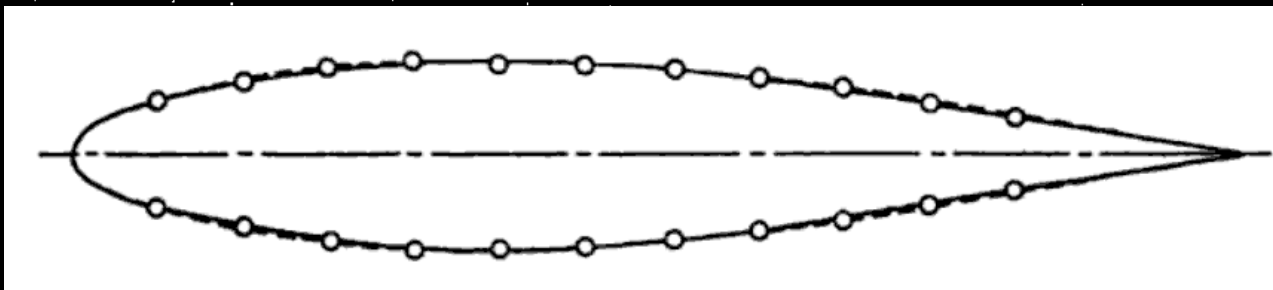
They named the salmon ***“Indomitable.”*** Also, after removing some of the planks covering the flume, 72 more marked coho jack salmon were found stuck in the flume and drainage pipe. (Excerpted from Wikipedia)



Trout Design



Trout cross section sketch by Sir George Cayley (circa 1809). Cayley postulated “streamlining” as a way to reduce drag.



Modern computationally-designed low-drag airfoil (N.A.C.A. 63A016). Circles show Cayley's trout cross section.

Let's pause to think...

Evolution:

A process that results in heritable changes in a population spread over many generations.

Said another way: **Improvement** through **incremental** changes due to **random mutations** over **long, long periods of time**.

- “Special” generation of Monarchs
- Bird navigation
- Penguin physiology
- Salmon spawning behavior
- Many, many more examples

Simply incremental changes over time?
We can't explain “instinct” but it's **critical to animal life** on this planet!



Who teaches us more than the beasts of the earth and makes us wiser than the birds of the heavens?

Job 35:11

Look at the birds of the air, that they do not sow, nor reap nor gather into barns, and yet your heavenly Father feeds them. Are you not worth much more than they?

Matt 6:26

But now ask the beasts and let them teach you; And the birds of the heavens, and let them tell you. Or speak to the earth and let it teach you; And let the fish of the sea declare to you. Who among all these does not know that the hand of the Lord has done this, in whose hand is the life of every living thing, and the breath of all mankind?

Job 12:7-10

“Hive Mind”

- Groups behaving differently than individuals
- Not herding, schooling, swarming or flocking
 - Group only *appears* to be acting together
 - Members actually acting *selfishly*
- “***Emergent behavior***”
 - Behavior **only emerges** when group is together
 - Here, more isn’t just **better**, it’s also **different**
 - Behavior benefits **group**, not the **individual**
 - Actions are often **bad for the individual** but the **group can’t survive** without it
 - e.g. individual bees *die* after stinging a hive attacker
- **Very hard** for evolution to explain this

Ants

- Many types of **ants**, **ant behavior**
- Two very interesting varieties:
 - South American **army ants**
 - African “**driver**” **ants** (*siafu* ants)
- Highly developed **caste system**
 - Soldiers in front
 - Queen and male suitors
 - Workers (females) carrying larvae
- Larvae odor signals army to stop
 - **Living nest** (ants form **nursery** and **egg chamber**)
 - While larvae hatch, queen lays 25,000 new eggs
 - Newly hatched workers pick up eggs and off they go!
- All females except queen are **sterile**
- Males exist for **mating**, and **die** soon afterward
- When marching, **ants eat everything in their path**



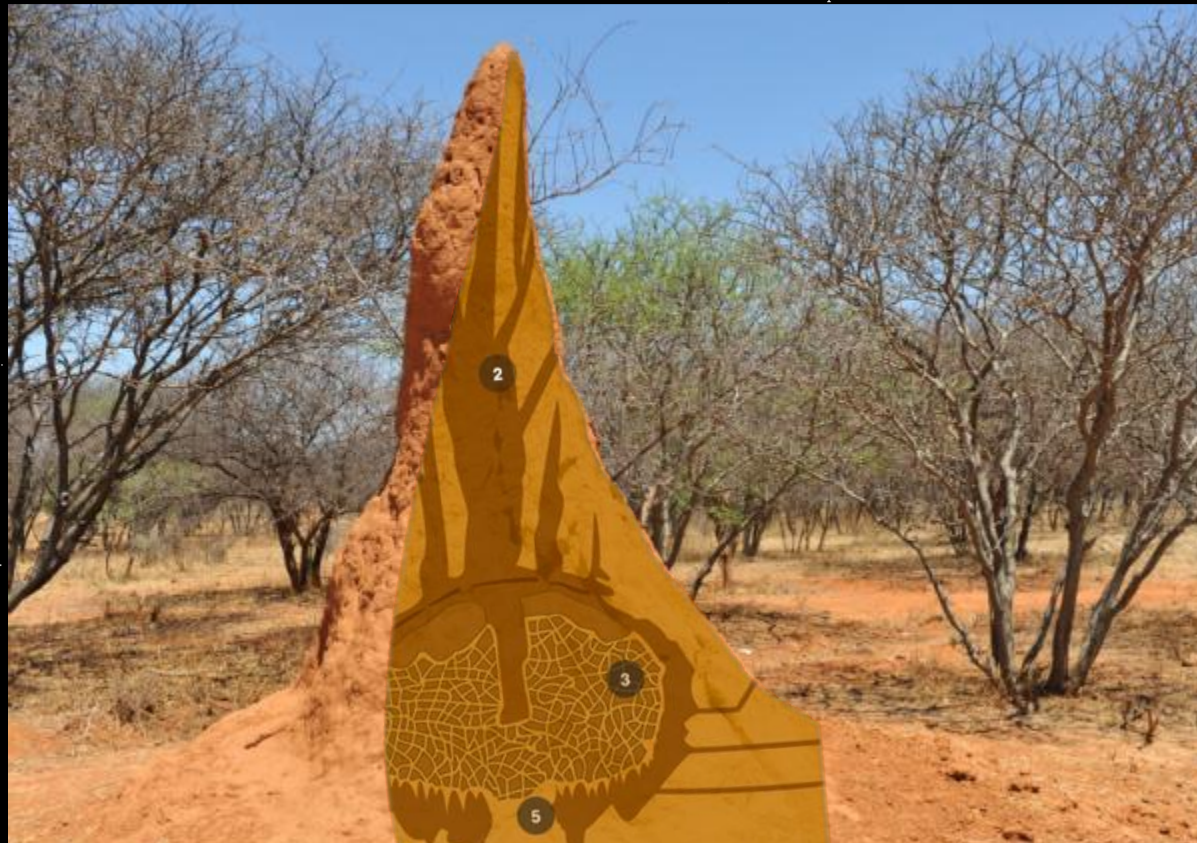
Ants

*Go to the ant, O sluggard. Observe her ways and be wise.
Which, having no chief, officer, or ruler, prepares her food in
the summer and gathers her provision in the harvest.*

Proverbs 6:6



What's This?





Termites

- Half the **biomass** of African plains
- Produce 15% of world's **methane**
 - Second most potent greenhouse gas
 - They add 1.1 million tons per year
- Three-tiered **caste system**
 - Royals (king and queen)
 - Workers (**blind**; **build**, **hunt**, **nurse**, **garden**)
 - Soldiers (**blind**; **huge jaws**)
- *Macrotermes* build huge **mounds**
 - Marvels of engineering
 - Keeps several million termites secure
 - Intricate cooling, gas-exchange shafts
 - Mounds last up to **80 years**
 - Built entirely from “spit-and-dirt” pellets
 - Equivalent to 7200ft tall building
 - **We can't build anything close to this!**



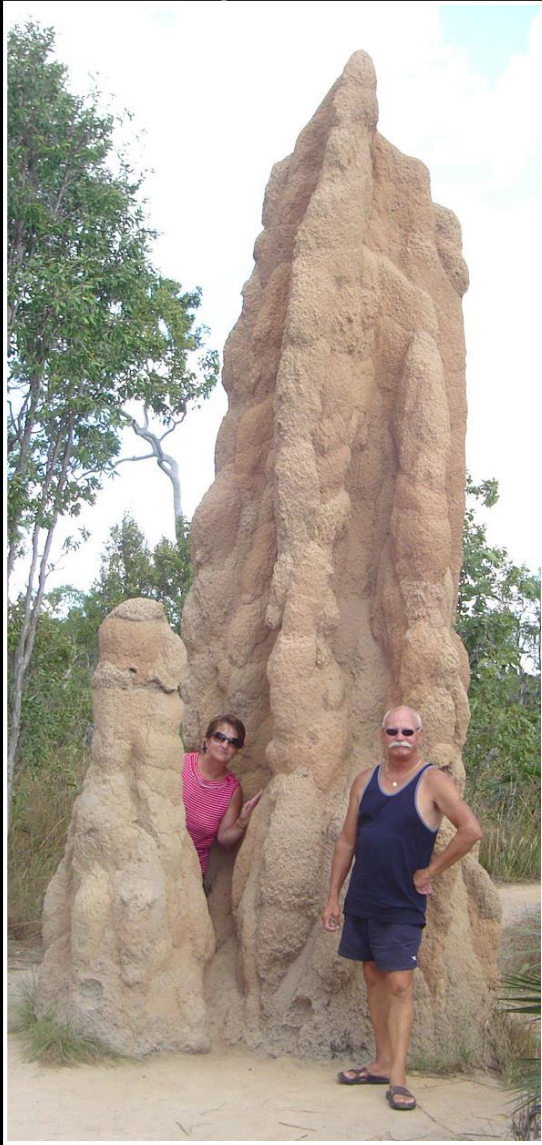
Note damage from **elephants**
scratching their **backsides!**

Termites

“The basic problem for understanding these structures is this: how can the millions of individuals in a colony work together to build a structure many times larger than themselves that has a characteristic architecture?”

J. S. Turner

Professor of Environmental and Forest Biology
www.esf.edu/efb/turner/termite/mound_structure.htm



*...His eternal power and divine nature
have been clearly seen, being understood
through what has been made, so that they
are without excuse.*

Romans 1:20

*The fool has said in his heart there is no
God.*

Psalms 14:1