

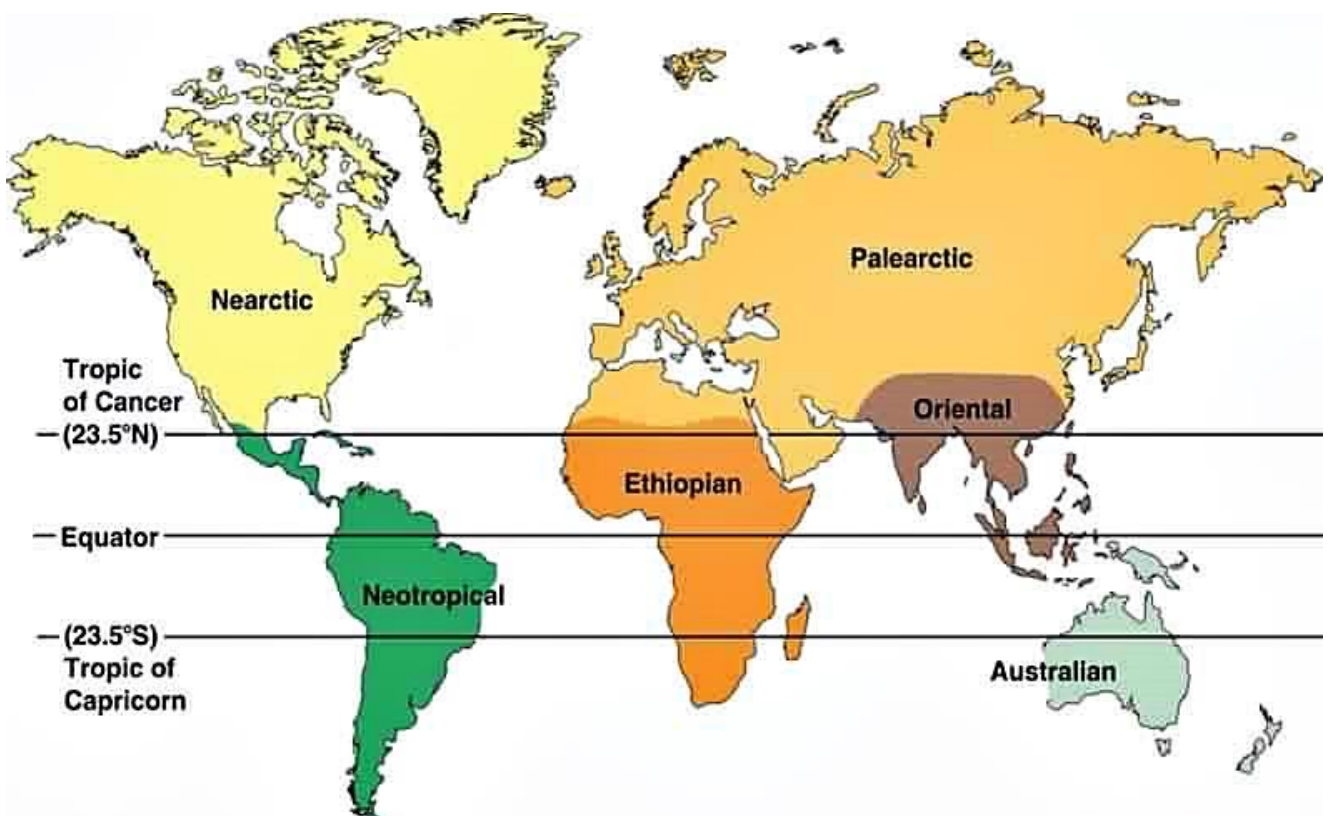
Paper – 6.1

Ecology, Zoogeography and Wildlife Biology

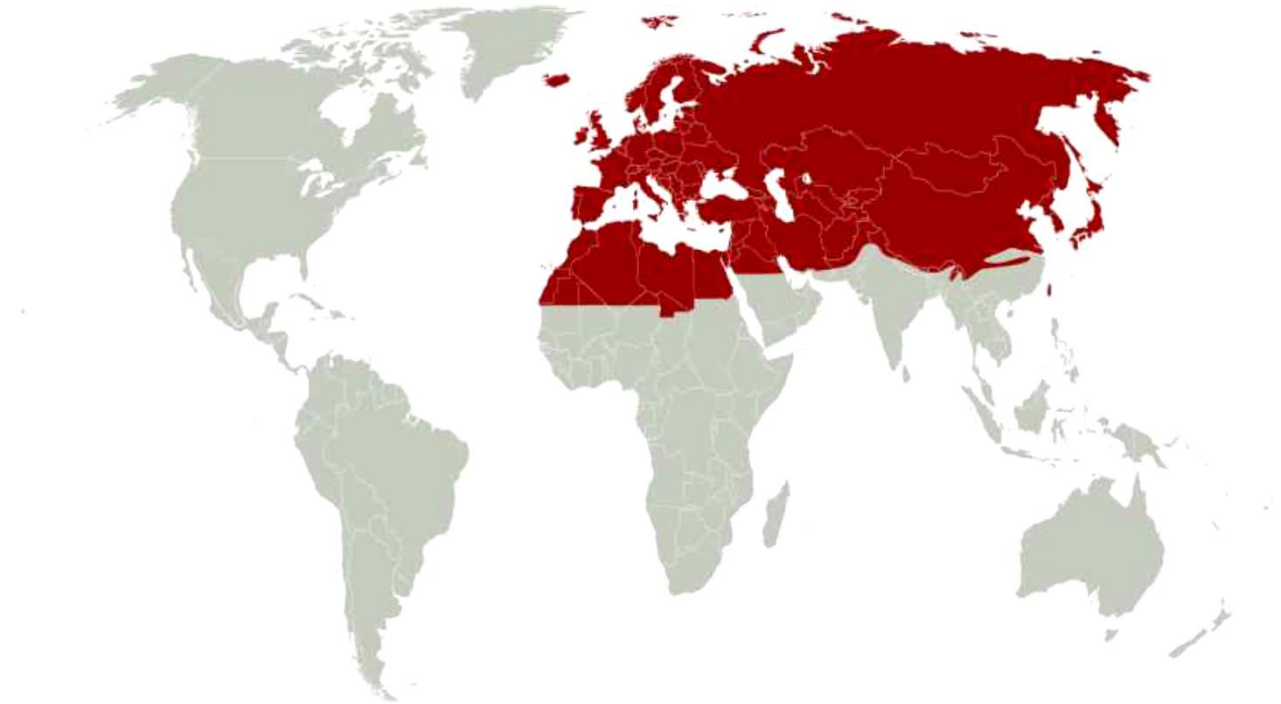
Unit – 9, ZOOGEOGRAPHY

“Branch of biology concerned with the distribution of all the animals, invertebrates and vertebrates, the terrestrial and aquatic, over the whole world.

- On the basis of presence and absence of several organisms, the earth can be divided into some regions. These regions are called realms.
- Several scientists proposed several scheme of realms.
- P. L. Sclater (1857) divided the geographical areas of the Earth into six parts, on the basis of the distribution of birds.
- Alfred Russel Wallace in 1876 published a paper on zoogeographical realms and retained the ‘six area concept’ of Sclater, but included the terrestrial vertebrates and invertebrates.
- The only change, he made was in renaming the Indian region of Sclater to Oriental region.
- Philip Sclater (1857) and Alfred Wallace (1876) identified the main zoogeographic regions of the world used today-
 1. Palearctic region
 2. Nearctic region
 3. Neotropical region
 4. Ethiopian region
 5. Oriental region
 6. Australian region



PALAEARCTIC REGION:



A. Geographical Boundary:

Geographically this realm consists of whole of Europe, Northern part of Africa and Asian Himalaya and Nanling range of China.

B. Sub-divisions:

This realm is further divided into four sub-divisions by Wallace.

- (i) European Sub-region
- (ii) Mediterranean Sub-region.
- (iii) Siberian Sub-region
- (iv) Manchurian Sub-region

C. Climatic Condition:

Extreme cold of Siberia and extreme hot of Sahara desert are characteristic climate of this region.

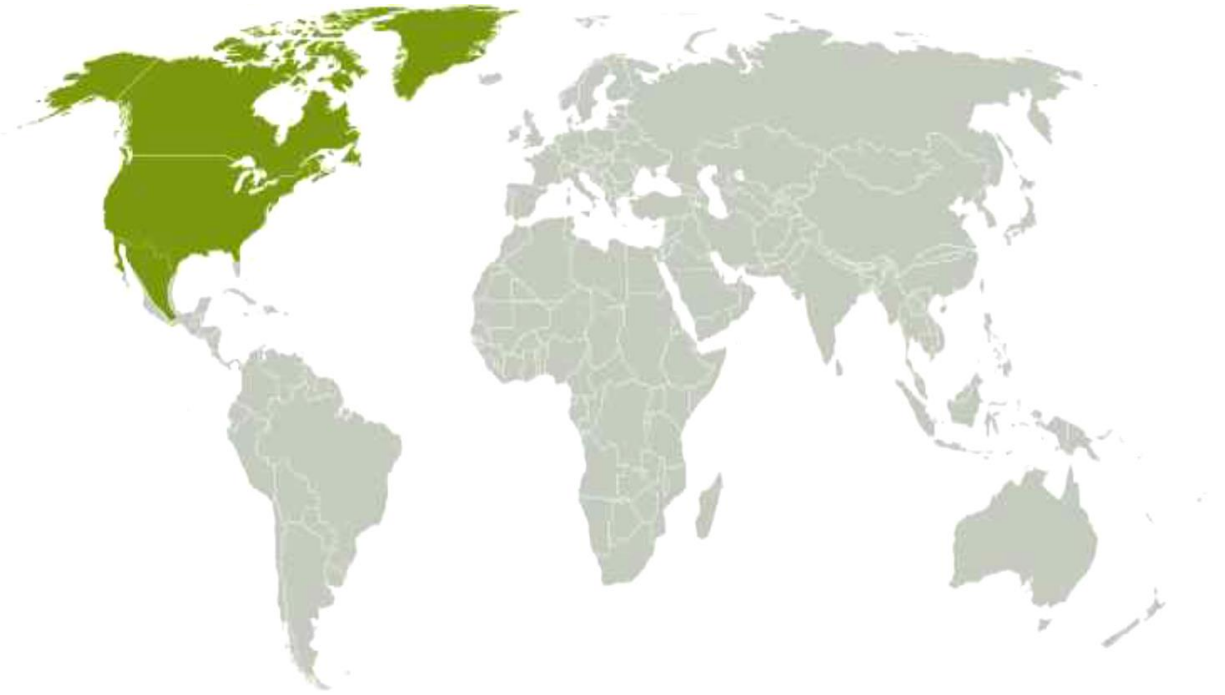
D. Ecological Condition:

Deciduous forest, large grass land, coniferous forest and mixed forest. Tundra area is also present in this region.

E. Characteristic Vertebrate Fauna:

- (i) **Fish:** Carp, Salmon, Pike are common in freshwater of this region
- (ii) **Amphibia:** European Salamander, Proteius, Hynobius etc.
- (iii) **Reptiles:** Sand boa, lizard – Trigonophis and Alligator.
- (iv) **Birds:** Arctic tern, pheasant, wrens, finches, warblers, geese etc.
- (v) **Mammals:** Porcupine, dog, wild ass, European bison, polar cat, deer, etc.

NEARCTIC REGION:



A. Geographical Boundary:

This region consists, on its north the entire of North America, in south up to Mexico, in East Greenland and in west Aleutian islands.

B. Sub-divisions:

It is also sub-divided into four sub-regions.

(i) Californian Sub-region:

(ii) Rocky Mountain Sub-region:

(iii) Allegheny Sub-region:

(iv) Canadian Sub-region:

C. Climatic Condition:

Like Palaearctic region it is also has extreme cold and hot climate.

D. Ecological Condition:

Deciduous forest range, huge grass land, coniferous forest, dry land and Tundra regions are prominent ecological zonations.

E. Characteristic Vertebrate Fauna:

(i) **Fishes:** Lepisosteus, Polydon, and varieties of perchs etc.

(ii) **Amphibia:** Siren, Amphiuma, Ambystoma, Ascaphys and Axolotl larva.

(iii) **Reptiles:** Conophis, Pituophis, Phrynosoma, etc.

(iv) **Birds:** Turkey, pelican, cuckoo, pigeon etc.

(v) **Mammals:** Didelphis, Armadillo, srew, mole, bear, wolf, monkey, deer, bat etc.

NEO-TROPICAL REGION:



A. Geographical Boundary:

Includes South and central America lower Mexico and West Indies . This region is connected with Nearctic region by central American isthmus and other parts bordered by the sea.

B. Sub-divisions:

This is also sub-divided into four sub-regions:

- (i) Chilean Sub-region
- (ii) Brazilian Sub-region
- (iii) Mexican Sub-region
- (iv) Antillean Sub-region

C. Climatic Condition:

Most parts of this region is covered by tropical dry lands. Only southern part of America experiences temperate climate.

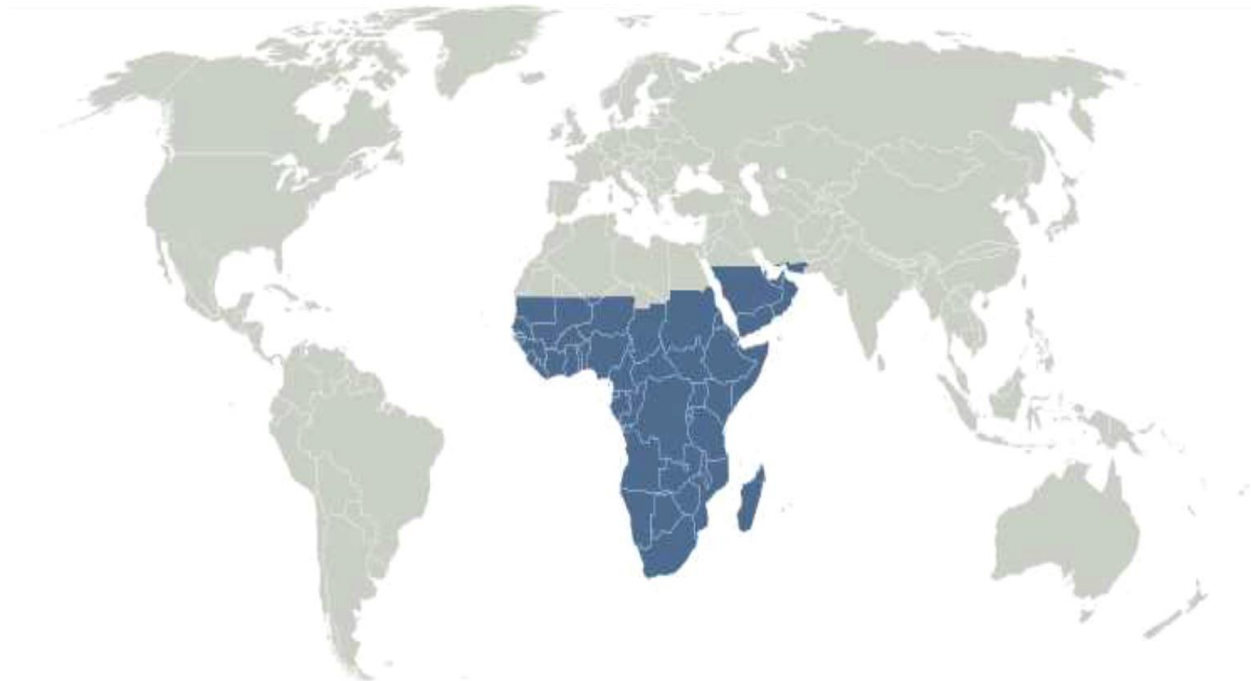
D. Ecological Condition:

In the Amazon valley there is tropical rain forest. Temperate region , dry and has desert like ecosystem are found. Argentina comprises mostly of grassland.

E. Characteristic Vertebrate Fauna:

- (i) **Fishes:** Lepidosiren, eel, catfish, etc.
- (ii) **Amphibia:** Caecilia, Siphonopsis, Hyla, Salamander, frog, toad, etc.
- (iii) **Reptiles:** Dromicus, Boa, Gecko, Alligator etc.
- (iv) **Birds:** Rea, tenemus, screamus, parakeet.
- v) **Mammals:** Opossum, sloth, armadillo, rodents, American tapir, bat, spider monkey, lama, etc.

ETHIOPIAN REGION:



A. Geographical Boundary:

It consists of southern part of the Tropic of cancer, most of the African mainland, southern part of Arabia and Madagascar.

B. Sub-divisions:

It is also sub-divided into four sub-regions.

- (i) East African Sub-region
- (ii) West African Sub-region
- (iii) South African Sub-region
- (iv) Malagasy

C. Climatic Condition:

Mainly temperate in most of the areas, but remains hot during most time of the year.

D. Ecological Condition:

The areas on the equinoctial line and West Africa possess rain forest along the sides of large rivers. Most of the other parts are dry deciduous forest. Northern and Southern parts are transformed into desert.

E. Characteristic Vertebrate Fauna:

- (i) **Fishes:** Cat fishes, lung fishes etc.
- (ii) **Amphibia:** Xenopus and several sp.of caecilians are present. Absence of group caudata.
- (iii) **Reptiles:** Ramnophis, Monotrophis, Cordylus,etc.
- (iv) **Birds:** Ostrich, cuckoo, kite, pigeon, hornbill, etc.
- (v) **Mammals:** Zebra, gorilla, antilope, etc.

ORIENTAL REGION:



A. Geographical Boundary:

Most of the Asian countries which are situated at the southern side of Himalaya are included in this realm. India, Burma, Indo-China, Malay, Sumatra, Java, Bali, Borneo and Filipines, etc. are within this realm.

B. Sub-divisions: It is composed of four subregions.

(i) Indian Sub-region: The divisions are as follows:

- Dry and semidry area of Northern India
- Ganga plateau and area above 20° latitude
- Southern India below 20° latitude
- Western side of Himalaya
- Southern part of Burma
- Plateau of Ganges
- Tribankur
- Ceylon
- Nicobar islands
- Andaman islands

(ii) Ceylonese Sub-region:

(iii) Indo-Chinese Sub-region:

(iv) Indo-Malayan Sub-region:

C. Climatic Condition:

Most part experience temperate atmosphere. Annual rainfall more than 1500 mm.

D. Ecological Condition:

Eastern part contains dense rain forest. Western part possess a desert. Other parts are having moderate forest.

E. Characteristic vertebrate fauna:

(i) **Fishes:** Carp, Notopteridae, Osteoglocid, cipriniformes etc.

(ii) **Amphibians:** Anurans, salamanders and caecilians etc.

(iii) **Reptiles:** Viper, pit viper, kraits, gekko, varanus, etc..

(iv) **Birds:** Pigeons, finches, pheasants, peacock, saras, etc..

(v) **Mammals:** Srew, rabbit, dog, cat, boar, rodents, flying lemur, elephants, ox, tiger, orangutan, gibbon, tapir, pangolin, Rhinoceros unicorns, etc.

AUSTRALIAN REGION:



A. Geographical Boundary:

Australia, New Zealand, New Guinea, Tasmania and some islands of adjacent areas are included in this realm.

B. Sub-divisions:

This is divided into four sub-regions.

- (i) Austro-Malayan Sub-regions:
- (ii) Australian Sub-region:
- (iii) Polynesian Sub-region:
- (iv) New Zealand Sub-region:

C. Climatic Condition:

Both hot and temperate climate. Average rainfall 75 mm.

D. Ecological Condition:

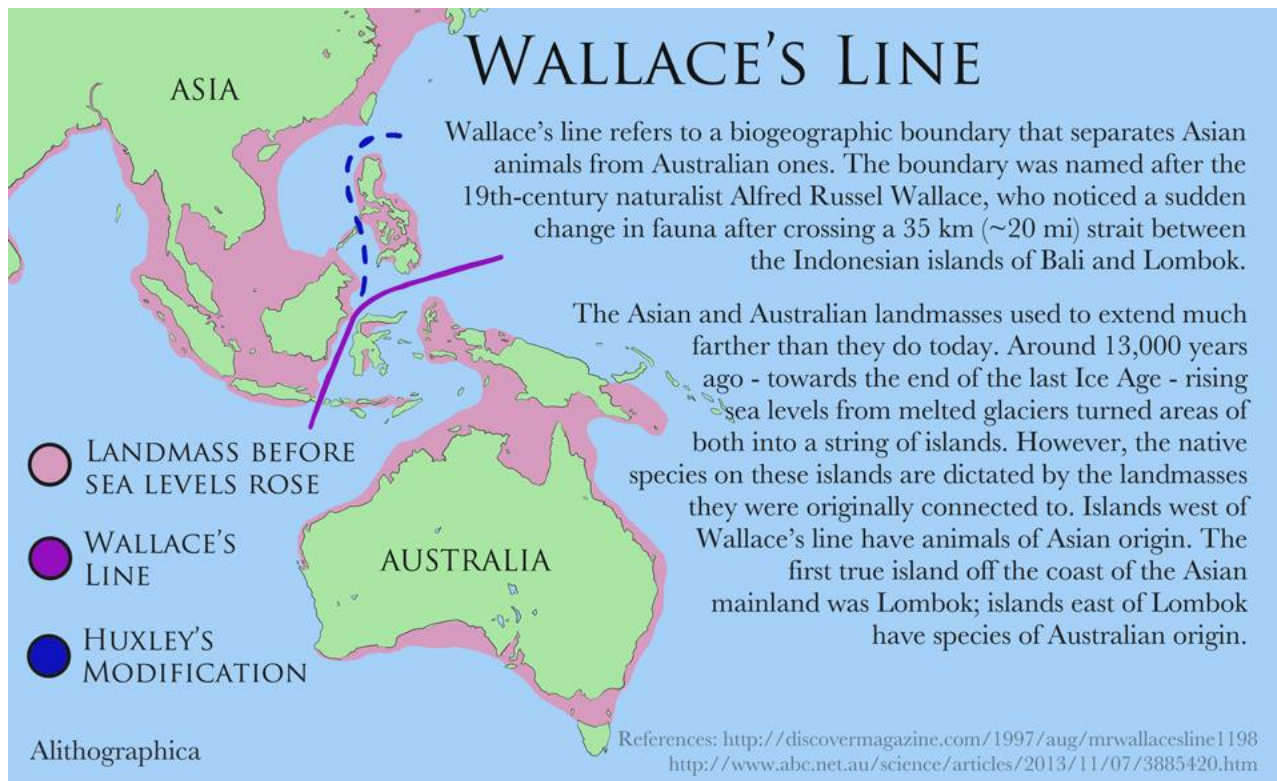
Rain forest, grassland, eucalyptus forest are prominent ecological characters.

E. Characteristic Vertebrate Fauna:

- (i) **Fishes:** Neoceratodus Lung fish, Osteoglossos, Gadopidae, etc.
- (ii) **Amphibia:** Xenorhinidae family is present in New Guinea only.
- (iii) **Reptiles:** Sphenodon the famous relict of reptiles present in New Zealand etc.
- (iv) **Birds:** Casuary, emu, kiwi, scrub, bawar etc.
- (v) **Mammals:** Ornithorhynchus, Tachyglossus ,Kangaroo etc..

Wallace's Line

Alfred Russell Wallace (1823-1913) is probably the most famous person that most people have never heard of. He was a 19th century naturalist who, independently of Charles Darwin, "discovered" the theory of evolution. Wallace's hypothesis was based on observations from islands in the Indonesian archipelago. He noted a distinct divide between the fauna of the western islands, with animals largely of Asian origin, and that of the eastern portion where animals were Australasian. Today this dividing line bears his name: the "WallaceLine."



The Wallace Line is an imaginary boundary that runs between Australia and the Asian islands and the mainland. This boundary marks the point where there is a difference in species on either side of the line. To the west of the line, for instance, all of the species are similar or derived from species that are found on the Asian mainland. To the east of the line, there are many species of Australian descent. Along the line is a mix of the two, where many species are hybrids of the typical Asian species and the more isolated Australian species.

The Wallace Line theory holds true for both plants and animals, but it is much more distinctive for the animal species than the plants.

The Wallace Line does not actually exist in reality. It is an imaginary line that intersects the Lombok Strait between the Indonesian islands of Bali and Lombok to the south, and extends north through the Makassar Strait between Kalimantan (Borneo) and Sulawesi.