

20 Multiple choice questions

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What is the impact of sea urchins on kelp forests?

- ☐ Sea urchins can stabilize kelp forests, preventing overgrowth.
- ☐ Sea urchins can decrease kelp biomass, leading to reduced habitat complexity.
- ☐ Sea urchins can promote kelp reproduction, expanding habitat size.
- ☐ Sea urchins can increase kelp growth, leading to enhanced biodiversity.

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What are the implications of the findings by Krayesky et al. 2016 regarding microorganisms in rhodoliths?

- ☐ They found no microorganisms in rhodoliths, suggesting sterile environments.
- ☐ They discovered that rhodoliths are uninhabited by any living organisms.
- ☐ They discovered many microorganisms living inside rhodoliths, indicating complex microhabitats.
- ☐ They identified only algae living on rhodolith surfaces, indicating simple ecosystems.

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What is the significance of kelp in relation to understory algae?

- ☐ Kelp promotes the growth of invasive algae, disrupting marine ecosystems.
- ☐ Kelp inhibits understory algae growth, reducing sessile invertebrate diversity.
- ☐ Kelp competes with coral for sunlight, decreasing reef biodiversity.
- ☐ Kelp can outcompete understory algae for light, facilitating sessile invertebrate diversity.

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What is the depth range for *Nereocystis luetkeana*?

- ☐ *Nereocystis luetkeana* is found at depths of 5 m in sheltered bays.
- ☐ *Nereocystis luetkeana* is found at depths of 30 m in open oceans.
- ☐ *Nereocystis luetkeana* is found at depths of 10 m in coastal estuaries.
- ☐ *Nereocystis luetkeana* is found at depths of 17 m in exposed areas.

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What is the role of giant kelp in its habitat?

- ☐ Giant kelp provides shelter for terrestrial animals, reduces wave energy, and increases turbidity.
- ☐ Giant kelp supports coral growth, alters ocean currents, and increases salinity.
- ☐ Giant kelp can shade out the bottom, change water chemistry, and buffer wave action.
- ☐ Giant kelp increases water temperature, reduces oxygen levels, and enhances sediment erosion.

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What are the challenges seaweed faces in terms of competition?

- ☐ Seaweed competes for space, nutrients, and light against other marine organisms.
- ☐ Seaweed competes for nutrients, shelter, and carbon dioxide with marine mammals.
- ☐ Seaweed competes for space, salinity, and temperature with coral reefs.
- ☐ Seaweed competes for sunlight, water depth, and oxygen with terrestrial plants.

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What is the density of crustaceans found per kg of kelp fronds?

- ☐ 10000 crustaceans per kg of kelp fronds.
- ☐ 3000 crustaceans per kg of kelp fronds.
- ☐ 5000 crustaceans per kg of kelp fronds.
- ☐ 8000 crustaceans per kg of kelp fronds.

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What is the primary role of kelp forests in the carbon cycle?

- ☐ Kelp forests store CO₂ in the atmosphere, increasing global carbon levels.
- ☐ Kelp forests release CO₂ through respiration, increasing carbon levels in water.
- ☐ Kelp forests absorb Oxygen through photosynthesis, reducing oxygen levels in water.
- ☐ Kelp forests absorb CO₂ through photosynthesis, reducing carbon levels in water.

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What environmental factors determine the distribution of seaweed in the intertidal?

- ☐ Factors include temperature stability, nutrient concentration, and predator abundance.
- ☐ Factors include salinity levels, ocean depth, and disease prevalence.
- ☐ Factors include wave energy, sediment type, and human activity impacts.
- ☐ Factors include light availability, water chemistry, and competition with other species.

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What is the significance of dissolved organic carbon (DOC) in marine ecosystems?

- ☐ DOC acts as a carbon sink and is involved in nutrient cycling and photosynthesis.
- ☐ DOC acts as a pollutant and reduces water quality.
- ☐ DOC is involved in atmospheric carbon exchange and erosion.
- ☐ DOC supports terrestrial plant growth and soil enrichment.

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What is Kelp Rafting?

- ☐ Kelp Rafting describes the harvesting of kelp for biofuel production.
- ☐ Kelp Rafting involves the transportation of kelp for coastal erosion control.
- ☐ Kelp Rafting refers to the cultivation of kelp for commercial purposes.
- ☐ Kelp Rafting refers to kelp that can travel long distances, providing habitat and resources for various marine organisms.

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How does ocean acidity affect calcifying organisms?

- ☐ Increased acidity makes it harder for organisms to build calcium carbonate structures, leading to potential dissolution.
- ☐ Increased acidity enhances calcium carbonate formation, promoting coral growth.
- ☐ Increased acidity has no effect on calcium carbonate structures in marine organisms.
- ☐ Increased acidity stabilizes calcium carbonate structures, preventing dissolution.

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What are the effects of kelp detritus on water flow?

- ☐ Kelp detritus increases water flow, reduces nutrient levels, and stabilizes sediments.
- ☐ Kelp detritus reduces water flow, increases deposition, and alters nutrient and chemical levels.
- ☐ Kelp detritus accelerates water flow, increases salinity, and reduces chemical levels.
- ☐ Kelp detritus enhances water clarity, promotes erosion, and alters temperature.

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What are biotic factors that influence seaweed growth?

- ☐ Diversity, competition, parasites, epiphytes, and reproductive cycles.
- ☐ Habitat size, oxygen concentration, and geological features.
- ☐ Climate patterns, water depth, and chemical composition.
- ☐ Temperature, salinity, nutrient levels, and water clarity.

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What is the effect of seasonal changes on seaweed exposure?

- ☐ Seasonal changes impact predator activity, sediment deposition, and water clarity.
- ☐ Seasonal changes affect sun exposure, high tide levels, and UV light, impacting growth.
- ☐ Seasonal changes influence salinity, water depth, and ocean current patterns.
- ☐ Seasonal changes affect nutrient availability, water temperature, and oxygen levels.

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What is a significant resource that giant kelp could provide?

- ☐ Giant kelp could be a significant resource for many unaccounted species that are small or live in cryptic habitats.
- ☐ Giant kelp could be a significant resource for terrestrial mammals.
- ☐ Giant kelp could be a significant resource for large migratory fish.
- ☐ Giant kelp could provide energy for deep-sea hydrothermal vents.

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How do sea urchins affect the diversity of benthic invertebrates?

- ☐ Sea urchins enhance the diversity of benthic invertebrates and seaweed.
- ☐ Sea urchins reduce the diversity of benthic invertebrates and seaweed.
- ☐ Sea urchins promote the growth of coral reefs.
- ☐ Sea urchins stabilize the populations of marine predators.

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What are three connections that seaweed has in its ecosystem?

- ☐ Carbon sequestration, shelter construction, and water purification.
- ☐ Nutrient absorption, predator avoidance, and energy storage.
- ☐ Primary production, habitat, and foundation species.
- ☐ Oxygen production, soil stabilization, and food source for terrestrial animals.

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What is the predicted ocean pH by 2100?

- ☐ The predicted ocean pH by 2100 is 8.5, which is less acidic than current levels.
- ☐ The predicted ocean pH by 2100 is 7.8, which is 150 times more acidic than preindustrial levels.
- ☐ The predicted ocean pH by 2100 is 7.0, which is more alkaline than preindustrial levels.
- ☐ The predicted ocean pH by 2100 is 8.0, maintaining current acidity levels.

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What is the saturation state of seawater (Ω) and its significance?

- ☐ Ω indicates the salinity of seawater; values greater than one inhibit shell formation.
- ☐ Ω indicates the temperature of seawater; values greater than one promote coral bleaching.
- ☐ Ω indicates the saturation state of seawater for calcium carbonate; values greater than one promote shell formation.
- ☐ Ω indicates the pH level of seawater; values greater than one promote ocean acidification.