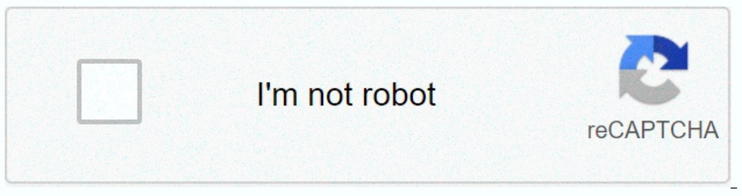


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# Taxonomy worksheet chapter 17

Ch. 17.1 Classification historyBiologists use a classification system to organize information on the diversity of living things. Early systems of classification biologists make it easier to communicate and retain information about organisms when organisms are grouped; biological classification. Classification- grouping of objects or organisms based on a set of criteria. Aristotle's Aristotle system developed the first accepted system of biological classification as a plant or animal. The animals were grouped together by the presence or absence of blood, and were then further grouped by habitat or morphology. The plants were classified by average size and structure: trees, shrubs or herbs. Aristotle's system was useful, but it had limitations. It didn't represent evolutionary relationships, some organisms didn't fit easily. Linnaeus system Swedish naturalist Carolus Linnaeus expanded the Aristotle system and formalized it into the scientific system. Like Aristotle, its system was based on observational studies of morphology and the behaviour of organisms. The first system of taxonomic organization. Taxonomy- the discipline of biology, which primarily refers to the identification, naming and classification of species on the basis of natural relationships. Taxonomy is part of a larger branch of biology called systematics. Systematics are the study of biological diversity with an emphasis on the evolution of history. The binomum nomenclature of the Linnaeus method of denomination of organisms is called the binomum nomenclature and remains valid to this day. Binomal nomenclature- gives each species a scientific name that has two parts. The first part is the name of the genus, the second part is a specific epic or a name that identifies the species. Latin is the basis because it is a non-change language and historically it is used in science and education. Biologists use scientific names for species because common names differ in use. The use of scientific names avoids confusion that can be created by common names. Rules: The first letter of the genus is always capitalized italicized When it is written manually, both parts are underlined When the full written name of the genus is often short on the first letter in later performances. Modern classification systems The study of evolution in the 1800s added a new dimension to the Linnaeus classification system. Today, modern classification systems are still rooted in Linnaeus's tradition, but have been modified to reflect new knowledge of evolutionary foremans. Taxonomic categories taxonomic categories used by scientists are part of the u nesting-hierarchical system, each category contains within the other, and are distributed from widest to most specific. Species and genus Taxa - called a group of organisms. The more properties of the taxon, the more organisms the taxon contains. Genus- a group of species that are closely related and share Ancestor. The family is made up of similar, related generations. Fees are distributed to the hierarchical system. The Higher Tax Order contains related families. The class contains related orders. Phylum or Division- contains related classes. The section is used instead of phytoum in the classification of bacteria and plants. A kingdom made up of a related philosophy or division. The domain- containing one or more realms, is the widest of the tax. System applications Provide field guides, often involving dichotomy keys; key based on the type of choice between alternate characteristics. Systematics identify new species and relationships between known species. Includes: taxonomy, paleontology, molecular biology and comparative anatomy. Knowledge of relationships between species can be important for humans: penicillin and relatives. Ch. 17.2 Modern classification systems have changed over time. Species identification As knowledge increases, species definitions change. Typological type Concept Idea that species are different different groups based on physical similarities. This is based on the idea that species are immutable, different and natural species. The type of instance was the individual who best displayed the characteristics of this species, each difference can be considered a different type. The typological concept of the species has been replaced because we now know that organisms are changing and that some species are turning out to be a major change. The concept of biological species defines a species as a group of organisms capable of intertwining and producing fertile offspring in the natural environment. It has limitations: some organisms, which are different species, can be bred (dog & wolf, many plants). It also does not represent extinct species or asexual species. Phylogenetic Species Concept Phylogeny- evolutionary history of a species. The concept of phytogenetic species defines a species as a cluster of organisms that is separated from other clusters and shows evidence of a pattern of fore-and-down. When a phytogenetic species branches, it becomes two different species. ie: geographical isolation Signs For sorting types scientists often construct patterns of descent or philosophy using characters. Signs- inherited functions that vary from row to species. Common morphological signs indicate that the species are closely related and developed from a recent common ancestor. Morphological signs Analog signs do not show a close evolutionary relationship, homologous signs may perform different functions, but show an anatomical similarity, inherited from the common ancestor. Biochemical signs of amino acids and nuclear nucleotides are used to help determine evolutionary relationships between species. The chromosomal structure and number are also used to determine the similarity of species. Organisms may be very different, but they have similar chromosomal structures. DNA and analyses are also used. The higher the number of sequences of common DNA between species, the greater the number of common genes - and the greater the evidence that the species has a recent common ancestor. Phylogenetic Reconstruction Cladistics- a method that sorts organisms in the order that have been cast from the common ancestor. Character types Two main types of characters when analyzing the hammerhead. The character of the ancestors is located in the entire type of descent of the group of organisms. Derived characters are present in members of one row group, not in the common ancestor. Kladograms The systemists for the klavdogram use derived characters. A hammer-branch diagram that represents the proposed philosophy or evolution of the history of a species or group. The groups in the cladograms are called cladograms, and it is one branch of the kladogram. Kladogram Outgroup is a species or group of species that has more predeacuation marks on the kladogram than other organisms. The kladogram is constructed so that the sequence of sequences in which the derived characters evolved according to the outgroup. The more derived characters that are divided between two organisms, the more recent common ancestor. node; the point of origin of the branches constitute a common ancestor. The cladogram is also called a phytogenetic tree. Charles Darwin's tree of life used the analogy of the tree to suggest that all species evolved from one or a few species. Ch. 17.3 Domains and KingdomsThe widest bioheading system used has six kingdoms in three domains. The classification of species the broadest category in the classification system used by most biologists is a domain. There are three domains: Bacteria, Archaea and Eukarya. Within these domains there are six kingdoms: Bacteria, Archaea, Protista, Fungus, Plantae and Animalia. Organisms are classified into domains according to the type and structure of cells. Organisms are separated into kingdoms by type of cells, structure and diet. This system has been in use for less than three decades. Scientists have discovered a new type of organism in the 1970s; unicellular prokaryotes named archaea. Domain Bacteria Members domain and kingdom bacteria are prokaryoti, whose cell walls contain peptidoglycan. This is a diverse group that can survive in many different environments. Some are aerobic, needing oxygen to survive, others are anaerobic, dying in the presence of oxygen. Some are autotrophicin and produce their own food, most are heterotrophy and produce their diet from other organisms. The domain of archaea this species is said to be more ancient than bacteria and even more associated with the ancestors of eukaryote. Their cell walls do not contain peptidoglycan, they have some of the same proteins as eukaryote. Some are autotrophicins, but most are heterotrophy. It is also called extremophile, because they can live in environments: hot springs, salt lakes, spas and muddy marshes. Domain Eukarya Cells with membrane-bound dish and other membrane-bound organelles. It contains the kingdoms of Protista, Fungus, Plantae and Animalia. The Kingdom of Protista Protists- eukaryotic, single-celled, colonial or multicellular. Don't turn on any other realms. Three groups: Plant-like: called algae, autotrophic Animal-like: called protozoans, heterotrophy Fungi are similar: mucus mold and mold, heterotrophy Kingdom Fungi- single cell or multicellular, eukaryote, heterotrophic, lacking motility, have cellular walls chitina. It consists of filaments called hyphae. Some are parasites, some saprobi, feed on dead or decaying organic matter. Secreting digestive enzymes into your food source and then absorbing digested materials directly into their cells. The kingdom of Plantae Multicelular, they have cell walls of cellulose, most have chloroplasts, cells are organized in tissues. Kingdom Animalia Multicellular, heterotrophic, cellless walls, cells are organized, most of it movable. Jekleinic acid viruses surrounded by a protein coat. Don't own cells, they're not considered alive. Thanks for the cooperation! Thanks for the cooperation! Cooperation!