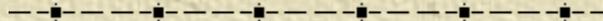




*Overview of Natural
History Studies in Guam*

BI 201 Natural History of Guam
Class Presentation 02





✦ Prior to 1521

- The earliest inhabitants settled in Guam some 4,000 ybp
- To survive, these settlers obviously gained intimate knowledge of the environment and biota over the ensuing 3,500 years
- Unfortunately, that knowledge was transmitted orally, and most of it has been lost

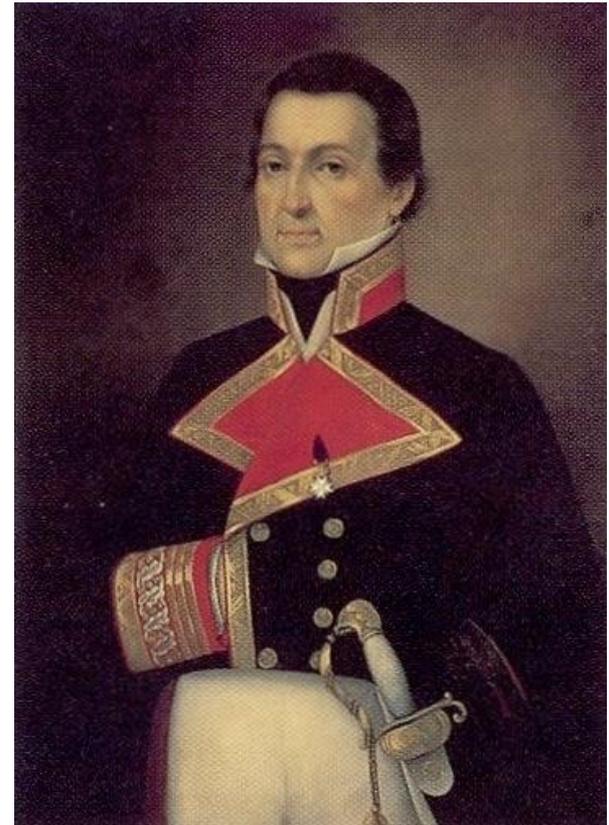
✦ **Early “Discoverers”**
(1521–1790s)

- The first contact with western culture occurred with the arrival of Magellan on March 6, 1521
- Unfortunately, scant attention was given to the physical environment or biota of the island for centuries afterward
 - Why?



Ferdinand Magellan, ca. 1480-1521

- The Spanish Crown's first and only scientific expedition (1789–1794) to the Pacific was led by Capt. Alejandro Malaspina



Alejandro Malaspina, 1754-1810

- 
- Naturalists on the expedition included Antonio Pineda (zoology and geology), Thadaeus Henke and Louis Nee (botany)
 - Pineda made observations along both east and west coasts of Guam, as well as the streams
 - His observations were never published, because he perished in the Philippines

- 
- Henke and Nee collected thousands of plants specimens during the voyage
 - The majority of the specimens were lost when a ship transporting them sank off Lima, Peru, but some 20,000 specimens are deposited in museums and herbaria in Europe
 - Most of Henke's specimens are in Prague and Nee's specimens are in Madrid

✦ **Period of Scientific
Exploration (19th
Century)**

- Several Russian vessels visited Guam in the early 1800s
 - The Romanzoff Expedition (1815–1818) in the brig *Rurik* under the command of Capt. Otto von Kotzebue visited Guam in 1817



Otto von Kotzebue, 1787-1846

- 
- Naturalists on board were von Chamisso (botanist) and Eschscholtz (entomologist)
 - » They reported on the geology of the island and the coral reefs
 - » Botanical collections are at St. Petersburg, Russia and Kew, England

- 
- The Russian ship *Senyavin*, captained by Capt. Feodor Petrovich von Lutke, visited Guam in 1828
 - Friedrich Heinrich Freiherr von Kittlitz (ornithologist) collected bird specimens from the island

- 
- French explorations also made port calls in Guam during the early 1800s
 - The Freycinet Expedition (1817–1820), in the corvettes *Uranie* and *Physicienne* under the command of Louis Claude de Saulces de Freycinet, visited Guam in March 1819
 - Naturalists on board were Gaudichaud-Beaupré (botanist) and Quoy and Gaimard (zoologists)

- **Dr. Jean René Constant Quoy** and **Dr. Joseph Paul Gaimard** were actually the ships' medical officers



Jean René Constant Quoy

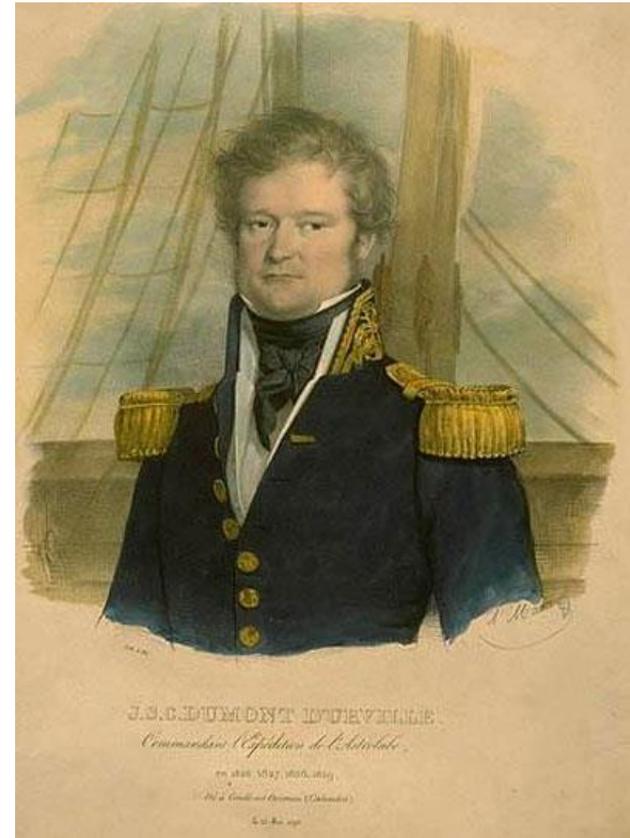


Joseph Paul Gaimard

- » Quoy and Gaimard described many species from Guam that were new to science, including the first marine invertebrates and land snails
- » The marine invertebrates included gastropods, salps, corals, sponges, and crabs
- » Most notable were the coconut crab *Birgus latro* [= *Pagurus latro*] and the blue coral *Heliopora coerulea* [= *Pocillopora coerulea*]

- 
- Gaudichaud-Beaupré named many species in Guam after Don José Torres, who lived in Guam at the time, e.g.,
Alyxia torresiana
 - » Gaudichaud-Beaupré named the genus *Medinilla* for José de Medinilla y Pineda, the Governor at the time
 - » Gaudichaud-Beaupré's specimens are in the national museum of France

- Voyage of the *Astrolabe* (1826–1829)
 - In May 1828 the French corvette *Astrolabe*, under the command of Capt. Jules Sébastien César Dumont D’Urville, visited Guam



César Dumont D’Urville, 1790-1842

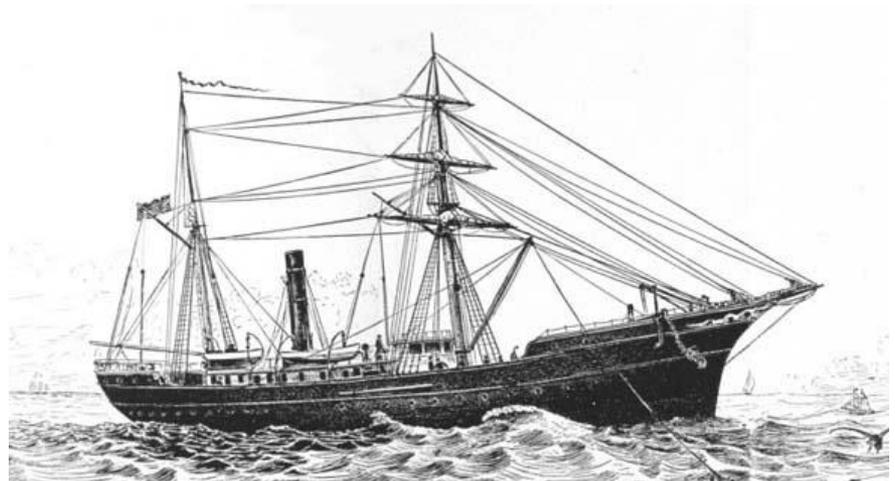
- 
- » Naturalists on board included Quoy and Gaimard (their second visit to Guam) and Lesson (botanist)
 - » The botanical specimens are in Paris
 - Voyage of the *Astrolabe* and *Zélée* (1837–1840)
 - In January 1839, Dumont D'Urville returned to Guam with the French corvettes *Astrolabe* and *Zélée*
 - » Naturalists on board included Hombron, Jacquinot, and Le Guillou, botanists all
 - » Their specimens are in Paris

- 
- The Frenchman Alfred Marche spent two years, 1887–1889, collecting plants in the Marianas
 - Marche was the first to make botanical collections in the northern Mariana islands
 - He also collected molluscs, insects, fishes, and lizards

✦ 1900s to World War II

- Voyage of the *Albatross* (1899–1900)
 - The U.S. Fish Commission steamer *Albatross* visited Guam in February 1900

The Fisheries Steamer *Albatross* discovered hundreds of marine species during its expeditions throughout the world. (NOAA Photo Library)



- 
- The visit was a leg of the “expedition to the tropical Pacific 1899-1900” at the request of President Roosevelt
 - Alexander Agassiz described the geology of Guam and photographed elevated limestone at Cabras Island and volcanic hills above Agana
 - His collection of natural history specimens was limited, with only one species of crab (= ghost crab *Ocypode ceratophthalma*) and one species of sea cucumber (= balate *Holothuria scabra*) recorded from Guam, the latter in error

- 
- Under the American administration, several individuals produced monographs on island biota
 - Lt. William E. Safford, serving as Lt. Governor 1899–1900, explored much of the island
 - With the assistance of Padre Palomo, Safford was able to add many species to known flora of the island, many known to him only by the Chamorro name
 - Safford published “*The Useful Plants of Guam*”, which includes notes on invertebrates and reefs

- E.D. Merrill's botanical studies
 - Merrill was the botanist at the Bureau of Science in Manila at the time
 - Merrill received assistance from colleagues and friends who collected specimens for him in Guam
 - Merrill published his studies in “*An Enumeration of the Plants of Guam*” in 1914 and “*Additions to the Flora of Guam*” in 1919

- Bishop Museum collections
 - Alvin Seale collected zoological specimens in Guam in 1900
 - » He collected fishes, crustaceans, echinoderms, and one soft coral
 - Hans G. Hornbostel collected specimens for Bishop Museum while stationed in Guam 1922–1928
 - » Although mostly interested in archaeology, he made invertebrate collections for the museum
 - E.H. Bryan, Jr. collected for Bishop Museum in the 1930s
 - » Bryan studied marine and terrestrial ecosystems in Guam and elsewhere in Micronesia
 - » He reported on his some of his studies in the *Guam Recorder*

- Pacific Vegetation Project

- The U.S. Army Corps of Engineers initiated a number of surveys in Micronesia following the end of World War II.
- A field party composed of members of the U.S. Corps of Engineers, U.S. Army, and U.S. Geological Survey were on Guam between 1951 and 1954.
 - » They produced the “Military Geology of Guam” (Tracey et al. 1959) and a series of studies assembled in Geological Survey Professional Paper, Volume 403.
 - » Chapter A was the general geology of Guam (Tracey et al. 1964); Chapter B, the marine geology (Emery 1962) primarily covered Cocos Lagoon floor, channels, reef surface, beaches, and rocky shores.
 - » Of special note was extensive work on the rimmed terraces with list of species collected from the rims.
 - » Chapter E is the larger Foraminifera (Cole 1963); and Chapter G, the fossil and Recent calcareous algae (Johnson 1964).

- Challenger Deep dive

- On January 23, 1960 the U.S. Navy Bathyscaph *Trieste* with Lt. Don Walsh and Jacques Picard descended to the bottom of the Challenger Deep, 200 miles southeast of Guam in the Mariana Trench, to a depth of 35,800 ft (11,033 m).
- Although they did not collect any biological specimens, they did observe a single flounder during the twenty minutes they rested on the bottom.
- This remains the deepest manned-vehicle dive on record

- 
- University of Guam studies
 - Ben Stone's *Flora of Guam* in 1970
 - Marine Laboratory opened in December 1970
 - » *Marine Biodiversity of Guam* in 2003
 - » Terrestrial biodiversity volume in preparation