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| Notes: Tidal Zones & Marine EcosystemsI can identify biotic and abiotic factors in marine ecosystems and describe how they interact with one another.  |
| **Essential Question**: How do adaptations increase the likelihood of a species’ survival in the intertidal zones?  |
| **What are the two major ecology concepts that come into play in intertidal zones**? 1. 2. **Tidal Zone Adaptation*** Tidal habitats change daily with the tides, or organisms \_\_\_\_\_\_\_\_\_, or adjust to changing environmental conditions with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to:

1. 2. 3. **Types of Tidal Habitats*** Sandy Beaches and mud flats
	+ Substrate offers lots of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but little structure for attachment
	+ Animals \_\_\_\_\_\_\_\_\_ themselves in mud
	+ Can also attach to \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Rocky Shores
	+ Little \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from strong waves: animals much anchor
	+ Complex tide pools possible
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ offer protection from drying

**Tidal Zones*** Tidal habitats are divided into zones based on relative beach \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and how often they are covered by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The zones are:
	+
	+
	+
	+
* Zones are affected \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by changing tides
* Adaptations are required to avoid drying out, \_\_\_\_\_\_\_\_\_\_ action, and predators.
* Tides are controlled by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gravity pulling on the ocean.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**SPLASH ZONE*** \_\_\_\_\_\_\_\_\_ on beach
* Out of water most of the time
* Species must tolerate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_, heat, cold and \_\_\_\_\_\_\_\_\_\_\_\_\_ dry periods
* *Adaptation example*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and algae are most tolerant to desiccation (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_)
* **Splash Zone Life Examples:**
	+
	+
	+

**HIGH TIDE ZONE*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ wave action
* Tide pools provide some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Adaptations include ability to survive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to air without drying out and survive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* *Adaptation example*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ survive wave action by attaching themselves to the sheltered side of large rocks.
* **High Tide Zone Life Examples:**
	+
	+
	+
	+

**MIDDLE TIDE ZONE*** Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ region
* Covered and uncovered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a day
* Life must tolerate BOTH submersion in water and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to air.
* Animals move in and out of adjacent (next to) zones to feed.
* *Adaptation example:* The \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ of an ochre sea star allow it to suction onto surfaces.
* **Middle Tide Zone Life Examples:**
	+
	+
	+
	+

**LOW TIDE ZONE (SUBTIDAL ZONE)*** Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and shelter
* Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of organisms compared to other zones
* Less exposure to air and heat- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for a lot of the time
* Animals unable to exist in other zones because they will \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_.
* *Adaptation example:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have tentacles that inject a paralyzing neurotoxin when touched.
* **Low Tide Zone Life Examples:**
	+
	+
	+
	+

**Exposure to Water**Most timeSplash ZoneHigh Tide ZoneMiddle Tide ZoneLow Tide Zone**Summary**:  |