_	<u>Main Topic:</u>		
	ergy Flow in Ecosystems		
Learning Objectives/Outcomes:			
Topic 1: Types of Biotic Organisms	Topic 2: Food Chains	Topic 3: Food Webs	
Ideas	Ideas	Ideas	
Where does most of the energy	What is a food chain?	What is a food web?	
that fuels life come from?	- Energy passing from one	- A series of	
- The sun	organism to another in	overlapping food	
ine suit	the form of food	chains that more	
What is a producer?		completely model	
- An organism that makes	What indicates the direction of	the flow of energy	
their own food by using the	energy transfer?	through an	
sun's energy	- Arrows	ecosystem	
5,		- Can also model the	
What is photosynthesis?	What is an energy pyramid?	variety of organism	
- The process in which	- Compares the energy	in an ecosystem	
producers transform the	available at each level of		
sun's energy into food	the food chain	Describe a healthy food	
		web.	
Explain the process of	What is 90% of energy	- Has an abundance	
photosynthesis.	organisms consume used for?	of producers, many	
- Chlorophyll containing	 Life processes or lost as 	herbivores, and	
organisms transform	heat	relatively few	
energy from the sun into		carnivores and	
glucose.	How much energy is passed on	omnivores.	
 Also requires carbon 	to organisms at the next level?	 The balance helps 	
dioxide and water, and also	- About 10%	the ecosystem	
produces oxygen		maintain and	
And the second and	Which organisms have the least	recycle biomass.	
.Sun's energy	amount of energy available?		
VVV	 Organisms at the top of 	Do food webs include	
$CO_2 + H_2O = C_6H_{12}O_6 + O_2$	the food pyramid	decomposers?	
Carbon Water Sugars Oxygen dioxide Octuber		 Many food webs do 	
Chierophyl	Why do energy pyramids and	not include	
	food chains rarely have more	decomposers, but	
	than 4 levels?	they are present	
What is a consumer?	- Because the limited	and essential in	
 An organism that eats 	amount of energy	providing balance o	
producers or other	available at higher levels	energy flow of an	
consumers for energy	would not be enough to	ecosystem	
	sustain organisms at	- All organisms in a	
What is a primary consumer?	that level	food web would	
 Organisms that eat only 		have arrows	
producers		pointing to	
 Also known as herbivores 		decomposers.	

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What is a secondary consumer? - Organisms that eat primary		
consumers		
What is a carnivore?		
 Animals that only eat other animals 		
annnais		
What is an omnivore?		
 Organisms that eat both 		
plants and animals		
What is a decomposer?		
- An organism that breaks		
down dead material for		
energy		
What is biomass?		
- The energy stored in once-		
living organisms		
How do decomposers help recycle		
biomass?		
 By breaking it down into 		
energy-rich substances		
such as, carbon, nitrogen,		
and phosphorus		
Key Vocabulary	Key Vocabulary	Key Vocabulary
Producer: An organism that makes	Food chain: Energy passing from	Food web: A series of
their own food by using the sun's	one organism to another in the	overlapping food chains that
energy	form of food	more completely model the flow of energy through an
Photosynthesis: The process in	Energy pyramid: Compares the	ecosystem
which producers transform the	energy available at each level of	
sun's energy into food	the food chain	
Consumer: An organism that eats		
producers or other consumers for		
energy		
Primary consumer: Organisms that		
eat only producers		
Coordon, consumer Oracia a		
Secondary consumer: Organisms that eat primary consumers		

 Carnivore: organisms that only eat other animals Omnivore: Organisms that eat both plants and animals Herbivore: organisms that eat only producers Decomposer: An organism that breaks down dead material for energy Biomass: The energy stored in once-living organisms 		
Pictures The server does the server the	Pictures	Pictures
The glant daws up water and sinceral from the ground through noise Minerals	Producer Primary Consumer Secondary Consumer Decomposer	And and a second
	Primary consumers	Register spreads from encloses Note: In the second secon
	Primary producers 10,000 J of sunlight	