

Operation Survival 21

TEACHER'S GUIDE



TEACHER’S GUIDE FOR “OPERATION SURVIVAL 21”

*by John Burkitt, Educational Director
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WHAT IS OPERATION SURVIVAL 21 ABOUT?

This lesson series focuses on the survival of exotic cats through the 21st century, but all of its concepts extend to the general challenges of protecting the environment at large. Students are reminded that each person has an important role to play in protecting and improving their world.

WHO SHOULD USE THIS BOOK?

It is designed for the standards of learning and educational skills for students in the third through sixth grades, however it may be appropriate for older students.

As a free, web-based or classroom based learning resource which may be completed in or out of the context of a formal learning environment, “Operation Survival 21” is designed to get its message to the widest possible audience, and every attempt has been made to make this resource worthy to bear its important message either to the home school, casual web surfer, or classroom. You are strongly encouraged to ask questions or provide feedback that will help improve this work for future audiences.

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NATIONAL EDUCATIONAL STANDARDS ADDRESSED:

The activities in this book address either all or part of the following National Achievement Standards depending on how thoroughly the activity is completed or if expansions to the base activity are created.

I. The National Science Education Standards, 1996

NS.K-4.1 and NS.5-8.1 SCIENCE AS INQUIRY

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

NS.K-4.3 LIFE SCIENCE

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

NS.5-8.3 LIFE SCIENCE

- Regulation and behavior
- Populations and ecosystems
- Diversity and adaptations of organisms

NS.K-4.6 PERSONAL AND SOCIAL PERSPECTIVES

- Personal health
- Characteristics and changes in populations
- Types of resources
- Changes in environments

NS.5-8.6 PERSONAL AND SOCIAL PERSPECTIVES

- Personal health
- Populations, resources and environments
- Natural hazards
- Risks and benefits

II. The Standards for English Language Arts, 1996

NL-ENG.K-12.1 READING FOR PERSPECTIVE

Students read a wide range of print and nonprint texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

NL-ENG.K-12.3 EVALUATION STRATEGIES

Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

NL-ENG.K-12.6 APPLYING KNOWLEDGE

Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and nonprint texts.

NL-ENG.K-12.7 EVALUATING DATA

Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

III. The National Geography Standards, 1994

How human actions modify the physical environment – Standard 14, Grade K-4 and 5-8

LESSON OBJECTIVES:

1 - Introduction:

The lesson series clearly focuses on the survival of exotic cats through the 21st century, but all of its concepts easily generalize to the challenges of protecting the environment at large.

By the end of this introductory lesson, students should know the meaning of extinction and know the difference between natural extinction and unnatural (human caused) extinction. Natural extinction is addressed as a slow moving shaper of ecosystems while unnatural extinction is portrayed as a rapidly moving destroyer of ecosystems. The tone is set for students to see themselves as part of a potential solution to the threat of rapid unnatural extinction.

2 - Cat Profiles:

Several representative species show students the amazing diversity of the cat family. One readily distinguishing characteristic of each species is highlighted in a manner designed to engage the imagination and appreciation of the reader.

3 - Conflicts With Man:

The first of four challenges to species survival is addressed. Concepts of predator and prey are defined and the idea of “conflict” is explained non-judgmentally, as are the two basic types of conflicts: livestock losses and attacks. Man’s historical response to conflict—extirpation—is compared to modern alternatives more conducive to peaceful co-existence.

4 - Habitat Loss:

The second of four challenges to species survival is habitat loss. The concept of habitat is explained and the rate of habitat loss is put into a scale that is easy to comprehend. The two major causes of habitat loss...urban sprawl and short term management...are simply explained and identified as a “silent killer” that is less dramatic than hunting but equally deadly to creatures like upper level predators.

The legitimate need for a human habitat is addressed and the remedies of controlled growth and sustainable management are set forth as eco-friendly alternatives that meet the needs of both humans and wildlife.

5 - Genetic Diversity:

A difficult balance is struck between the need for accuracy and an age-appropriate introduction to trait inheritance. By intent, words are defined in the glossary of terms that are not used in the text proper. This was done to introduce more motivated students to correct terminology while not creating barriers to understanding in the main passage.

The basic concept that more closely related animals have a greater chance of encountering the same problems is explained by a creative simile...collectors cards which behave like inheritable traits, with the genetic composition of the offspring compared to the outcome of a hand of cards, each outcome unique but governed by a consistent set of rules. Like game scores,

some results of inheritance are more successful than others, and the best results come more often when the deck is properly shuffled.

The concept is introduced that animals in captivity are carefully bred in ways that encourage genetic diversity.

6 - Extinction:

The fourth, irrecoverable catastrophe that can befall a species. The roles of natural selection and environmental change in natural extinction are explained, as are the human causes of unnatural extinction. A non-judgmental but urgent plea is made for changes to the human lifestyle that are conducive to the preservation of the environment for future generations.

7 - Your Mission:

The student is shown how they can make a difference in their world through education, charity and advocacy. The single most important point of this lesson series is that the young people of today are the leaders of tomorrow, and each person has the potential to leave the Earth a better place than he or she found it.

COMPREHENSION AND RETENSION:

There are numerous opportunities in “Operation Survival 21” for students to evaluate their own comprehension of the passages. Difficult words are explained in glossaries of terms, and fun yet challenging review questions allow students to tackle real-world problems with their new idea toolkit. Suggested activities and tests ease integrating “Operation Survival 21” into the lesson plan while leaving the teacher some flexibility. You are encouraged to download and reproduce the Activities Packet.

Review Questions - CAT PROFILES:

1) Which cat is the largest?

A) Lion, B) Jaguar, C) **Tiger**

Note: The Siberian Tiger is the largest, and it may exceed 800 pounds.

2) Which cat is the strongest for its size?

A) Snow Leopard, B) Tiger, C) **Leopard**

Note: The Leopard can pull seven times as much per pound as a trained athlete.

3) Which cat lives in groups?

A) Margay, B) **Lion**, C) Iriomote Cat

Note: The Lion lives in groups called prides.

4) Which cat is the fastest?

A) **Cheetah**, B) Tiger, C) Jaguarondi

Note: The Cheetah has been clocked running at 75 miles per hour.

5) Which cat sometimes hangs upside down in trees to nap?

A) Leopard, B) Jaguarondi, C) **Margay**

Note: The Margay spends most of its life in trees. It even raises young there.

Review Questions - CONFLICTS WITH MAN:

- 1) A bobcat spots a rabbit. Which sort of attack is likely?
A) Aggressive Attack, **B) Predatory Attack**, C) Defensive Attack
Note: Predatory behavior is killing without fear or anger.
- 2) A cougar spots a lynx too close to her cubs. Which sort of attack is likely?
A) *Aggressive Attack*, B) Predatory Attack, C) Defensive Attack
Note: Though the cougar is defending her cubs, she is not afraid for her own safety. If a student argues the point, concede that just because the cougar is angry certainly does not mean she can't also fear for her offspring too.
- 3) A bounty is money paid for...
A) *Killing a predator*, B) Replacing dead livestock, C) Medical expenses from a mauling.
Note: Bounties were once more common than they are now.
- 4) When park rangers move a problem bear far from a campsite to protect visitors, that is
A) Extirpation, B) Reparation, C) *Selective Control*
Note: As you might imagine, selective control involves more work since it involves identifying the specific animals for removal.
- 5) When someone from the health department reduces the number of blackbirds in a public park, that is...
A) Extirpation, B) Extinction, C) *Control*
Note: Setting the target numbers for control depends greatly upon the goal of the action. Some animals are managed for their own good, such as preventing large populations of herbivores from starving en-masse.

Review Questions - HABITAT LOSS:

- 1) Rain forest land is stripped bare and planted with crops. It will only support crops for a couple of years. What is this?
A) Urban Sprawl, B) Reclamation, C) *Short Term Management*
Note: The soil found in the Amazon Basin wears out quickly. Crops are then moved to another burned over area. This is "slash and burn agriculture."
- 2) About how many species become extinct every day?
A) *137*, B) 207, C) 5
Note: This number includes all types of life. Many of the species are plants or insects unfamiliar to your students, but we should not make value judgments that their obscurity makes these species less important somehow.
- 3) Urban Sprawl is the uncontrolled growth of cities when growth is not...
A) Prevented, B) *Planned*, C) Expected
Note: Not all growth is bad, however uncontrolled growth is consuming the last wild places on Earth. Students should realize the value of striking a balance between development and preservation.
- 4) When a woodsman cuts some trees but plants seedlings to replace them, that is...
A) *Sustainable management*, B) Reclamation, C) Short Term Management
Note: Some people reject even sustainable cutting in State/National Forests.
- 5) What is the BEST word that describes where tigers live?
A) *Habitat*, B) Jungles, C) Zoos
Note: Explain that the International Space Station is a new concept, but still a perfectly valid human habitat.

Review Questions - GENETIC DIVERSITY:

- 1) What determines how different living things are?
A) Inbreeding, B) Dispersal, C) **Genetic Diversity**
Note: The technical aspects of Genetic Diversity are not vital to grasping its importance in preserving the environment.
- 2) Dominant traits are said to be:
A) Dispersed, B) **Expressed**, C) Inbred
- 3) Lack of Genetic Diversity makes which thing more likely?
A) Dispersal, B) Habitat Loss, C) **Health Problems**
Note: Some of these problems are physical, some behavioral. The Florida Cougar suffers from a number of problems due to the small breeding population having become somewhat inbred.
- 4) A Species is a group of living things that can interact to:
A) **Produce Offspring**, B) Share a habitat, C) Defend a territory
Note: The inevitable question about crosses between species will surface. However the crosses do not belong to either species, so the parents do not produce offspring that are "like themselves."
- 5) About how many traits are needed to build a tiger?
A) **30,000** B) 1,700,310 C) 3,000,000
Note: The difference between "trait" and "characteristic" needs explanation. Your height is a characteristic determined by several traits and environmental factors. Your taste in music is a characteristic that is not a trait at all. Your eye color is a trait determined by a single gene.

Review Questions – EXTINCTION:

- 1) The permanent loss of a species is called:
A) Dispersal, B) **Extinction**, C) Extirpation
Note: Emphasis is on permanent. Extirpation can be reversed, as with the reintroduction of wolves into Yellowstone National Park.
- 2) Natural Extinction is NOT caused by:
A) **Man**, B) Climate change, C) Vegetation change
Note: Natural Extinction is a part of nature, and an integral part of the development of life as we know it. Unnatural Extinction leads to destruction, not development.
- 3) One result of extinction is a loss of:
A) **Species Diversity**, B) Habitat, C) Agriculture
Note: Species diversity does to ecosystems what genetic diversity does to individual species...it gives it adaptability and resilience to environmental stresses.
- 4) In recent years the rate of extinction has increased by....
A) 10 times, B) 100 times, C) **1000 times**
Note: 1000 is a nice round number that sounds like it was pulled out of a hat. But it is the result of careful research by the scientific community.
- 5) Extinction can be completely be reversed by
A) Cloning, B) Urban planning, C) **No known method**
Note: In these days of "Jurassic Park" students need to be reminded that no successful recreation of an extinct animal through cloning has yet been done. The time to rely on science is before extinction, not after. It is far easier to avoid mistakes than to correct them.

Solution to CATS OF THE WORLD Word Find Puzzle

T	A	C	D	E	T	T	O	P	S	Y	T	S	U	R	E	D	O	M	G
B	O	C	A	R	A	C	A	L	R	D	L	U	N	A	G	R	O	M	H
X	N	Y	L	N	A	E	P	O	R	U	E	W	O	L	V	A	A	G	E
D	R	A	P	O	E	L	W	O	N	S	Y	G	C	C	U	N	S	O	P
O	L	A	C	E	U	E	J	H	T	X	A	W	E	V	U	E	I	U	G
M	A	S	D	O	K	D	O	K	R	H	A	W	L	L	A	U	A	T	M
E	L	C	W	T	I	G	E	R	Z	A	T	I	O	N	J	R	T	A	O
S	A	L	T	Y	G	M	J	D	S	T	A	V	T	W	A	O	I	C	U
T	V	O	A	C	H	A	U	V	L	E	C	E	A	R	G	P	C	D	N
I	R	U	C	T	G	R	N	O	I	E	B	E	C	T	U	E	G	E	T
C	E	W	Y	U	E	B	G	Z	O	H	O	P	D	W	A	A	O	D	A
C	S	W	A	T	S	L	L	O	N	C	B	P	N	A	R	N	L	D	A
A	P	R	B	E	V	E	E	R	A	S	T	C	A	W	O	W	D	E	N
T	A	R	Z	A	N	D	C	O	U	G	A	R	S	R	N	I	E	H	C
S	N	A	F	R	I	C	A	N	L	E	O	P	A	R	D	L	N	T	A
C	I	L	E	A	T	A	T	E	D	C	W	A	R	Z	I	D	C	A	T
H	S	E	S	D	W	T	A	C	D	E	T	O	O	F	K	C	A	L	B
C	H	I	N	E	S	E	M	O	U	N	T	A	I	N	C	A	T	F	O
V	L	A	D	X	N	Y	L	N	A	I	D	A	N	A	C	T	Z	E	W
O	Y	A	G	R	A	M	G	E	O	F	F	R	E	Y	S	C	A	T	Z
S	N	T	A	C	S	A	P	M	A	P	B	E	N	G	A	L	C	A	T
T	X	I	R	I	O	M	O	T	E	C	A	T	A	L	L	I	C	N	O
F	I	S	H	I	N	G	C	A	T	S	I	T	N	E	D	I	B	A	W
C	H	A	R	T	A	C	N	E	D	L	O	G	N	A	C	I	R	F	A

FEEDBACK FORM: OPERATION SURVIVAL 21

On a scale of 1 to 10, with 10 being STRONGLY AGREE and 1 being STRONGLY DISAGREE, please rate the following statements:

1. This program was a useful teaching aid.

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

2. Course material was clearly explained and appropriate for the children.

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

3. I feel that the message of Operation Survival 21 is something children need to hear.

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

4. I feel that Operation Survival 21 was very in-depth and well researched.

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

If you rated any of these below an “8” please explain:

Do you have any advice, remarks, questions, or attaboys? If so, please use the back of this form or attach another sheet. While OS21 was provided free for your use, I'm not above guilt tripping you for constructive feedback! Send your completed materials to:

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