Name	;	BIG	оск:	_ Date:
and ma	Students will assess the dependence of all catter within their ecosystem.			
a. Inve	estigate relationships among organisms.	ns, populations, con	nmunities,	ecosystems, and
LEQ1:				
	Relatio	onships		
•	is the study of relation	-	nisms and	their environment.
_	Interactions between living things and the	eir environment		
_	Interactions among living things			
•	Ecologists study the environments differ	ent levels of organi	zation.	
	_			
	<ul><li>Organism</li></ul>	_	Ecosyste	m
		_	Biome	
	<ul><li>Community</li></ul>	•		
•	An organism is an individual living thing	g, such as an alligat	or.	
	<ul> <li>Species: group of similar organic</li> </ul>			e
	·			
•	A population is a group of the same spec A community is a group of different spec		or in one or	······································
•	An ecosystem includes all of the organis			
water,	and other nonliving things in a given area.			, 5011, 100115,
•	A is a major regional or		if organism	ns characterized by
the cli	mate conditions and plant communities that		ا مامناها ا	11 a £ 1:£a a : a ta
•	The biosphere contains the combined po  All biomes (land, water, air)	rtions of the planet	ın wnich ai	ii oi iiie exists.
	- The			
	<del></del>			
•	Observation Ecologist Stud	y Relationships		
	- Direct			
	• Used for easy to spot sp	ecies		
	<ul> <li>Indirect Survey</li> </ul>	44.00		
	<ul><li>Used for species that are</li><li>Look for signs of their p</li></ul>		track	
•	Experimentation	reserice.		
	<ul> <li>Conducted in lab which gives re</li> </ul>	searchers more con	trol	
	<ul><li>Conducted</li></ul>			count of natural
	interactions			
•	Modeling			.1
	<ul> <li>Allows scientists to learn about of the possible in a lab or natural setting</li> </ul>	organisms or ecosys	stems in wa	ays that would not
	Use computer and			_

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	Biotic and Abiotic Factors	
Biotic (	Every ecosystem includes both living and nonliving factors c and Abiotic Factors	
Diotic		
•	Biotic factors are living things.	
	<ul><li>Plants</li></ul>	
	<del>-</del>	
	— Fungi	
	<ul><li>Bacteria</li></ul>	
•	Abiotic factors are nonliving things	
	<ul><li>Moisture</li></ul>	
	<ul><li>Temperature</li></ul>	
	_	
	- Sunlight	
	– soil	
•		
•	Changing one factor is an ecosystem can affect many other factors	
	is the assortment, or variety, of living	g things in an
	ecosystem.	.1 111 .
	<ul> <li>Rain forests have more biodiversity than other locations in</li> </ul>	the world, but are
_	threatened by human activities	•
•	A is a species that has an unusually large effect	
	They form and maintain a complex	
	Habitat and Niche	
•	Every organism has a habitat and a niche.	
•	A habitat differs from a niche.	
•	A habitat is all aspects of the area in which an organism lives	
	• factors	
	•factors	
Α	Your address	
An	niche includes all of the factors that a species in hy, and reproduce	needs to survive, stay
nearmy	• Food	
	Abiotic conditions	
	• Behavior	
•	Your occupation	
	ies can share but cannot occupy the same	in the same
ecosyst		
niche)	occurs when two species use resources in the same	ie way (occupy same
•	Competitive exclusion keeps two species from occupying the same	niche.
Compe	petitive exclusion has three different outcomes:	
•	1. One species is better suited to the niche and the other will e	ither be pushed out or
	become extinct.	
	2. The niche will be	
Comm	3. The two species will further diverge.	a at the same time
Compe	petitive Exclusion Principle: No two species can occupy the same nich	e at the same time.

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Ecological equivalents are species that occupy similar ni regions.	ches but live in diff	erent
Community Interac	ctions	
Organisms interact as individuals and as populations		
There are three main ways in which organisms in	nteract:	
<ul> <li>Competition</li> </ul>		
•		
<ul> <li>Symbiosis</li> </ul>		
• Mutualism		
• Commensalism		
• Parasitism		
Resource availability gives structure to a community.		#2623 <b>#</b> 22
Competition occurs when two organisms fight for the sar Types of competition:	ine	resource.
Intraspecific:		
Interspecific:		<del></del>
Interspecific:     occurs when one organism ca     Symbiosis is a relationship in which two species	ptures and eats anot	ther organism.
Symbiosis is a relationship in which two species	live closely.	$\mathcal{E}$
• Three types:	•	
<ul><li>Mutualism</li></ul>		
<ul><li>Commensalism</li></ul>		
- Parasitism		
Mutualism: both organisms, the of		
Commensalism: one organisms, the ot	ner is	·
Parasitism: one organism benefits, the other is Endoparasite: live in the tissue and organs of host	·	
- feed on nutrients ingested by host		
- Example:		
Exoparasite: exterior of host		
- feed on fluids of host		
- Example:		
Population Density and D	Nistribution	
•		
• Each population has a density, dispersion, and a	•	
• Population density is the number of individuals to		
<ul> <li>a measurement of the number of individ</li> </ul>	uals living in a defi	ned space.
• Scientists can calculate population density.		
• Formula:		<del></del>
<ul> <li>Geographic dispersion of a population shows ho</li> <li>Population dispersion refers to how a po</li> </ul>	•	• •
• There are three types of dispersion:		
– Uniform		
<ul> <li>Survivorship curves help to describe the reprodu</li> <li>Diagram showing the number of survivi set of births.</li> </ul>		-

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•	Survivorship curves can be type I, II or III			
•	Type I -low level of infant mortality and an older population  Common to large			
•	Type II -survivorship rate is equal at all stages of life  Common to birds and reptiles			
•	Type III -very high birth rate, very high infant mortality.  — Common to			
	Population and Growth Patterns			
•	Populations grow in predictable patterns			
•	The size of a population is always changing.			
•	Four factors affect the size of a population:  — Immigration:			
	organisms coming into a			
	<ul><li>Births</li></ul>			
	– Emigration			
	<ul><li>Organisms an ecosystem</li><li>Deaths</li></ul>			
•	Population growth is based on available resources.			
•	There are two types of growth:			
	Exponential			
	<ul><li>Logistic</li></ul>			
•	Exponential growth is a population increase due to	an ahundar	ace of resources	
•	Logistic growth is due to a population facing limited resource		ice of resources.	
	<ul> <li>Population will level out around</li> </ul>			
•	Carrying capacity is the maximum number of individuals in			
enviror	onment can support.	а роринино	ii that the	
•	A is a dramatic decline in the size	of a popul	ation over a short	
period	of time.			
•	Ecological factors limit population growth.			
•	A is something that keeps the siz	ze of a popu	ılation down.	
•	There are two types of limiting factors:			
	<ul> <li>Density dependent</li> </ul>			
	— Density			
•	Density dependent limiting factors are affected by the number	er of individ	duals in a given	
area.				
•	Examples:			
	<ul><li>Predation</li></ul>			
	<ul> <li>Parasitism and disease</li> </ul>			
•	Density independent limiting factors limit a population's gro	wth regard	less of the	
density		-		
•	Examples:			

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_	Unusual weather			
_	human activities	<u> </u>		