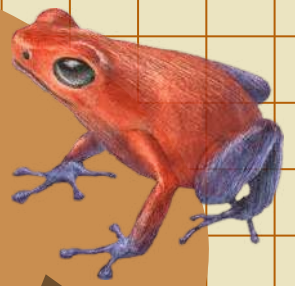


Ecology

Ecological Succession, Matter & Energy Flow, Populations & Ecological Relationships

Task Cards

MAMMOTH SCIENCE PUBLISHING

front

Question 1

Define the Components of an Ecosystem (Remembering):

Task: List and define the key components of an ecosystem using appropriate terminology.

flip

front

Question 2

Amoeba Sisters (2016, December 25). *Ecological Succession*. Youtube. Retrieved January 17, 2024, from https://youtu.be/uqEUzgVAF6g?si=uCdsGrNLFE127ye-

Distinguish Between Primary and Secondary Succession (Remembering):

Task: Explain the concept of ecological succession and differentiate between primary and secondary succession.

flip

front

Question 3

Identify Pioneer Species in Primary Succession (Understanding):

Task: Name the pioneer species involved in primary succession and describe their role in soil formation.

flip

front

Microbe Notes

Question 4

Compare Primary and Secondary Succession (Understanding):

Task: Create a Venn diagram comparing and contrasting primary and secondary succession, highlighting differences in organisms and time scales.

flip

front

Question 5

Crash Course (2012, December 25). *5 Human Impacts on the Environment: Crash Course Ecology #10*. Youtube. Retrieved January 17, 2024, from https://youtu.be/5eTCZ9L834s

Evaluate Factors Influencing Ecological Succession (Evaluating):

Task: Assess the impact of climate, topography, and disturbance history on the rate and direction of ecological succession in different ecosystems.

flip

front

Question 6

Predict Species in Succession Stages (Applying):

Task: Predict the types of species likely to colonize an area during different stages of succession and explain the reasoning behind your predictions.

flip

front

Question 7

Fuse School (2018, December 25). *Human Impacts on Biodiversity | Ecology and Environment | Biology | FuseSchool*. Youtube. Retrieved January 17, 2024, from https://youtu.be/wXJiHr8jWBs

Analyze Human Activities and Ecological Succession (Analyzing):

Task: Investigate how human activities like deforestation and urbanization disrupt ecological succession, and evaluate the potential consequences for ecosystem stability.

flip

front

Question 8

Evaluate Ecological Successions Role in Climate Change Mitigation (Evaluating):

Task: Assess the potential of ecological succession to mitigate climate change impacts on ecosystems, using evidence and scientific reasoning.

flip

front

Question 9

High School Science 101 (2019, December 25). *Types Of Adaptations*. Youtube. Retrieved January 17, 2024, from https://youtu.be/vnmPdHmRv9o

Identify Adaptations to Environmental Pressures (Understanding):

Task: List physical and behavioral adaptations organisms develop in response to specific environmental pressures such as predators or temperature extremes.

flip

front

Question 10

Analyze Biodiversity Changes (Analyzing):

Task: Investigate how changes in biodiversity can impact ecosystem stability, and explain how natural selection and species adaptations can overcome environmental changes.

flip

front

Question 11

Identify Producers and Energy Capture (Remembering):

Task: Define producers and explain how they capture and convert energy from the sun. Discuss the role of producers in transferring matter and energy through trophic levels.

flip

front

Question 12

Fuse School (2017, December 25). *Food Chains & Food Webs | Ecology & Environment | Biology | FuseSchool*. Youtube. Retrieved January 17, 2024, from https://youtu.be/2lqhJNgn_Wg?si=e0p3DQY5MTFQkqZ3

Describe Trophic Roles (Understanding):

Task: Describe the roles of herbivores, omnivores, carnivores, and decomposers in food chains, food webs, and energy pyramids. Explain how their feeding habits contribute to energy transfer between trophic levels.

flip

front

Question 13

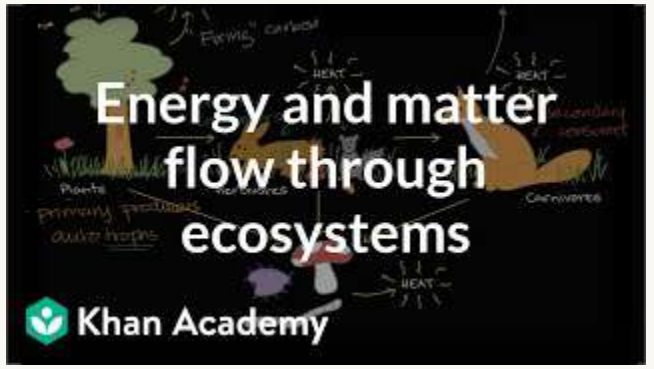
Explain Trophic Level Importance (Understanding):

Task: Explain the importance of each trophic level in the transfer of energy and matter through an ecosystem. Provide examples to illustrate the significance of each level.

flip

front

Question 14



Khan Academy (2017, December 25). *Flow of energy and matter through ecosystem | Ecology | Khan Academy*. Youtube. Retrieved January 17, 2024, from https://youtu.be/TitrRpMUt0I

Analyze Energy and Matter Flow (Analyzing):

Task: Analyze the flow of energy and matter through different trophic levels in an ecosystem. Create a diagram to visually represent the transfer of energy and matter.

flip

front

Question 15

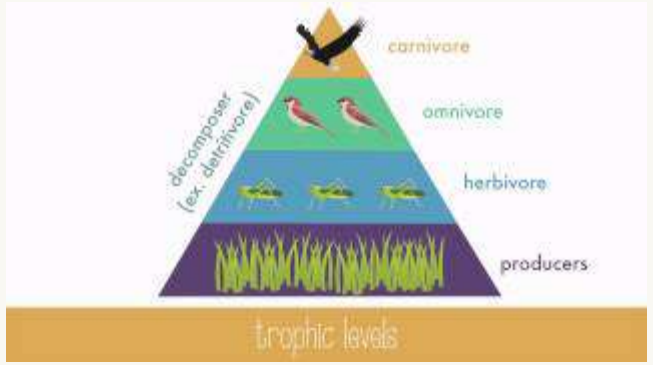
Identify Factors Affecting Energy Flow (Remembering):

Task: List and identify factors that can impact the flow of energy and matter through an ecosystem, such as climate, food availability, and competition.

flip

front

Question 16



Teachers Pet (2016, December 25). *Energy Transfer in Trophic Levels*. Youtube. Retrieved January 17, 2024, from https://youtu.be/0glkXlj1DgE

Explain Energy Loss in Ecosystems (Understanding):

Task: Explain why the amount of useful energy available to do work decreases as energy passes through an ecosystem. Reference concepts like the 10% rule and thermodynamics.

flip

front

GLA Green Living Answers
Environmental Sustainability

Question 17

Evaluate Implications of Disruptions (Evaluating):

Task: Evaluate the implications of changes in trophic levels or disruptions to energy flow in an ecosystem. Provide examples, such as the impact of overfishing on marine food webs or deforestation on terrestrial ecosystems.

flip

front

Question 18

Assess Ecosystem Health (Applying):

Task: Discuss how we can assess the health and stability of an ecosystem based on the flow of matter and energy through trophic levels. Propose strategies to maintain or improve ecosystem health.

flip

front

Question 19

Use of Energy Pyramids and Models (Applying):

Task: Demonstrate how energy pyramids and other models can be used to analyze the flow of matter and energy through an ecosystem. Provide specific examples and discuss insights gained from studying these models.

flip

front

Question 20

Khan Academy (2020, December 25). *Impact of changes to trophic pyramids | Ecology | AP Biology | Khan Academy*. Youtube. Retrieved January 17, 2024, from https://youtu.be/sV-KQ91Fnck

Connections between Trophic Levels (Applying):

Task: Explore the interconnectedness between different trophic levels in an ecosystem. Discuss how changes in one trophic level can have ripple effects on others, and provide real-world examples to illustrate these connections.

flip

front

Question 21

Analyze Symbiotic Relationships (Analyzing):

Task: Analyze different types of symbiotic relationships, including parasitism, commensalism, and mutualism. Provide examples illustrating each type.

flip

front

Question 22

GCSE Biology (2020, December 25). *GCSE Biology - Interdependence - Community and Competition #84*. Youtube. Retrieved January 17, 2024, from https://youtu.be/XVD5izWXmKo

Evaluate Competition in Communities (Evaluating):

Task: Evaluate how competition between organisms shapes communities. Discuss its impact on resource availability and species distribution within ecosystems.

flip

front

the nature EDUCATION Knowledge Project

Question 23

Critically Evaluate the Predation Role (Evaluating):

Task: Critically evaluate the role of predation in shaping communities. Explore predator-prey relationships and their effects on species abundance and diversity.

flip

front

Question 24

Investigate Ecological Relationships (Investigating):

Task: Investigate and appraise the influence of ecological relationships (predation, parasitism, commensalism, mutualism, and competition) on ecosystem stability.

flip

front

Question 25

Apply Scientific Inquiry (Applying):

Task: Apply scientific inquiry and critical thinking to identify and classify the type of relationship(s) present between different organisms in (choose 1) various ecological scenarios.

- **Scenario 1:** Coral Reef Ecosystem:Ecological Scenario: Investigate the interactions between coral polyps, symbiotic algae (zooxanthellae), and fish species in a coral reef ecosystem. Explore how mutualism and commensalism play roles in sustaining this complex community.
- **Scenario 2**: Savanna Grassland: Ecological Scenario: Examine the relationships among grazers (e.g., zebras), predators (e.g., lions), and birds (e.g., oxpeckers) in a savanna grassland ecosystem. Analyze how mutualism, predation, and commensalism contribute to the ecosystem dynamics.
- **Scenario 3**: Rainforest Canopy: Ecological Scenario: Study the interactions between different species inhabiting the canopy of a rainforest, such as epiphytic plants, insects, and birds. Identify examples of commensalism, mutualism, and potential competition in this diverse environment.
- **Scenario 4**: Freshwater Pond: Ecological Scenario: Explore the relationships between aquatic plants, herbivorous insects, and predatory fish in a freshwater pond ecosystem. Classify interactions, considering how predation, mutualism, and competition shape the balance in this ecosystem.

flip

front

Question 26

CrashCourse (2013, December 25). *Community Ecology: Feel the Love - Crash Course Ecology #4*. Youtube. Retrieved January 17, 2024, from https://youtu.be/GxE1SSqbSn4

Assess Ecological Relationship Balance (Evaluating):

Task: Assess the significance of maintaining a balance between ecological relationships to ensure ecosystem stability and sustainability.

flip

front

Question 27

Impact of Symbiotic Relationships on Ecosystem Stability (Analyzing):

Task: Explore how different types of symbiotic relationships (parasitism, commensalism, and mutualism) impact the stability of ecosystems.

flip

front

Question 28

Stile Education (2020, December 25). *Competition in ecosystems*. Youtube. Retrieved January 17, 2024, from https://youtu.be/L24Kp72V67g

Influence of Competition on Communities (Analyzing):

Task: Examine the ways in which competition between organisms shapes communities. Discuss its influence on the distribution of species and resources within ecosystems.

flip

front

Question 29

the nature EDUCATION Knowledge Project

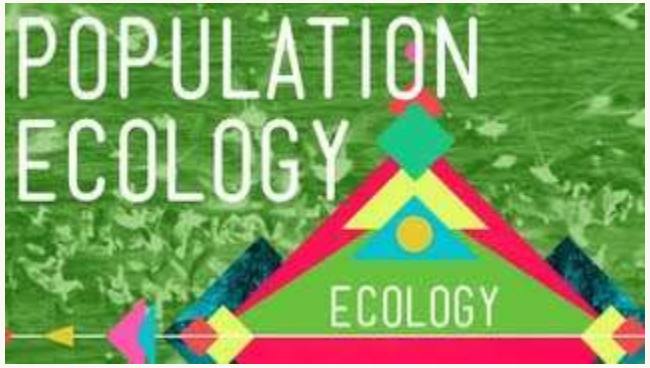
Effects of Predation on Species Diversity (Analyzing):

Task: Analyze the positive and negative effects of predation on species abundance and diversity within ecosystems.

flip

front

Question 30



Crashcourse (2010, December 25). *Population Ecology: The Texas Mosquito Mystery - Crash Course Ecology #2*. Youtube. Retrieved January 17, 2024, from https://youtu.be/RBOsqmBQBQk

Assessing Ecosystem Resilience (Evaluating):

Task: Evaluate the resilience of ecosystems in the face of ecological relationships. Discuss how the balance of symbiotic interactions and competition contributes to an ecosystem's ability to recover from disturbances.

flip

back

Answer 1

In an ecosystem, various components interact to maintain a delicate balance. The biotic factors encompass living organisms such as plants, animals, and microorganisms, each playing a unique role in the ecosystem. Additionally, abiotic factors include non-living elements like sunlight, water, soil, and temperature, influencing the ecosystem's overall health. Producers, like plants, harness sunlight through photosynthesis, providing the foundation for the food web. Consumers, including herbivores, carnivores, and omnivores, participate in energy transfer by consuming other organisms. Decomposers, like bacteria and fungi, break down dead organic matter, recycling nutrients back into the ecosystem. The habitat serves as the physical environment where these interactions unfold, shaping the biodiversity and dynamics of the ecosystem. This intricate web of relationships defines the key components that sustain life within an ecosystem.

flip

back

Answer 2

Ecological succession is a dynamic process where a natural community undergoes changes over time. Primary succession occurs in environments devoid of soil, such as bare rock or volcanic terrain. In this scenario, pioneer species, like lichens and mosses, colonize the barren substrate, breaking it down and facilitating soil formation. Over time, as soil accumulates, more complex plant communities, such as grasses and shrubs, establish themselves. Secondary succession, on the other hand, takes place in areas where an existing ecosystem has been disturbed, such as after a fire or human intervention. Here, the process begins with the remnants of the previous community, and the ecosystem gradually rebounds, with different species succeeding one another until a stable climax community is reached. Both primary and secondary successions illustrate nature's resilience and adaptability, showcasing the intricate patterns of change within ecosystems.

flip

back

Answer 3

Primary succession involves pioneer species that play a crucial role in initiating the colonization of barren landscapes, such as rocks or volcanic terrain. Lichens and mosses are notable pioneer species in this process. Lichens, a symbiotic association of fungi and algae, are adept at breaking down rock surfaces through physical and chemical weathering. As they grow, they contribute organic material to the barren substrate. Mosses, with their ability to retain moisture and trap particles, further aid in soil formation. Together, these pioneer species create a foundation for more complex plant life by gradually breaking down the rocky surface, facilitating the accumulation of soil. In essence, lichens and mosses are instrumental in the initial phases of primary succession, paving the way for the establishment of a more biodiverse ecosystem over time.

flip

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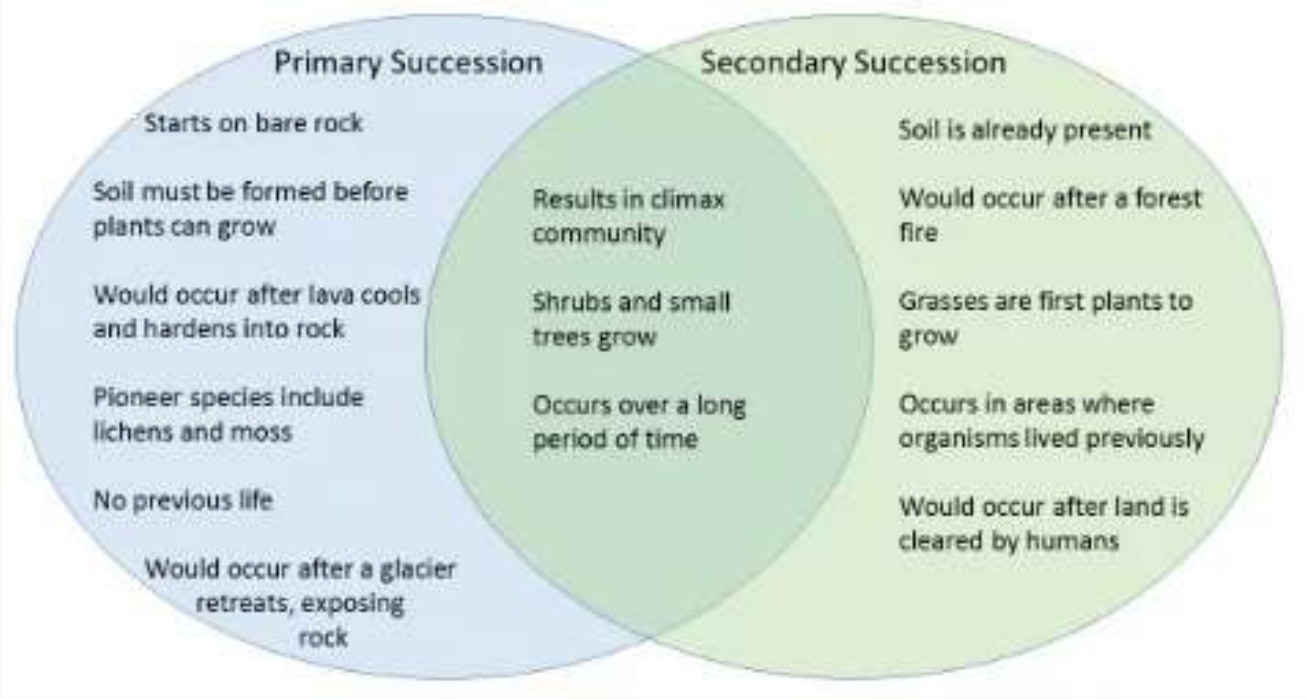
Answer 4



flip

back

Answer 5

Climate, encompassing factors like temperature and precipitation, can either facilitate or impede succession by shaping the conditions for plant growth. Topography, including elevation and slope, affects water drainage and sunlight exposure, influencing the types of species that can establish themselves. Disturbance history, whether natural events like fires or human-induced disruptions, plays a pivotal role in resetting succession stages. For instance, frequent disturbances might hinder the progression toward a stable climax community.

flip

back

Answer 6

In the early stages, pioneer species like lichens and mosses are likely to establish themselves, as they possess adaptations enabling them to thrive in harsh, barren conditions. As soil begins to form, grasses and herbaceous plants may follow, taking advantage of the improved substrate. Mid-succession stages often see the dominance of shrubs and small trees, characterized by their ability to compete for resources. In the later stages, larger trees and more complex plant communities become prevalent, forming a mature ecosystem. These predictions are grounded in ecological principles, considering the adaptive traits of different species and their ability to exploit specific environmental conditions conducive to each succession stage.

flip

back

Answer 7

Deforestation involves the removal of existing vegetation, interrupting natural succession processes. Urbanization, with its infrastructure development and land transformation, can alter local environments, hindering or redirecting succession pathways. These disruptions can lead to the loss of biodiversity, as well as impact soil composition and water dynamics. Additionally, the introduction of non-native species and pollutants may further compromise ecosystem stability. Investigating the relationship between human activities and ecological succession disruptions is crucial for understanding the broader implications on biodiversity, habitat integrity, and overall ecosystem health.

flip

back

Answer 8

Ecological succession, with its ability to adapt and restore ecosystems over time, has the potential to mitigate climate change effects. Successional processes can enhance carbon sequestration, as mature ecosystems, particularly forests, store substantial amounts of carbon. Furthermore, diverse plant communities developed through succession contribute to ecosystem resilience, making them better equipped to withstand changing climatic conditions. By analyzing empirical evidence and applying scientific reasoning, we can gain insights into the role of ecological succession as a natural mechanism for buffering and adapting ecosystems to the challenges posed by climate change.

flip

back

Answer 9

Physical adaptations may encompass camouflage to blend into surroundings, specialized appendages for efficient locomotion, or protective structures like shells or spines. Behavioral adaptations may involve changes in feeding habits, such as foraging during specific times, migration to more suitable climates, or the development of intricate social structures for enhanced cooperation and protection. These examples illustrate the diverse and specific ways in which organisms tailor their traits and behaviors to thrive in challenging environmental conditions.

flip

back

Answer 10

Alterations in biodiversity have discernible impacts on the delicate equilibrium within ecosystems, directly influencing key functions. For instance, a reduction in biodiversity may disrupt nutrient cycling, diminishing the efficiency of processes essential for sustaining plant and animal life. Additionally, changes in species composition can affect pest control mechanisms, potentially leading to increased vulnerability to pest outbreaks. Furthermore, diminished biodiversity can compromise the overall resilience of ecosystems, making them less adept at recovering from disturbances such as wildfires or extreme weather events. In response to these challenges, natural selection emerges as a critical force, guiding species to develop specific traits like resistance to pests, efficient nutrient utilization, and heightened adaptability to environmental changes.

flip

back

Answer 11

Producers are organisms that serve as the foundation of ecosystems by converting solar energy into organic compounds through photosynthesis. Plants, algae, and certain bacteria are common examples of producers. Through the process of photosynthesis, producers capture sunlight and utilize it to synthesize carbohydrates, storing energy in chemical bonds. This conversion of solar energy into organic matter establishes the base of the food chain. Producers play a crucial role in transferring matter and energy through trophic levels, as they are the primary source of nutrients for herbivores. These herbivores, in turn, become a source of energy for carnivores and other higher trophic levels. The efficiency of energy transfer within ecosystems is heavily dependent on the productivity and abundance of producers, underscoring their pivotal role in sustaining life cycles and energy flow.

flip

back

Answer 12

Herbivores, as primary consumers, feed directly on producers like plants, initiating the transfer of energy from the base of the food chain. Omnivores exhibit a versatile diet, consuming both plants and animals, contributing to the flow of energy through multiple trophic levels. Carnivores, as secondary or tertiary consumers, prey on herbivores and other carnivores, further transferring energy up the trophic hierarchy. Decomposers, such as bacteria and fungi, break down organic matter, returning nutrients to the soil and completing the nutrient cycle. Collectively, these feeding habits create interconnected food webs, illustrating the intricate relationships among species. Energy pyramids visually depict the decreasing energy available at each trophic level, highlighting the role of each group in facilitating the efficient transfer of energy within ecosystems.

flip

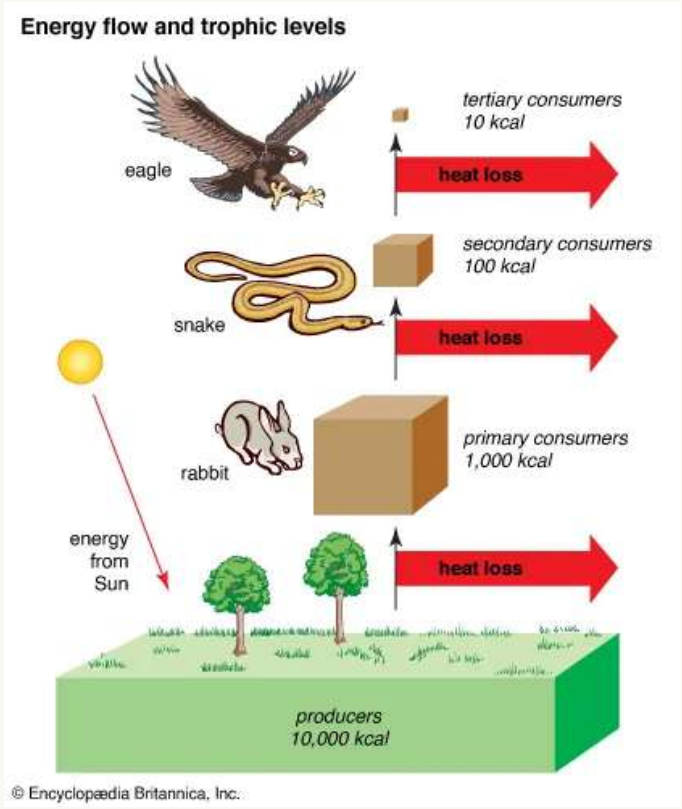
back

Answer 13

Producers, such as plants, are fundamental as they convert sunlight into organic matter through photosynthesis, initiating the flow of energy. Herbivores, like rabbits, serve as primary consumers, channeling the captured energy from producers into their own biomass. Carnivores, exemplified by predators like lions, occupy higher trophic levels, efficiently transferring energy by preying on herbivores. Decomposers, such as bacteria and fungi, play a vital role in nutrient recycling by breaking down organic matter, returning essential elements to the soil. Each trophic level, with its specific function, contributes indispensably to the overall balance and sustainability of the ecosystem.

flip

back



Answer 14

In an ecosystem, the flow of energy and matter follows a structured path through various trophic levels. It all starts with the producers, like plants, which use sunlight to create food through photosynthesis. This solar energy is then transferred to herbivores, such as rabbits, when they consume the plants. The herbivores become a source of energy for carnivores like wolves, forming the next trophic level. As organisms consume each other, energy and matter move up the trophic pyramid. Decomposers, like bacteria and fungi, play a crucial role by breaking down dead organisms and returning nutrients to the soil, completing the cycle. This flow of energy and matter ensures the balance and sustainability of the ecosystem, illustrating the interconnected relationships among its various components.

flip

back

Answer 15

Climate plays a pivotal role in regulating the rate of photosynthesis, affecting the productivity of producers and subsequently impacting energy flow. Availability of food resources influences the abundance and distribution of organisms at different trophic levels, shaping the dynamics of energy transfer. Competition among species for limited resources can alter feeding patterns and impact the overall balance of trophic interactions. Identifying these factors provides insights into the complex web of influences that shape the functioning and resilience of ecosystems.

flip

back

Answer 16

According to the 10% rule, only about 10% of the energy is transferred from one trophic level to the next. This is due to energy losses in the form of heat during metabolic processes, limiting the amount of available energy for the next trophic level. Thermodynamics further elucidates that energy transformations are inherently inefficient, with a portion of energy lost at each conversion. As energy moves through producers to herbivores, carnivores, and decomposers, these cumulative losses result in a decrease in the amount of energy available for productive work, emphasizing the constraints imposed by the laws of thermodynamics on energy transfer within ecosystems.

flip

back

Answer 17

Overfishing, for instance, can disrupt marine food webs by depleting top predators like sharks. This imbalance can lead to an overabundance of certain prey species, impacting their ecosystem roles and creating cascading effects on other trophic levels. Similarly, deforestation on land can disrupt energy flow by removing crucial habitats for various species. This can result in the decline of herbivores dependent on those habitats, subsequently affecting predators and the overall balance of the ecosystem. Evaluating such examples highlights the intricate relationships within ecosystems and underscores the importance of maintaining the integrity of trophic structures for ecological stability.

flip

back

Answer 18

By evaluating the efficiency of energy transfer and nutrient cycling, we can gauge the ecosystem's vitality. Strategies to enhance or preserve ecosystem health may include promoting habitat conservation to support diverse trophic levels, implementing sustainable resource management practices, and addressing factors that disrupt energy flow. Additionally, monitoring changes in species composition and trophic interactions provides valuable insights into the overall health of the ecosystem. Proposing and implementing conservation measures informed by these assessments becomes crucial in fostering resilient and sustainable ecosystems.

flip

back

Answer 19

For instance, a decline in herbivore populations due to factors like habitat loss can disrupt the balance, affecting carnivores dependent on them as prey. Conversely, an increase in herbivore numbers might lead to overgrazing, impacting plant populations and, consequently, affecting the entire food web. Real-world examples, such as the reintroduction of wolves in Yellowstone National Park influencing both herbivore behavior and plant growth, illustrate these dynamic connections. This exploration highlights the delicate balance within ecosystems and the cascading effects that changes in one trophic level can have on the entire ecological web.

flip

back

Answer 20

For instance, a decline in herbivore populations due to factors like habitat loss can disrupt the balance, affecting carnivores dependent on them as prey. Conversely, an increase in herbivore numbers might lead to overgrazing, impacting plant populations and, consequently, affecting the entire food web. Real-world examples, such as the reintroduction of wolves in Yellowstone National Park influencing both herbivore behavior and plant growth, illustrate these dynamic connections. This exploration highlights the delicate balance within ecosystems and the cascading effects that changes in one trophic level can have on the entire ecological web.

flip

back

Answer 21

Competition between organisms influences the allocation of resources, determining which species thrive and which face limitations. This dynamic interaction shapes the distribution of species across different niches within the ecosystem. As organisms compete for essential resources such as food, water, and shelter, the outcomes contribute to the establishment of community structures. Understanding the nuances of competition sheds light on the intricate relationships within ecosystems and the factors that govern the coexistence and distribution of species in diverse ecological communities.

flip

back

Answer 22

EX: Exploring predator-prey relationships, such as the influence of predators like wolves on herbivore populations, and their consequential effects on species abundance and diversity. Investigate how predation can lead to changes in prey behavior, affecting their distribution within communities. For instance, the reintroduction of wolves in Yellowstone National Park has been shown to influence elk populations, subsequently impacting plant communities. By delving into specific examples and considering broader ecological patterns, we gain insights into the multifaceted role of predation in shaping community dynamics and biodiversity.

flip

back

Answer 23

EX: Predation plays a pivotal role in regulating populations, influencing the abundance of prey species and shaping the diversity within communities. For example, the interaction between cheetahs and herbivores in the African savanna showcases how predation can shape the distribution and behavior of prey species. By delving into these specific examples, we gain insights into the mechanisms that govern community structure and the intricate dynamics influenced by predation.

flip

back

Answer 24

Ecological relationships, such as predation, parasitism, commensalism, mutualism, and competition, offers valuable insights into their influence on ecosystem stability. In a grassland ecosystem, the predation of lions on herbivores like zebras serves to regulate herbivore populations, preventing overgrazing and maintaining a balanced ecosystem. Parasitism is exemplified by a tick feeding on the blood of a deer, benefiting the tick while potentially harming the deer. Commensalism occurs when barnacles attach themselves to whales, providing a substrate for attachment without significant harm or benefit to the whale. Mutualism is evident in the relationship between bees and flowering plants, where bees pollinate flowers and obtain nectar as a food source, benefiting both species. Finally, competition arises when two species of birds compete for the same nesting site in a tree, influencing the distribution of bird species in the ecosystem. This comprehensive examination highlights the diverse ways in which ecological relationships shape the stability and dynamics of ecosystems.

flip

back

Answer 25

Scenario 3: Rainforest Canopy

In the Rainforest Canopy, epiphytic plants, insects, and birds exhibit diverse ecological relationships. Epiphytic plants, growing on trees, demonstrate a commensal relationship as they derive support without harming the host tree. Birds, like hummingbirds, engage in mutualistic relationships with both plants and insects. They pollinate flowers (mutualism with plants) and feed on insects (mutualism with insects), contributing to the overall balance of the canopy ecosystem.

flip

back

Answer 26

EX: Maintaining equilibrium between predation, such as the regulation of herbivore populations by predators like lions in a grassland ecosystem, is crucial for preventing overgrazing and sustaining a balanced environment. Similarly, recognizing the importance of mutualism, as seen in the relationship between bees and flowering plants, underscores the efficient pollination and nutrient cycling essential for the health of both species. By acknowledging and managing these ecological dynamics, we can implement conservation strategies that support a harmonious balance, fostering the long-term stability and sustainability of ecosystems.

flip

back

Answer 27

Parasitism, as exemplified by ticks feeding on deer blood, can influence the health and population dynamics of the host species. In commensalism, the association between barnacles and whales illustrates how one species benefits from the relationship without significantly impacting the other. Meanwhile, mutualism, such as the partnership between bees and flowering plants, showcases the interdependence that enhances ecosystem stability through efficient pollination and nutrient cycling. By exploring these specific examples, we gain insights into how different symbiotic relationships contribute to the intricate dynamics and balance within ecosystems.

flip

back

Answer 28

EX: In a forest ecosystem, the competition for sunlight among different tree species can determine their spatial distribution and overall community structure. Additionally, within a freshwater pond, the competition for limited nesting sites among bird species may impact their distribution and population dynamics. By delving into specific examples like these, we gain a deeper understanding of how competition is a driving force in shaping the composition and structure of ecological communities, influencing the allocation of resources and the coexistence of species within ecosystems.

flip

back

Answer 29

Predation plays a dual role, as observed in the Yellowstone National Park ecosystem where the reintroduction of wolves positively influences biodiversity. Wolves control herbivore populations, preventing overgrazing and enhancing plant diversity. On the negative side, the impact of lion predation on ungulate populations in African savannas can lead to a decline in certain prey species, affecting the overall species abundance and community dynamics. By examining these specific examples, we gain a nuanced understanding of how predation shapes both the positive and negative aspects of species abundance and diversity within ecosystems.

flip

back

Answer 30

EX: In a coral reef ecosystem, the symbiotic relationship between coral polyps and zooxanthellae enhances resilience by promoting coral health and recovery after disturbances like coral bleaching. Additionally, in a grassland, the competitive interactions among plant species contribute to ecosystem resilience by preventing the dominance of a single species and enhancing overall stability. Furthermore, the mutualistic association between mycorrhizal fungi and plant roots in a forest ecosystem aids in nutrient absorption, fostering resilience against soil disturbances. By examining these specific examples, we gain insights into how the intricate balance of ecological relationships influences the ability of ecosystems to rebound from disturbances and maintain their functionality.

flip