

Biogeography: The Distribution of Species and Ecosystems

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Abstract

Biogeography is the study of the distribution of species and ecosystems in geographic space and through geological time. Organisms and biological communities often vary in a regular fashion along geographic gradients of latitude, elevation, isolation and habitat area. Phytogeography is the branch of biogeography that studies the distribution of plants. Zoogeography is the branch that studies distribution of animals.

Knowledge of spatial variation in the numbers and types of organisms is as vital to us today as it was to our early human ancestors, as we adapt to heterogeneous but geographically predictable environments. Biogeography is an integrative field of inquiry that unites concepts and information from ecology, evolutionary biology, geology, and physical geography

Keywords— Phytogeography, Geography, Zoogeography, Organisms, Environment, etc.

INTRODUCTION:-

Biogeography is a synthetic science, related to geography, biology, soil science, geology, climatology, ecology and evolution.

Some fundamental concepts in biogeography include:

- evolution – change in genetic composition of a population
- extinction – disappearance of a species
- dispersal – movement of populations away from their point of origin, related to migration
- geodispersal – the erosion of barriers to biotic dispersal and gene flow, that permit range expansion and the merging of previously isolated biotas
- range and distribution
- vicariance – the formation of barriers to biotic dispersal and gene flow, that tend to subdivide species and biotas, leading to speciation and extinction.

COMPARATIVE BIOGEOGRAPHY:-

The study of comparative biogeography can follow two main lines of investigation

- Systematic biogeography is the study of biotic area relationships, their distribution, and hierarchical classification;
- Evolutionary biogeography is the proposal of evolutionary mechanisms responsible for organismal distributions. Possible mechanisms include widespread taxa disrupted by continental break-up or individual episodes of long-distance movement.

MODERN APPLICATIONS OF BIOGEOGRAPHY:-

Biogeography now incorporates many different fields including but not limited to physical geography, geology, botany and plant biology, zoology, and general biology. A biogeographer's main focus is on what environmental factors and what the influence of man does to the distribution of the specific species of study. In terms of applications of biogeography as a science today, technological advances have allowed satellite imaging.

PHYTOGEOGRAPHY:-

Phytogeography is the branch of biogeography that is concerned with the geographic distribution of plant species and their influence on the earth's surface. Phytogeography is concerned with all aspects of plant distribution, from the controls on the distribution of individual species ranges (at both large and small scales, see species distribution) to the factors that govern the composition of entire communities and floras.

Geobotany, by contrast, focuses on the geographic space's influence on plants. The basic data elements of phytogeography are occurrence records (presence or absence of a species) with operational geographic units such as political units or geographical coordinates. These data are often used to construct phytogeographic provinces (floristic provinces) and elements.

ZOOGEOGRAPHY:-

Zoogeography is the branch of the science of biogeography that is concerned with the geographic distribution (present and past) of animal species.

Biogeography is most keenly observed on the world's islands. These habitats are often much more manageable areas of study because they are more condensed than larger ecosystems on the mainland. Islands are also ideal locations because they allow scientists to look at habitats that new invasive species have only recently colonized and can observe how they disperse throughout the island and change it. They can then apply their understanding to similar but more complex mainland habitats. Islands are very diverse in their biomes, ranging from the tropical to arctic climates. This diversity in habitat allows for a wide range of species study in different parts of the world.

The short-term interactions within a habitat and species of organisms describe the ecological application of biogeography. Historical biogeography describes the longterm, evolutionary periods of time for broader classifications of organisms. Early scientists, beginning with Carl Linnaeus, contributed theories to the contributions of the development of biogeography as a science. Beginning in

the mid-18th century, Europeans explored the world and discovered the biodiversity of life. Linnaeus initiated the ways to classify organisms through his exploration of undiscovered territories.

DIASPORA:-

A diaspora is a scattered population with a common origin in a smaller geographic area. Diaspora can also refer to the movement of the population from its original homeland. Diaspora has come to refer particularly to historical mass dispersions of an involuntary nature, such as the expulsion of Jews from Judea, the fleeing of Greeks after the fall of Constantinople, the African Trans-Atlantic slave trade, the southern Chinese or Hindus of South Asia during the coolie trade, and the deportation of Palestinians in the 20th century. And the exile and deportation of Circassians.

POPULATION GEOGRAPHY:-

Population geography is a division of human geography. It is the study of the ways in which spatial variations in the distribution, composition, migration, and growth of populations are related to the nature of places. Population geography involves demography in a geographical perspective. It focuses on the characteristics of population distributions that change in a spatial context. Examples can be shown through population density maps. A few types of maps that show the spatial layout of population are choropleth, isoline, and dot maps.

Population geography studies:

- Demographic phenomena (natality, mortality, growth rates, etc.) through both space and time
- Increase or decrease in population numbers
- The movements and mobility of populations
- Occupational Structure
- The way in which places in turn react to population phenomena e.g. immigration

Research topics of other geographic sub-disciplines, such as settlement geography, have also a populationgeographic dimension:

- Grouping of people in settlements
- The way from the geographical character of places e.g. settlement patterns

All of the above are looked at over space and time.

Birth rate:-

Some factors that influence the birth rate are how educated women are, availability of birth control, religious beliefs, economic background of the parents, and infant mortality rate. Studies show that the more education that a women has, the less children they have. Availability of birth control pills and condoms decreases the birth rate, but only if the user knows how to use these methods of birth control properly. Some religions believe in abstinence, places where these religions are prevalent will have lower birthrates. Also, some religions do not believe in abortion, in places where this belief is strong birth rates may be higher because people keep unplanned pregnancies. In certain parts of the world, people have a lot of children for economic reasons. Children can help bring in money for the family. Children, at a young age, will start working on a family farm or in a family business, helping to provide for the family. Parents want to make sure that they have enough children to take care of them in the future. In countries where the infant mortality rate is high, families will have more children, to make sure some of them outlive their parents and are able to provide for their parents in old age.

It the beginning of the population increase, there were many factors that caused it to grow. With the industrial revolution came advances in agriculture and industry that gave way to individual families being able to afford more children. In addition, increases in our knowledge about nutrition and medicine helped us to have more healthy babies. When women take care of their bodies better, they are more fertile and therefore can have more children. With cures for fatal diseases including antibiotics and vaccines, these children are also able to live longer. Finally, there has been an increase in fertility due to a number of factors including a reduction in the average age at which menarche occurs and an increase in the number of menstrual cycles a woman has in her lifetime. Menarche refers to the age at which a girl has her first period and it has "been systematically falling over the past 100 years and today is about 13 years or less, on average" (Cartledge 38). This means that a womans time of fertility is increasing to include most of her teen years. In addition, as recently as 200 years ago "women in the Western world averaged only 30 menstrual cycles in a life time. Today for women with two children it is nearer to 450" (Cartledge 38). These figures all give women many more opportunities to conceive children in their lifetime.

Conclusion:

Biogeographers seek to develop theories to explain past, present, and changing future composition of plants and animals distribution patterns in order to better understand the processes of how organisms interact with our planet. Biogeography is both interdisciplinary within other subfields of geography as well as other disciplines, such as ecology, geology, and biology. An integrative approach helps biogeographers provide a holistic understanding of the diversity of life and make recommendations for the conservation of biological diversity.

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