Voyages of Discovery

European
Cook’s Expeditions
HMS Beagle
The Challenger Expedition
Renaissance Period 1400-1700

- Primary motives were economics, politics, and religion
- **Prince Henry** of Portugal attempted to find route East around Africa – failed
- **Bartholomeau Dais** – 1487 - first voyage around Cape of Good Hope
- **Vasco da Gama** – First voyage around Cape to India
- **Columbus** – Trade route to Asia
- **Amerigo Vespucci** – Explored South America and is credited with being first European to recognize South America as a new Continent
Discovery of Pacific Ocean

- **Vasco Nunez de Balboa** – crossed Isthmus of Panama into Pacific Ocean
  - First European
  - Restored faith that you could sail around the world
- **Ferdinand Magellan** – 1519
  - 5 ships, 260 men left Spain
  - Returned in 1522… 1 ship, 18 men
    - Rest died from disease, accidents
    - Magellan killed in fight in Phillipines
- **Sir Francis Drake** – 1577
  - Expedition to raid Spanish Ships for treasure
    - Successful
  - Decided to “runaway” from Spanish warships and went the long way around - 1580
Beginnings of Marine Science 1700-1900

- First explorations for the sake of exploring
  - Established colonies allowed for repairs and resupply
- Britain’s Captain James Cook
- Chronometer
  - A clock not affected by waves or motion at sea
  - Huge breakthrough because sailors could now determine longitude
  - Exact positions now known
- Cook used this to become great navigator and was asked to lead an expedition
Cook’s First voyage

- Scientific journey to Tahiti - 1769-1771
  - Purpose: document path of Venus as it passed between Earth and Sun so scientists could calculate the distance from Earth to sun
    - Also had secret orders
  - Seek out undiscovered southern continent (at pole) and claim it for England
- Found New Zealand and Australia, but not the “southern” continent
  - Returned to England around Africa
Cook’s Second Voyage

• Left 1772 to find the southern continent
• Sailed around Africa, and went further south
  – Blocked by ice
• Sailed north up to South Pacific and documented many of the islands there
• Arrived back in England in 1775
• Never found the Southern continent
Cook’s Third Voyage

• Left England 1776 to find the Northwest Passage

• Most other searches went from the Atlantic, he went around Africa and into the Pacific

• Landed on islands in the middle of the Pacific which he named the Sandwich Islands
  – Warm welcome by natives who thought they were supernatural beings

• Later islands were named Hawaii
Goose is ‘Cook’ed

• Left Hawaii entered Bering Strait
• Could not find Northwest Passage
• Went back to Hawaii
  – Welcome not so nice
• Left after about 2 weeks but ran into a storm and broke a mast
  – Had to turn around and the natives were not happy
• Fighting broke out and Cook was killed
  – Crew fled and returned to England in 1780
• Maps, journals and reports helped to change the Western view of the world
First U.S. Expedition – Wilkes Expedition 1838

- Objective: to explore the Southern Atlantic and Pacific oceans
  - Important for whalers
- 4 years later they returned with reports on many new areas
  - Both coasts of S.A.
  - Australia, New Zealand
  - Hawaii, Phillipines, Singapore, California and Oregon
  - Most important – Proved existence of South America
- Also gathered specimens and eventually published 19 volumes of documentation of the research trip
Darwin and the H.M.S. Beagle

- Best known of all expeditions because of the Theory of Natural Selection that Darwin developed after studying the data that this expedition gathered
- Darwin was the ship’s Naturalist, commanded by Robert Fitzroy
- Five year voyage circling the earth studying the southern oceans
Route of the Beagle

- Explored the South American coasts
  - Darwin focused on the varied geology and biology there

- South Pacific Islands
  - Darwin focused on the coral reefs
  - Hypothesized that since corals only grow in shallow warm, lighted waters and reefs extend down deep, the coral must grow up from base as the sea floor sinks
  - This became his first published work: *Structure and Distribution of Coral Reefs*
    - This is the explanation accepted today
The Challenger Expedition - 1872

- First Expedition devoted entirely to Marine Science!!!
- 4 year mission to gather detailed and consistent observations of various oceanographic phenomena
  - All 4 branches were used
- Documented temp., currents, water chemistry, marine organisms, and marine bottom sediments at 362 spots over 36 million square kilometers
Written reports of accomplishments

Took 23 years to complete

- 29,500 pages, 50 volumes
- 1\textsuperscript{st} systematic plot of currents and temperatures, map of bottom deposits, outlines of main contours of ocean basins, discovery of Mid-Atlantic Ridge and Marianas Trench
- Recorded then-deepest known spot at 8,200 m (26,900 feet)
- Discovered organisms in the deepest parts (not thought life was possible)
- Id’d 4,717 new species
- NASA named 2\textsuperscript{nd} space shuttle in its honor…..