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The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. A food chain is a descriptive diagram including a series ofarrows, each pointing from one species to another, representing the flow offood energy from one feeding group of organisms to another. There are two typesof food chains, they include:Grazing food chainDetritus food chainThe grazing food chain begins with autotrophs whereas thedetritus food chain begins with dead organic matter. In a grazing food chain, energy and nutrientsmove from plants to the herbivores consuming them and to the carnivores oromnivores preying upon the herbivores. In detritus food chain, dead organic matter ofplants and animals is broken down by decomposers e.g bacteria and fungi andmoves to detrivores and then carnivores.A grazing food chain is a food chain in whichthe energy in the lowest trophic level is derived from photosynthesis. In grazing food chains, the first energytransfer is from plants to herbivores. In an aquatic ecosystem, the grazingfood chain is the major conduit for energy flow. However, in a terrestrialecosystem, a much larger fraction of energy flows through the detritus foodchain than through the grazing food chain.In grazing food chain, producers (autotrophs/green plants) serve as a source of food and constitute the first trophic level.Sunlight serves as the main source of energy for grazing food chain.This type of food chain adds energy into the ecosystem.Grazing food chain fixes inorganic nutrients.Grazing food chain involves all macroscopic organisms.Also Read: Difference Between Gross And Net Primary ProductivityA detritus food chain goes from dead organic matter intomicroorganisms and then to organisms feeding on detritus and their predators. Dead organic matter or detritus feedingorganisms are referred to as detrivores or decomposers. The detrivores are eaten by predators.Detritus food chains are found in a variety of places suchas the bottom of lakes and oceans which are too dark to carry outphotosynthesis. Thus, their ecosystems are less dependent on direct solarenergy. Unlike the grazing food chain, the detritus food chain produces a largeamount of energy to the atmosphere.Detritus food chain begins with detritivores (decomposers) that feed on the dead and decaying matter and serves to release the nutrients back into the atmosphere.Energy for detritus food chain comes from the remains of detritus.This type of food chain takes up energy from the detritus, ensuring maximum utilization and minimum wastage.Detritus food chain helps in fixing inorganic nutrients.Detritus food chain involves sub soil organisms, which can be macroscopic or microscopic.Also Read: Difference Between Food Web And Food ChainBASIS OF COMPARISON GRAZING FOOD CHAIN DETRITUS FOOD CHAIN Description In grazing food chain, producers (autotrophs/green plants) serve as asource of food and constitute the first trophic level.Detritus food chain begins with detritivores (decomposers) that feedon the dead and decaying matter and serves to release the nutrients back intothe atmosphere.Main Source Of Energy Sunlight serves as the main source of energy for grazing food chain.Energy for detritus food chain comes from the remains of detritus.Role This type of food chain adds energy into the ecosystem.This type of food chain takes up energy from the detritus, ensuringmaximum utilization and minimum wastage.Importance Grazing food chain fixes inorganic nutrients.Detritus food chain helps in fixing inorganic nutrients.Involves Grazing food chain involves all macroscopic organisms.Detritus food chain involves sub soil organisms, which can bemacroscopic or microscopic.It helps in understanding the feedingrelationship and the interaction between organisms in any ecosystem.It helps us to understand the problemsassociated with biological magnification in the ecosystem.It helps us to appreciate the energy flowmechanism and matter circulation in ecosystem and understand the movement oftoxic substances in the ecosystem.Also Read: Difference Between Autotrophic And Heterotrophic Nutrition Ans: The Grazing Food Chain (GFC) begins with primary producers or plants and finishes with carnivores (tertiary or apex carnivores), whereas the Detritus Food Chain (DFC) begins with dead organic matter and concludes with carnivores. The sun provides energy for the food chain in GFC, whereas organic remnants or detritus provide energy for the food chain in DFC. Ans: Production is the process of generating energy by converting inorganic substances (such as CO, HO, and minerals) into organic compounds using predominantly sunlight. It is used to keep energy in place. Decomposition is the process of breaking down complex organic substances into simpler components. It generates energy. Ans: Inorganic substances or minerals (standing state or standing quality), organic substances, and various environmental circumstances such as temperature, pH, light, and so on are all examples of abiotic components.Components that are biotic or living: Autotrophs, or producers, are individuals who are capable of producing their own nourishment.Consumers who are unable to make their own food and must rely on food produced by other creatures are known as heterotrophs. Ans: The trophic level is a visualization of energy transfer in the food chain between species.Autotrophs, or species that make their own food through photosynthesis, are the lowest trophic level in the grazing food chain. The primary consumers, herbivore creatures such as fish, rabbit, and deer, make up the second trophic level. Secondary consumers, a carnivore that eats herbivores, are the third trophic level. Tertiary consumers are the highest trophic level, a high-level carnivore that eats both primary and secondary consumers, such as lions and tigers. Ans: Abiotic elements such as temperature, latitude, and rainfall have an impact on biotic components such as habitat shape, organism dietary choices, and the existence of top-level species. As a result, changes in abiotic components have an impact on the food chain. A Food chain is the sequence of transfers of matter and energy in the form of food from one organism to another organism. Food chains are connected locally into a food web because most organisms consume more than one type of animal or plant. Plants that convert solar energy to food by photosynthesis are the primary food source. In a predator food chain, a plant-eating animal is usually eaten by a flesh-eating animal. In a parasite food chain, a smaller organism consumes part of a larger host and may be consumed by even smaller organisms. And in a saprophytic food chain, microorganisms live on the dead organic matter.A food chain always starts with the producers and ends with the apex predator.For example, grass insects lizard snake.(Image will be Uploaded Soon)A food chain is of two types, grazing food chain and detritus food chain. There is a lot of difference between the grazing food chain and the detritus food chain, and here we will discuss it in detail.Grazing Food ChainAs we know, the primary source of energy is the Sun. The plants convert the Suns energy into food by the process of photosynthesis. This is the start of the grazing food chain. A food chain where the energy is gained by the organisms is from photosynthesis; it is termed as the grazing food chain.The grazing food chain starts with the green plants as they are the producers and can perform photosynthesis. Then, the energy is transferred from the green plants to the herbivores. In a grazing food chain, the Sun is the ultimate or primary source from which energy transfer takes place.The grazing food chain can be further subdivided into two types:Predator food chain Here, the autotrophs or producers are directly consumed by the herbivores.Parasitic food chain Here, the Herbivores that eat the producers are infected by parasites.The grazing food chain is a type of food chain where the energy transfer is between the lowest trophic levels.Examples of grazing food chain are:Phytoplankton small fish Large FishThe above food chain is an example of an aquatic grazing food chain. Here, we can see that the phytoplanktons which are the aquatic plants are consumed by small fishes which are eaten by large fishes.Grass Deer Lion/Tiger.Here is another example of a grazing food chain that represents the terrestrial animal food chain.Detritus Food ChainIn a detritus food chain, the main source of nutrition is dead plants or animals. The detritus food chain does not depend on solar energy. The organisms that gain their energy from the dead remains of the plants or animals are known as detrivores or decomposers.In a detritus food chain, the energy is first transferred from the dead remains of plants and animals to the decomposers and then it is transferred to the predators feeding on the decomposers.Examples of detritus food chain are:Dead organic matter microorganisms decomposers.Here, the food chain starts with the dead remains of plants and animals, which is consumed by microorganisms such as bacteria or fungi. These microorganisms are eaten by decomposers such as snails, and earthworms, and the decomposers are finally consumed by other large animals.Grazing food chain and detritus food chain have certain differences which we have listed down here.Basis of DifferenceGrazing Food ChainDetritus Food ChainDefinitionA grazing food chain is a food chain that starts with green plants as the main source of energy.A detritus food chain is a food chain that starts with the dead remains of organisms as a main source of energy.Energy SourceThe primary source of energy in a grazing food chain is solar energy.The dead remains of plants and animals act as the primary source of energy for the detritus food chain.Organisms InvolvedThe grazing food chain involves all the macroscopic or sub-soil organisms.The detritus food chain mainly involves microscopic organisms.ImportanceThe grazing food chain releases energy into the ecosystem.The detritus food chain uses a large amount of energy from the environment.First Trophic LevelIn the grazing food chain, green plants form the first trophic level.In the detritus food chain, the first trophic level is occupied by the decomposers.Implications of Grazing Food ChainImplications of the grazing food chain are as follows:Grazing food chain is directly dependent on the flow of solar energy and thus, the gross production of plants might be oxidized during respiration or can be eaten by herbivores or they may die and decay.In the grazing food chain, sunlight energy serves as the primary source of energy.This food chain always adds energy to the ecosystem.The grazing Food Chain helps in the fixation of inorganic nutrients.The grazing Food Chain involves every macroscopic organism.Implications of Detritus Food ChainImplications of the detritus food chain are listed below:Energy for the detritus food chain is from the dead and decomposed matter known as detritus.Detritus food chain acquires energy from detritus, utilizing the detritus to its fullest, with minimum wastage.This food chain helps in solving inorganic nutrients.This food chain includes subsoil species that can be macroscopic or microscopic.In comparison with other kinds of food chains, this food chain has a much larger energy flow in a terrestrial ecosystem.,the free encyclopedia that anyone can edit.117,185 active editors 7,001,904 articles in EnglishThe English-language Wikipedia thanks its contributors for creating more than seven million articles! Learn how you can take part in the encyclopedia's continued improvement.Members of the victorious Blondie crewThe Boat Race 2018 took place on 24March. Held annually, The Boat Race is a side-by-side rowing race between crews from the universities of Oxford and Cambridge along a 4.2-mile (6.8km) tidal stretch of the River Thames in south-west London, England. For the third time in the history of the event, the men's, the women's and both reserves' races were all held on the Tideway on the same day. The women's race saw Cambridge lead from the start, eventually winning by a considerable margin to take the overall record to 4330 in their favour. In the women's reserve race, Cambridge's Blondie (crew pictured) defeated Oxford's Osiris by nine lengths. The men's reserve race was won by Cambridge's Goldie, who defeated Oxford's Isis by a margin of four lengths. The men's race was the final event of the day and completed a whitewash as Cambridge won, taking the overall record to 8380 in their favour. The races were watched by around 250,000 spectators live, and broadcast around the world. (Fullarticle...)Recently featured: Radar, Gun Laying, Mk.I and Mk.IIAndrea NavageroNosy KombaArchiveBy emailMore featured articlesAboutKitty Marion... that Kitty Marion (pictured) was force-fed over 200 times during a hunger strike?... that the North Korean destroyer Choe Hyon is the largest ship constructed for the Korean People's Navy?... that after the release of High and Low, director Akira Kurosawa received telephone calls imitating his film that threatened to kidnap his daughter?... that May Bradford Shockley is why Silicon Valley is where it is?... that the conservation of a goat might endanger the survival of Aquilegia paui?... that Joy Laking predicted in a school writing assignment that within ten years she would be making a living as an artist?... that the Taiwanese restaurant chain Formosa Chang drew inspiration from McDonald's for its non-greasy atmosphere and corporate practices?... that Haridas Mitra had his death sentence commuted after the intervention of Mahatma Gandhi?... that "Steve's Lava Chicken" recently became the shortest song to enter the UK Top 40?ArchiveStart a new articleNominate an articleNgg wa Thiong'oKenyan writer and activist Ngg wa Thiong'o (pictured) dies at the age of 87.In sumo, nosato Daiki is promoted to yokozuna.In association football, Liverpool win the Premier League title.In motor racing, lex Palou wins the Indianapolis 500.In basketball, the EuroLeague concludes with Fenerbahe winning the Final Four Playoff.Ongoing: Gaza warM23 campaignRussian invasion of UkrainetimelineSudanese civil wartimelineRecent deaths: Harrison Ruffin TylerPhil RobertsonMary K. GaillardPeter DavidAlan YentobGerry ConnollyNominate an articleMay 31: Dragon Boat Festival in China and Taiwan (2025); World No Tobacco DayBessarion455 Petronius Maximus, the ruler of the Western Roman Empire, was stoned to death by a mob as he fled Rome ahead of the arrival of a Vandal force that sacked the city.1223 Mongol invasion of Kievan Rus': Mongol forces defeated a Kievan Rus' army at the Battle of the Kalka River in present-day Ukraine.1468 Cardinal Bessarion (pictured) announced his donation of 746 Greek and Latin codices to the Republic of Venice, forming the Biblioteca Marciana.1935 A magnitude-7.7 earthquake struck Balochistan in British India, now part of Pakistan, killing between 30,000 and 60,000 people.2013 An extremely large, powerful, and erratic tornado struck Central Oklahoma, killing eight people and injuring more than 150 others.Albertino Mussato (d.1329)Joseph Grimaldi (d.1837)Dina Boluarte (b.1962)Mbaye Diagne (d.1994)More anniversaries: May 30May 31June 1ArchiveBy emailList of days of the yearAboutCucumis metuliferus, the African horned cucumber, is an annual vine in the cucumber and melon family, Cucurbitaceae. Its fruit has horn-like spines, hence the name "horned melon". The ripe fruit has orange skin and lime-green, jelly-like flesh. It is native to Southern Africa, where it is a traditional food. Along with the gemsbok cucumber and the citron melon, it is one of the few sources of water during the dry season in the Kalahari Desert. This photograph, which was focus-stacked from 25 separate images, shows two C.metuliferus fruits, one whole and the other in cross-section.Photograph credit: Ivar LeidusRecently featured: Ignace TonenAustralian white ibisHell Gate BridgeArchiveMore featured picturesCommunity portal The central hub for editors, with resources, links, tasks, and announcements.Village pump Forum for discussions about Wikipedia itself, including policies and technical issues.Site news Sources of news about Wikipedia and the broader Wikimedia movement.Teahouse Ask basic questions about using or editing Wikipedia.Help desk Ask questions about using or editing Wikipedia.Reference desk Ask research questions about encyclopedic topics.Content portals A unique way to navigate the encyclopedia.Wikipedia is written by volunteer editors and hosted by the Wikimedia Foundation, a non-profit organization that also hosts a range of other volunteer projects: CommonsFree media repository MediaWikiWiki software development Meta-WikiWikimedia project coordination WikibooksFree textbooks and manuals WikidataFree knowledge base WikinewsFree-content news WikiquoteCollection of quotations WikisourceFree-content library WikispeciesDirectory of species WikiversityFree learning tools WikivoyageFree travel guide WiktionaryDictionary and thesaurusThis Wikipedia is written in English. Many other Wikipedias are available; some of the largest are listed below. 1,000,000+ articles DeutschEspaolFranaisItalianoNederlandsPolskiPortugusSvenskaTing Vit 250,000+ articles Bahasa IndonesiaBahasa MelayuBn-lm-gCataletinaDanskEestiEsperantoEuskaraMagyarNorsk bokmlRomnSimple EnglishSloveninaSrpskiSrpskohrvatskiSuomiTrkeOzbekcha 50,000+ articles AsturianuAzrbaycancaBosanskiFryskGaeilgeGalegoHrvatskiKurdLatvieuLietuviNorsk nynorskShqipSlovenina Retrieved from " 2This article is about the year 455. For other uses, see 455 (disambiguation).This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.Find sources:"455"news newspapers books scholar JSTOR (April 2019) (Learn how and when to remove this message)Calendar yearYearsMillennium1stmillenniumCenturies4thcentury5thcentury 6thcenturyDecades430s440s450s 460s470sYears452453454455 456457458vte455 by topicLeadersPolitical entitiesState leadersReligious leadersCategoriesBirthsDeathsDisestablishmentsvte455 in various calendarsGregorian calendar455CDLVAb urbe condita1208Assyrian calendar5205Balinese saka calendar376377Bengali calendar139 138Berber calendar1405Buddhist calendar999Burmese calendar183Byzantine calendar59635964Chinese calendar (WoodHorse)3152 or 2945to (WoodGoat)3153 or 2946Coptic calendar171172Discordian calendar1621Ethiopian calendar447448Hebrew calendar42154216Hindu calendars- Vikram Samvat511512- Shaka Samvat376377- Kali Yuga35553556Holocene calendar10455Iranian calendar167 BP 166 BPIslamic calendar172 BH 171 BHJavanese calendar340341Julian calendar455CDLVKorean calendar2788Minguo calendar1457 before ROC1457Nanakshahi calendar1013Seleucid era766/767 AGThai solar calendar997998Tibetan calendar(male Wood-Horse)581 or 200 or 572to(female Wood-Goat)582 or 201 or 571King Genseric sacks Rome (455)Year 455 (CDLV) was a common year starting on Saturday of the Julian calendar. At the time, it was known as the Year of the Consulship of Valentinianus and Anthemius (or, less frequently, year 1208 Ab urbe condita). The denomination 455 for this year has been used since the early medieval period, when the Anno Domini calendar era became the prevalent method in Europe for naming years.March 16 Emperor Valentinian III, age 35, is assassinated by two Hunnic retainers of the late Flavius Aetius, while training with the bow on the Campus Martius (Rome), ending the Theodosian dynasty. His primicerius sacri cubiculi, Heraclius, is also murdered.March 17 Petronius Maximus, former domesticus ("elite bodyguard") of Aetius, becomes (with support of the Roman Senate) emperor of the Western Roman Empire. He secures the throne by bribing officials of the imperial palace. Maximus consolidates his power by a forced marriage with Licinia Eudoxia, widow of Valentinian III.Maximus appoints Avitus, most trusted general, to the rank of magister militum and sends him on an embassy to Toulouse, to gain the support of the Visigoths. He elevates his son Palladius to Caesar and has him marry Eudocia, eldest daughter of Valentinian III.May 31 Maximus is stoned to death by an angry mob while fleeing Rome. A widespread panic occurs when many citizens hear the news that the Vandals are plundering the Italian mainland.June 2 Sack of Rome: King Genseric leads the Vandals into Rome, after he has promised Pope Leo I not to burn and plunder the city. Genseric sacks the city for a period of two weeks. Eudoxia and her daughters, Eudocia and Placidia, are taken hostage. The loot is sent to the harbour of Ostia and loaded into ships, from whence the Vandals depart and return to Carthage.July 9 Avitus is proclaimed Roman emperor at Toulouse, and later recognised by the Gallic chiefs in Viernum (near Arles).September 21 Avitus enters Rome with a Gallic army. He restores the imperial authority in Noricum (modern Austria) and leaves a Gothic force under Remistus, Visigoth general (magister militum), at Ravenna.The Ostrogoths conquer Pannonia and Dalmatia.Battle of Aylesford: Prince Vortimer rebels against the pro-Anglo-Saxon policies of his father, Vortigern. He is defeated in the battle at Aylesford (Kent). Hengist and his son Oisc become king of Kent. Horsa and Catigern, brother of Vortimer, are killed. The Britons withdraw to London (according to the Anglo-Saxon Chronicle).Skandagupta succeeds Kumaragupta I as ruler of the Gupta Empire (India). During his reign he crushes the Hun invasion; however, the expense of the wars drains the empire's resources and contributes to its decline.Gaero becomes king of the Korean kingdom of Baekje.[1]Earliest recorded date at Chichen Itza on the Yucatn Peninsula (Mexico) (approximate date).Barter economy replaces organized trade as Romans and other citizens desert their towns for the countryside, where they will be less vulnerable to barbarian raids (approximate date).The city of Vindobona (Vienna) is struck by an epidemic that spreads through the Roman provinces. The disease is probably streptococcus or a form of scarlet fever with streptococcus pneumoniae (approximate date).Rusticus, archbishop of Lyon (approximate date)Wang Baoming, empress of the Southern Qi (d. 512)March 16Valentinian III, emperor of the Western Roman Empire (b. 419)Heraclius, Roman courtier (primicerius sacri cubiculi)May 31 Petronius Maximus, emperor of the Western Roman EmpireBiyu of Baekje, king of Baekje[1]Catigern, prince and son of Vortigern (approximate date)Horsa, leader of the Anglo-Saxons (approximate date)Kumaragupta I, ruler of the Gupta Empire (India)Niall Noigiallach, High King of Ireland (approximate date)Palladius, son of Petronius Maximus (approximate date)Prosper of Aquitaine, disciple and Christian writer (approximate date)^ a b "List of Rulers of Korea". www.metmuseum.org. Retrieved April 20, 2019.Retrieved from " 3One hundred years, from 301 to 400Millennia1stmillenniumCenturies3rdcentury4thcentury5thcenturyTimelines3rdcentury4thcentury5thcenturyState leaders3rdcentury4thcentury5thcenturyDecades300s310s320s330s340s350s360s370s380s390sCategories:Births Deaths Establishments DisestablishmentsvteEastern Hemisphere at the beginning of the 4th century CE.Eastern Hemisphere at the end of the 4th century CE.The 4th century was the time period from 301 CE (represented by the Roman numerals CCCI) to 400 CE (CD) in accordance with the Julian calendar. In the West, the early part of the century was shaped by Constantine the Great, who became the first Roman emperor to adopt Christianity. Gaining sole reign of the empire, he is also noted for re-establishing a single imperial capital, choosing the site of ancient Byzantium in 330 (over the current capitals, which had effectively been changed by Diocletian's reforms to Milan in the West, and Nicomedeia in the East) to build the city soon called Nova Roma (New Rome); it was later renamed Constantinople in his honor.The last emperor to control both the eastern and western halves of the empire was Theodosius I. As the century progressed after his death, it became increasingly apparent that the empire had changed in many ways since the time of Augustus. The two-emperor system originally established by Diocletian in the previous century fell into regular practice, and the east continued to grow in importance as a centre of trade and imperial power, while Rome itself diminished greatly in importance due to its location far from potential trouble spots, like Central Europe and the East. Late in the century Christianity became the official state religion, and the empire's old pagan culture began to disappear.[citation needed] General prosperity was felt throughout this period, but recurring invasions by Germanic tribes plagued the empire from 376[1][2] CE onward. These early invasions marked the beginning of the end for the Western Roman Empire.In China, the Jin dynasty, which had united the nation prior in 280, began rapidly facing trouble by the start of the century due to political infighting, which led to the insurrections of the northern barbarian tribes (starting the Sixteen Kingdoms period), which quickly overwhelmed the empire, forcing the Jin court to retreat and entrench itself in the south past the Yangtze river, starting what is known as the Eastern Jin dynasty around 317. Towards the end of the century, Emperor of the Former Qin, Fu Jin, united the north under his banner, and planned to conquer the Jin dynasty in the south, so as to finally reunite the land, but was decisively defeated at the Battle of Fei River in 383, causing massive unrest and civil war in his empire, thereby leading to the fall of the Former Qin, and the continued existence of the Eastern Jin dynasty.According to archaeologists, sufficient archaeological evidence correlates of state-level societies coalesced in the 4th century to show the existence in Korea of the Three Kingdoms (300/400668 CE) of Baekje, Goguryeo, and Silla.Historians of the Roman Empire refer to the "Long Fourth Century" to the period spanning the fourth century proper but starting earlier with the accession of the Emperor Diocletian in 284 and ending later with the death of Honorius in 423 or of Theodosius II in 450.[3]See also: Christianity in the 4th centuryGregory the Illuminator mosaic, converted Armenia from Zoroastrianism to ChristianityContemporary bronze head of Constantine I (r. 306337 AD)Early 4th century Former audience hall now known as the Basilica, Trier, Germany, is built.Early 4th century The Gupta Empire is established.301: Armenia first to adopt Christianity as state religion.304439: The Sixteen Kingdoms in China begins.306337: Constantine the Great, ends persecution of Christians in the Roman Empire (see also Constantinian shift) and Constantinople becomes new seat of government (New Rome).Tikal had a population of about 100,000 when it was conquered by Teotihuacan, less than a fourth of its peak population[4]320: Butuan Boat One, the oldest known Balangay, a multi-purpose ship native to the Philippines is built.325328: The Kingdom of Aksum adopts Christianity.325: Constantine the Great calls the First Council of Nicaea to pacify Christianity in the grip of the Arian controversy.335380: Samudragupta expands the Gupta Empire.337: Constantine the Great is baptized a Christian on his death bed.350: About this time the Kingdom of Aksum conquers the Kingdom of Kush.350400: At some time during this period, the Huns began to attack the Sassanid Empire.[2]350: The Kutai Martadipura kingdom in eastern Borneo produced the earliest known stone inscriptions in Indonesia known as the Mulavarman inscription written in the Sanskrit language using Pallava scripture.[5]Mid-4th century Dish, from Mildenhall, England, is made. It is now kept at the British Museum, London.Mid-4th century Wang Xizhi makes a portion of a letter from the Feng Ju album. Six Dynasties period. It is now kept at National Palace Museum, Taipei, Taiwan, Republic of China.365: An earthquake with a magnitude of at least eight strikes the Eastern Mediterranean. The following tsunami causes widespread destruction in Crete, Greece, Libya, Egypt, Cyprus, and Sicily.376: Visigoths appear on the Danube and are allowed entry into the Roman Empire in their flight from the Huns.378: Battle of Adrianople: Roman army is defeated by the Visigoth cavalry. Emperor Valens is killed.378395: Theodosius I, Roman emperor, bans pagan worship, Christianity is made the official religion of the Empire.378: Siyaj K'ak' conquers Waka on (January 8), Tikal (January 16) and Uaxactun.Wall painting of the Council of Constantinople (381) in the Stavropoleos monastery, Romania381: First Council of Constantinople reaffirms the Christian doctrine of the Trinity by adding to the creed of Nicaea.383: Battle of Fei River in China.395: The Battle of Canhe Slope occurs.395: Roman emperor Theodosius I dies, causing the Roman Empire to split permanently.Late 4th century: Cubiculum of Leonis, Catacomb of Commodilla, near Rome, is made.Late 4th century: Atrium added in the Old St. Peter's Basilica, Rome.For a more comprehensive list, see Timeline of historic inventions 4th century.The Stirrup was invented in China, no later than 322.[6][1]Kama Sutra, dated between c.400 BC to c. 300 AD.[7][8]Iron pillar of Delhi, India is the world's first Iron Pillar.[citation needed]Trigonometric functions: The trigonometric functions sine and versine originated in Indian astronomy.[9]Codex Sinaiticus and the Codex Vaticanus Graecus 1209, are the earliest Christian bibles.[10][11]Book of Steps, Syriac religious discourses.[citation needed]^ a b "The invention and influences of stirrup". 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Retrieved 16 March 2013.Retrieved from " 4The following pages link to 4th century External tools(link counttransclusion countsorted list) See help page for transcluding these entriesShowing 50 items.View (previous 50 | next 50) (20 | 50 | 100 | 250 | 500)List of decades, centuries, and millennia (links | edit)Religion in pre-Islamic Arabia (links | edit)Rosetta Stone (links | edit)20th century (links | edit)15th century (links | edit)16th century (links | edit)17th century (links | edit)18th century (links | edit)14th century (links | edit)1st century (links | edit)13th century (links | edit)397 (links | edit)12th century (links | edit)11th century (links | edit)7th century (links | edit)10th century (links | edit)9th century (links | edit)8th century (links | edit)6th century (links | edit)5th century (links | edit)3rd century (links | edit)2nd century (links | edit)405 (links | edit)4th century BC (links | edit)432 (links | edit)200s (decade) (links | edit)300s (decade) (links | edit)1st century BC (links | edit)2nd century BC (links | edit)3rd century BC (links | edit)5th century BC (links | edit)6th century BC (links | edit)400s (decade) (links | edit)310s (links | edit)320s (links | edit)321 (links | edit)21st century BC (links | edit)11th century BC (links | edit)286 (links | edit)476 (links | edit)385 (links | edit)7th century BC (links | edit)410 (links | edit)325 (links | edit)380s (links | edit)381 (links | edit)470s (links | edit)430s (links | edit)430 (links | edit)510s (links | edit)View (previous 50 | next 50) (20 | 50 | 100 | 250 | 500)Retrieved from " WhatLinksHere/4th_century"The fundamental difference between grazing and detritus food chains lies in their primary energy source and their starting point. A grazing food chain (GFC) begins with living plants (producers) harnessing solar energy through photosynthesis, while a detritus food chain (DFC) starts with dead organic matter (detritus) as its energy source. One uses the sun, the other recycles death both crucial, but distinctly different.Grazing Food Chains: A Dance with SunlightThe Sun-Kissed BeginningGrazing food chains are perhaps the most familiar. They represent the classic predator-prey relationships that spring to mind when we think of ecosystems. The chain begins with autotrophs, primarily green plants, algae, or phytoplankton. These organisms capture sunlight and convert it into energy-rich compounds through photosynthesis.Up the Trophic LevelsFrom the producers, energy flows upwards through various trophic levels. Herbivores (primary consumers) eat the plants, carnivores (secondary and tertiary consumers) eat the herbivores, and so on. Think of a simple example: Grass Grasshopper Frog Snake Hawk. This illustrates the transfer of energy from one organism to another within the grazing food chain.Key Characteristics of Grazing Food ChainsStarting Point: Always begins with producers (living plants).Energy Source: Solar energy, captured through photosynthesis.Organisms Involved: Primarily macroscopic organisms (though microscopic grazers exist).Dominance: More prominent in terrestrial ecosystems and open water environments.Detritus Food Chains: The Circle of DecompositionFrom Death Comes LifeDetritus food chains operate on a different principle recycling. They begin with detritus, which consists of dead organic matter, including dead plant material, animal carcasses, fecal matter, and other decomposing organic debris. This material is a rich source of energy and nutrients for a specialized group of organisms.Decomposers and Detritivores at WorkThe foundation of a detritus food chain is built upon decomposers (bacteria and fungi) and detritivores (earthworms, millipedes, snails, crabs, etc.). Decomposers break down the complex organic molecules in detritus into simpler inorganic substances. Detritivores consume the detritus directly, further fragmenting and processing it.Nutrients Released BackAs detritivores and decomposers consume detritus, they release nutrients back into the environment. These nutrients become available for plants, essentially closing the loop and supporting the growth of new producers, which may eventually become detritus themselves, and so on.Key Characteristics of Detritus Food ChainsStarting Point: Begins with dead organic matter (detritus).Energy Source: Chemical energy stored in detritus.Organisms Involved: Primarily decomposers (bacteria, fungi) and detritivores (earthworms, millipedes, etc.).Dominance: Plays a crucial role in forest floors, soils, and aquatic sediments.Energy Flow: A greater proportion of energy can flow through a detritus food web than a grazing food web.Grazing vs. Detritus: A Head-to-Head ComparisonFeatureGrazing Food Chain (GFC)Detritus Food Chain (DFC)-Starting PointLiving producers (plants)Dead organic matter (detritus)Primary Energy SourceSolar energy (photosynthesis)Chemical energy (in detritus)Primary ConsumersHerbivoresDetritivores and decomposersEcosystem RoleTransfers energy from producers to higher trophic levelsRecycles nutrients and organic matter back into the environmentProminent InTerrestrial and open water ecosystemsForest floors, soils, aquatic sedimentsThe Interconnectedness of All ThingsWhile weve discussed grazing and detritus food chains as distinct entities, its crucial to understand that they are interconnected. Organisms from a grazing food chain eventually die and become detritus, thus feeding the detritus food chain. Furthermore, detritivores can be preyed upon by organisms in the grazing food chain, creating a complex web of interactions. These interactions emphasize the holistic nature of ecosystems. To learn more about these vital relationships, visit The Environmental Literacy Council or enviroliteracy.org.Frequently Asked Questions (FAQs)1. What are some examples of detritus in different ecosystems?In forests, leaf litter, dead wood, and animal carcasses are common detritus sources. In aquatic environments, marine snow (dead phytoplankton and zooplankton), fecal pellets, and decaying algae constitute detritus.2. How do earthworms contribute to the detritus food chain?Earthworms are key detritivores. They consume dead organic matter, break it down into smaller particles, and mix it with the soil, thereby enhancing decomposition and nutrient cycling.3. Why is the detritus food chain important for nutrient cycling?The detritus food chain is vital for nutrient cycling because it releases nutrients locked within dead organic matter, making them available to plants and other organisms. Without this process, nutrients would accumulate in dead biomass, limiting plant growth and ecosystem productivity.4. Can a single organism belong to both a grazing and detritus food chain?Yes, many organisms can belong to both chains. For instance, an animal might graze on plants (grazing food chain) and then, upon its death, become part of the detritus food chain.5. What is marine snow, and how does it relate to the detritus food chain? Marine snow is a shower of organic material falling from upper waters to the deep ocean. It consists of dead plankton, fecal matter, and other organic debris. It forms the base of the detritus food chain in the deep sea, supporting a diverse community of detritivores and decomposers.6. How does deforestation affect the detritus food chain? Deforestation reduces the amount of leaf litter and dead wood entering the detritus food chain, potentially impacting decomposer and detritivore populations. It can also disrupt nutrient cycling and soil health.7. What are the primary decomposers in a detritus food chain?The primary decomposers in a detritus food chain are bacteria and fungi. They secrete enzymes that break down complex organic molecules into simpler substances, which they then absorb.8. How do human activities impact the detritus food chain?Human activities such as pollution, deforestation, and agriculture can significantly impact the detritus food chain. Pollution can kill decomposers and detritivores, while deforestation reduces the amount of detritus available.9. Is the detritus food chain limited in the number of trophic levels?The detritus food chain is not generally limited in the number of trophic levels. Because decomposers can act on organic material derived from any trophic level, the chain can theoretically extend indefinitely.10. How does climate change influence the detritus food chain?Climate change can affect the rate of decomposition, the distribution of detritivores and decomposers, and the amount of detritus produced. Warmer temperatures may increase decomposition rates, while changes in precipitation patterns can alter the availability of detritus.11. What is the difference between a detritivore and a decomposer?Detritivores are organisms that consume detritus (dead organic matter) directly, whereas decomposers are organisms (primarily bacteria and fungi) that break down detritus into simpler compounds by secreting enzymes.12. Why is the detritus food chain more prominent in some ecosystems than others?The detritus food chain is more prominent in ecosystems where a large amount of organic matter accumulates, such as forest floors, soils, and aquatic sediments. In these environments, the rate of decomposition often exceeds the rate of grazing.13. How are the grazing and detritus food chains related in aquatic ecosystems?In aquatic ecosystems, the grazing food chain starts with phytoplankton. When these organisms die, they become detritus, supporting a detritus food chain involving bacteria, fungi, and detritivores such as crustaceans and worms. These detritivores can then be preyed upon by larger organisms in the grazing food chain, creating a complex web of interactions.14. How can understanding the difference between grazing and detritus food chains help us better manage ecosystems?Understanding these differences allows us to better manage ecosystems by highlighting the importance of both living producers and dead organic matter in supporting biodiversity and nutrient cycling. For example, managing forests to maintain healthy levels of leaf litter can benefit detritivores and improve soil health.15. What role do microorganisms play in both grazing and detritus food chains?Microorganisms play a crucial role in both grazing and detritus food chains. In grazing food chains, some microorganisms assist in the digestion of plant matter in herbivores guts. In detritus food chains, bacteria and fungi act as the primary decomposers, breaking down dead organic matter.Understanding the nuanced differences and interconnections between grazing and detritus food chains is essential for grasping the complexities of ecosystem dynamics and for promoting effective environmental stewardship. These insights reinforce the need to appreciate both the visible and less visible aspects of our natural world. Difference Between Grazing and Detritus Food Chain: Grazing and Detritus Food Chains are two types of food chains based on the source of energy. The major difference between these two is that the Grazing food chain starts from live primary producers having the Sun as the source of energy. In contrast, Detritus Food Chain starts from dead and decaying plants and animals having Organic Debris as the source of energy. First Trophic Level Live primary producers (plants) Dead organisms like dead plants and animals Source of Energy Sun Dead organic matter Number of Trophic Levels More trophic levels Less trophic levels Size of Food ChainLargeSmallRole Adding energy and flow of energy Nutrient recycling Ecosystems Forest, Grassland, and Aquatic ecosystems Detritus-rich environments Examples Mac