

Zoogeography

Lesson 3

The Development of Ecological Biogeography

1. Ecological zoogeography began with the simple observations of men such as Linnaeus, who recorded in what **type of environment** each plant was found.



2. Forster recognized **latitudinal** gradients of diversity



3. later matched by Humboldt's **altitudinal** gradients

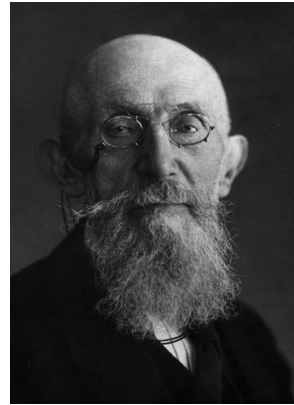


4. Candolle pointed out the importance of competition in limiting the distribution of plants

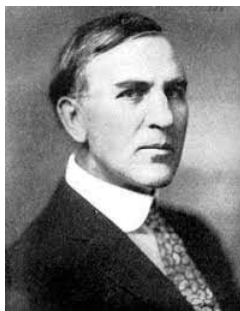


In 1888: The first clear and simple system of categorizing the different types of vegetation by the German botanists Hermann Wagner and Emil von Sydow

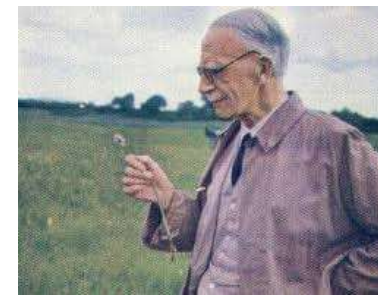
They recognised 9 out of 10 categories that are still commonly used (only the Mediterranean type of scrubland was not identified)



In 1916: Clements and Shelford introduced the term Biome as plant formation with the addition of its animals.



In 1935: Tansley added the climatic and soil aspects of the complex, calling it an ecosystem, which became the basic unit of ecology.

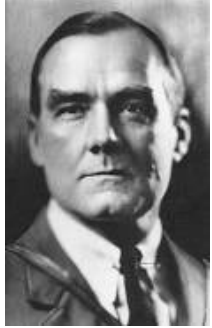


Marine biogeography

The biogeography of the oceans is similar to that of the continents because it is concerned with the biota of vast areas of the surface of the globe.



but it is also very different because of the nature of the environment and of the organisms that it contains.



1853: James Dana, published a brief paper where he divided the surface waters of the globe into several different zones based on their **mean minimum temperature**.



1856: Edward Forbes published the first comprehensive work, recognizing five depth zones and 25 faunal provinces along the coasts of the continents. He was the first to recognize the enormous Indo-Pacific faunal region; stated that the coastal faunas varied according to the nature of the coast, seabed, local currents and depth; and placed the **25 faunal provinces** in **nine latitudinal belts**.

1911 **Atlas of Zoogeography** assembled by three British zoologists (John Bartholomew, William Clark and Percy Grimshaw).

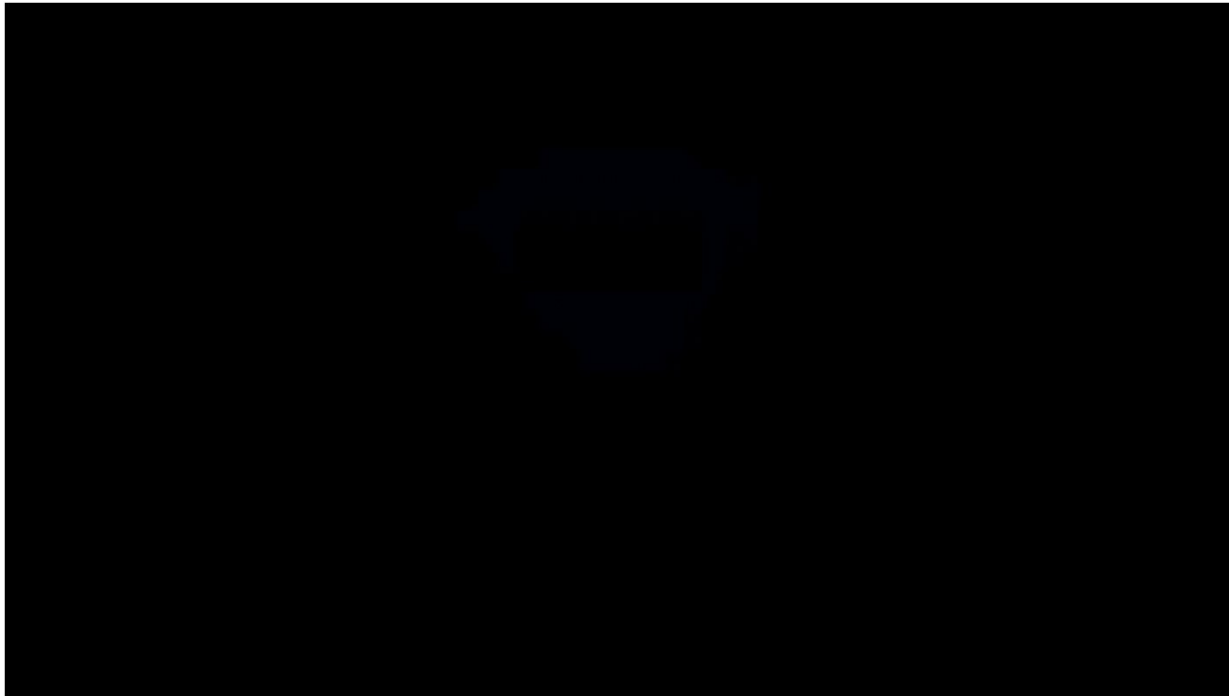
Their 30 maps of the distributions of fishes were based on the patterns of distribution of 27 families.



1953: influential review and synthesis of all the relevant literature was carried out by the Swedish worker Sven Ekman.

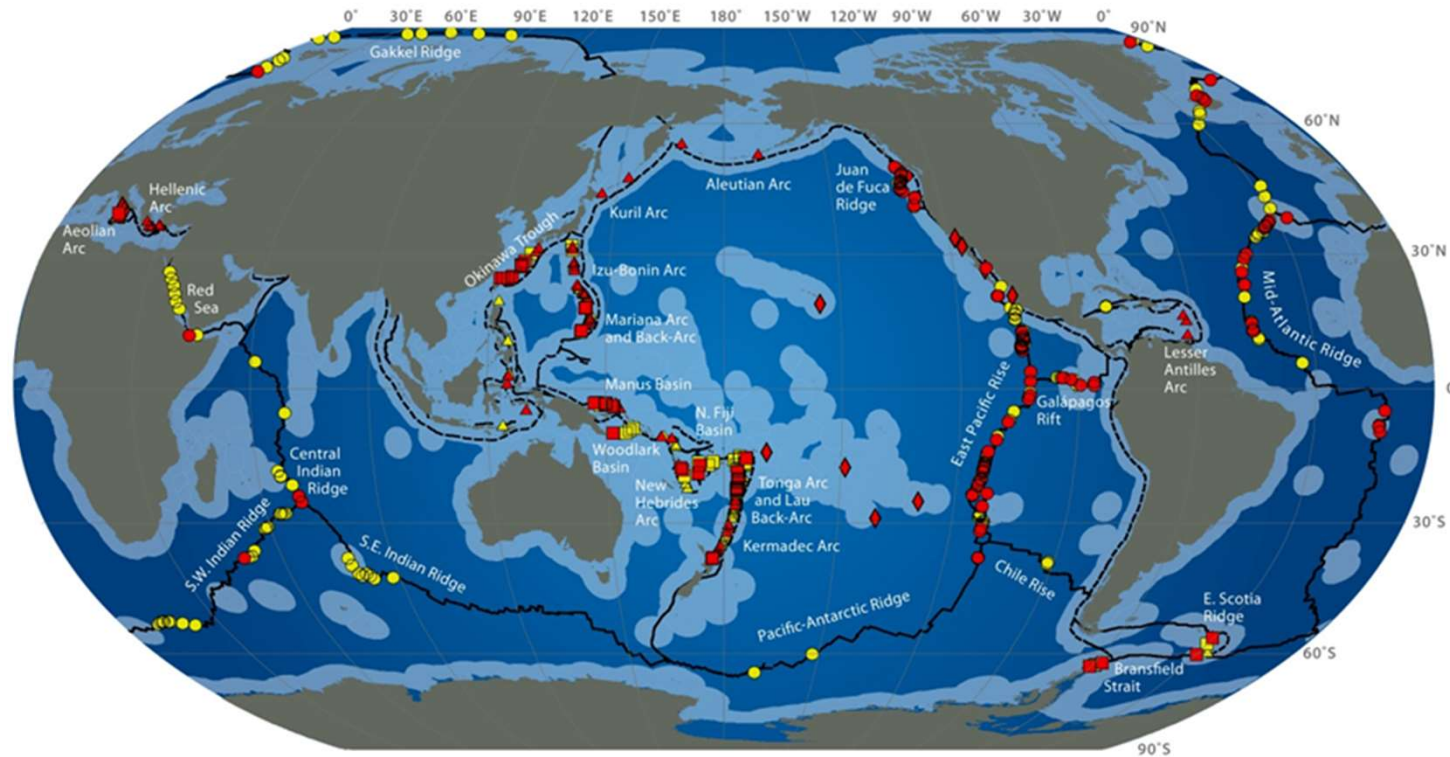
This divided the faunas of **the shallow seafloors** into **seven** (mainly climatic) **areas**, and included the recognition of the unity of the faunas of the Indian and West Pacific oceans, as well as the unity of the faunas of the East Pacific and Atlantic oceans.

The greatest of the more recent advances in our knowledge of marine biogeography have come partly from our increasing ability to explore the depths of the sea but also, surprisingly, from our ability to establish sensing and recording satellites in space.



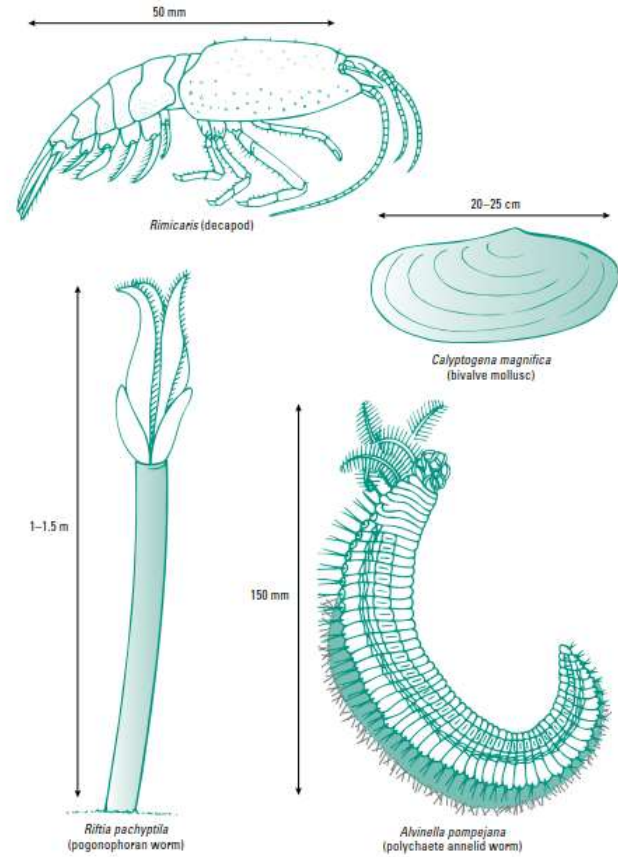
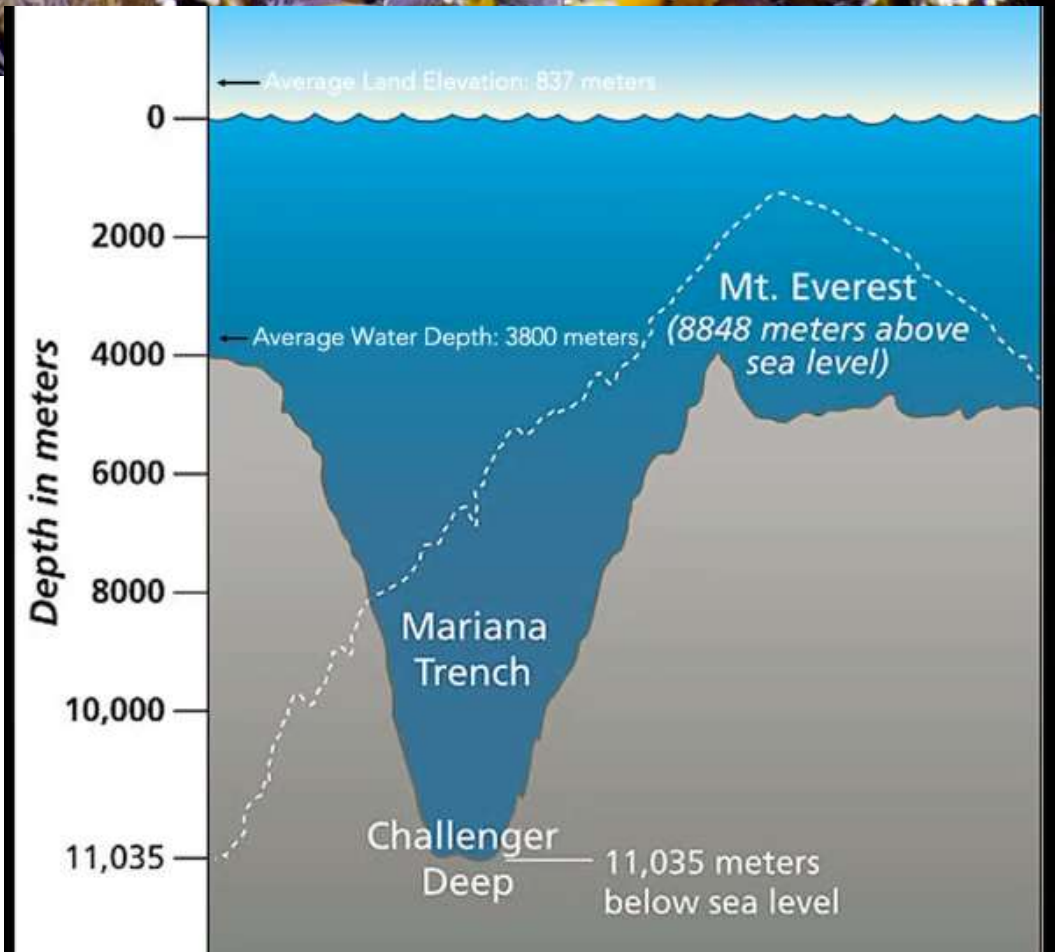
Our now-possible journeys into the deepest part of the oceans led to the discovery in 1977 of what is probably the last of the ecosystems of the world to be found, as well as perhaps the weirdest – the strange hydrothermal vent faunas.

Global Distribution of Hydrothermal Vent Fields



Mid-ocean ridge	Arc volcano	Back-arc spreading center	Intra-plate volcano & Other	Ridge & Transform
● Active	▲ Active	■ Active	◆ Active	— Trench
● Unconfirmed	▲ Unconfirmed	■ Unconfirmed	◆ Active	● Exclusive Economic Zones





Video on Vimeo

<https://vimeo.com/85247595>