Trips and Treks: Teaching Endangered Species Through Literature

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Trips and Treks: Teaching Endangered Species Through Literature

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Atlanta, Georgia
EXPEDITIONS IN THE NATURAL WORLD AS DISCOVERED IN CHILDREN’S LITERATURE
1. The World Wildlife Federation estimates that between 10,000-100,000 species are being lost each year. In fact, global populations of fish, birds, mammals, amphibians and reptiles declined by 58% between 1970 and 2012.

2. The extinction rate is 100-1,000 times higher than the natural extinction rate.

3. Unlike the mass extinction events of geological history, the current extinction challenge is one for which a single species - ours - appears to be almost wholly responsible.

Preservation efforts are required!!! We must motivate, inspire, educate, and develop tomorrow’s scientists, biologists, and environmentalists.

The Extinct Flightless Dodo
WHAT IS CAUSING THIS LOSS OF BIODIVERSITY?

1. Habitat destruction from logging, picking, hunting, and plucking (building materials, medicine, food).

2. The wildlife trade for souvenirs, status symbols, and food.

3. Problem is: overpopulation and overconsumption.

4. Ecological overshoot: By 2012, the bio-capacity equivalent of 1.6 Earths was needed to provide the natural resources and services humanity consumed in that year.

5. Ecological Overshoot ultimately leads to the depletion of resources on which our global economy depends.

Preservation efforts are required!!! We must motivate, inspire, educate, and develop tomorrow’s scientists, biologists, and environmentalists.
LIVING PLANET INDEX
1970-2010

The Global LPI shows a decline of 52% between 1970 and 2010. This suggests that, on average, vertebrate species populations are about half the size they were 40 years ago.
Consumption Pattern Changes and Preservation efforts are required!!! We must motivate, inspire, educate, and develop tomorrow’s scientists, biologists, and environmentalists.
ORBIS PICTUS – NCTE
2015 – CHASING CHEETAH

RICH IN CONTENT

INTERDISCIPLINARY

• Science
• Geography
• Culture
• Music
• __________________________
ROBERT E. SIBERT AWARD – ALSC
2015 – NEIGHBORHOOD SHARKS

Rich in Content

INTERDISCIPLINARY

• Science
• Environment/Biology
• Predator/Prey
• Ocean Life
• Geography
• Art
• ______________________
IMAGINE A WORLD WITHOUT...

...GREEN PARROTS (NO MORE TREASURE ISLAND)!
IMPROVING THE NATURAL WORLD:
STORY 1

2014 Sibert Award; 2014 Orbis Pictus Honor

PARROTS OVER PUERTO RICO, by Susan Roth
AWARENESS

- Black rats, honeybees from ships
- Hunting, trapping, building, cutting down trees
- Invasive birds – pearly eyed thrashers
- Predators and hurricanes
- Only 24 remained from millions – El Yunque
THE ADVENTURE

• US and Commonwealth of Puerto Rico Parrot Recovery Program
• Scientists trekked into the forest to gather eggs and chicks for the aviary – leaving at least one egg or chick
• Scientists built nesting boxes which deterred predators and placed them in the forest
• They also released the captive-bred back into the wild and monitored their progress.
• Created an aviary and nesting in Rio Abajo Forest as well.
CHILD READER CONSIDERS...

• The delicate balance of bird and animal habitat
• The consequences of sprawl and making nature into something it was not meant to be
• The beauty and value of wonder of nature
• What we do not hear when our birds are gone
• Only parrot native to US
• Culled fruit, helped insure forest seedlings, balance for predators
• CCSS.ELA-Literacy.RI.2.3 - Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

• AASL 2.1.2 Organize knowledge so that it is useful.

• 3-LS4-4 - Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

• Ask the students to complete a timeline in which they compare the number of parrots in Puerto Rico to human activity, events, and migration patterns

<table>
<thead>
<tr>
<th>Millions of green parrots</th>
<th>1 million green parrots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous peoples and natural events</td>
<td>Migration of tribal people from the South – hunting and use as pets – first invasive species introduced</td>
</tr>
<tr>
<td>Solution and Discussion:</td>
<td>Solution and Discussion:</td>
</tr>
</tbody>
</table>
**Set a goal of number of books to read each nine weeks.**

1) **Read About:** Healthy, natural order of prey and predation and how humans either help or hinder.  
   **Award:** Attend a special guest event (local Fish and Wildlife Officer)

2) **Read About:** Recovery from natural disasters  
   **Award:** Visit a Disaster Effort Team office

3) **Read About:** Status of parrots worldwide  
   **Award:** Visit an aviary

4) **Read About:** Humans living in balance with nature  
   **Award:** Storyteller who speaks to myths about human relationships with animals and birds (caring or non-caring with consequences)
IMAGINE A WORLD WITHOUT...

..GOLDEN FROGS (SO PRETTY)!
THE CASE OF THE VANISHING GOLDEN FROGS,
by Sandra Markle
AWARENESS

- The world is no longer a safe place for frogs, who eat insects and are prey for snakes, rodents, etc.
- Symbol of Panama – statutes in yards
- Chytrid fungus zoospores, due to climate change
- Attacks frog’s skin, which is how it breathes and maintains body temperature
- Fungus spread by invasive frogs, shipped from one place to another – bullfrogs for meat, African clawed frogs for pregnancy tests
- Spreads 18 miles per year
THE ADVENTURE

- Karen Lips discovered the problem in the forests of Panama...consulted scientists from around the world.
- Collected within the forests and sent to US and Canada zoos.
- Houston Zoo partnered to build a frog refuge in Panama – first in a hotel – males hard to find but mating successful.
- Are now considered extinct in the wild.
- Red-backed salamander – helper bacteria.
COMMON CORE

• CCSS.ELA-Literacy.RI.3.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

• 5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

• The author writes: “Perhaps, one day, one of you will become the science detective who finally stops this killer.” Visit the web links provided by the author and study them thoroughly. Draw interconnected magnifying glasses on art paper. Within the lens, based on the information gathered, graphically present how this extinction occurred per these discoveries.
READING PROMOTION

1) Read about: Frogs, their habitat, and their benefit
   Award: Art project (frogs and insects)

2) Read about: Nature based science careers
   Award: Visit a park, disinfecting shoes before entering creek

3) Read about: Rainforest
   Award: David Attenborough’s Life in Cold Blood
   http://www.bbc.co.uk/sn/tvradio/programmes/lifeincoldblood/video.shtml

4) Read about: The importance of color in nature – camouflage, mating, beauty
   Award: Create a paper mache golden frog statute
IMAGINE A WORLD WITHOUT...

...DOLPHINS...SO PLAYFUL!
A field biologist and ornithologist, Webb doesn’t skimp on technical information. Each journal entry includes the ship’s longitude and latitude. Graphs explain water salinity and dolphin population trajectories. A glossary includes concepts like the Beaufort scale (a measurement of wind conditions) and a reticle (a distance measurement on the ship’s binoculars)...Despite the calm seascape and the moments of joy, a pall of environmental damage hangs over the expedition. “Over the years I have spent at sea I have seen more and more plastic and oil pollution, and more entangled animals,” Webb reports. “I have noted the numbers of some species of seabirds decline.” But she will also inspire budding scientists to do something about it. New York Times Book Review http://www.nytimes.com/2011/06/01/books/review/childrens-books-far-from-shore-by-sophie-webb.html?_r=0
AWARENESS

• Decreasing populations of spotted and spinner dolphins caused by drowning in yellowfish tuna nets
• Shorebirds described as “canary in a coalmine.” They let scientists know something is wrong. Number of flying fish also an indicator
• Evidence of more and more plastic, oil pollution, entangled animals (line), cigarette lighters and butts, combs, balloons
• Marine animals stressed by catch-and-release
• Introduced to one of the least known and most mysterious of marine mammals – Curvier’s beaked whale – as well as delicacy of nature – Juan Fernandez petrels who will only breed on the Chilean Juan Fernandez Islands
THE ADVENTURE

• A four month adventure on the open ocean – Eastern Tropical Pacific Ocean! (NOAA)
• 22 foot boat with 1 chief, 6 marine mammal, 2 birder, 4 visiting scientists and two oceanographers
• Along with counts and photographs, samples of everything – surface feeding animals, dolphin tissue samples with crossbows and biopsy bolts
• Symbiotic relationships
• Human trip – bird poop, exercise, social times, etc.
CCSS.ELA-Literacy.RI.4.7
Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

• **MS-LS2-5** - Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

• **CCSS.ELA-Literacy.W.4.3**
Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

• **CCSS.ELA-LITERACY.RST.6-8.7**
• Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
<table>
<thead>
<tr>
<th>Based upon the map on page 14, and the text, describe what makes the ecosystem exciting</th>
<th>Explain why the 100m zone depicted on the graph at page 13 is an ideal location for mammal life</th>
<th>Based upon the graph at page 25, and the text, write your opinion as to why the dolphin population is not increasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine why scientists need to track “zones of probability” as found on the graph at page 46?</td>
<td>Based upon all the drawings of marine mammals in the book, choose the one you would most like to encounter and explain why</td>
<td>Write a letter to the chief NOAA scientist telling him which part of the ship you would like to work in, based upon the text and the drawing on page 9</td>
</tr>
<tr>
<td>Based upon the text, and pages 53 and 71, explain how a biopsy of a marine animal occurs on open seas</td>
<td>Find what borders (countries) dolphins most like to swim near based upon the graph at page 58</td>
<td>Based upon all the drawing of sea and shore birds in the book, choose the one you would most like to encounter and explain why</td>
</tr>
</tbody>
</table>
1) Read about marine mammals
   Award: Trip to aquarium

2) Read about sea and shore birds
   Award: Square dance to raise money for shorebirds
   http://www.youtube.com/watch?v=hhLTInrSYoo

3) Read about oceans
   Award: cookout for school with “boat” to climb on or into

4) Read about threats to our oceans and ocean life
   Award: Plastic bag gathering and recycling
   show http://www.youtube.com/watch?v=JV05LBLTNRM and talk about irony
IMAGINE A WORLD WITHOUT...

...SHOREBIRDS (SO AMAZING)!
AWARENESS

• In 1995, 150,000 rufa red knot shore birds – by 2000, dying by the thousands
• Food source at just one location – Delaware Bay – was being disturbed.
• Fewer than 25,000 may remain
• 80% may have disappeared in B95’s (Moon Bird) time
• Spotted in May, 2014, making him 23 – “gritty success inspires action”
• A perfect athlete – 18,000 mile circuit each year – they take the risk for food! – page 31 – use stars, sun, earth’s magnetic field, and landforms for navigation
THE ADVENTURE

- From Rio Grande, to Brazil, to Delaware(!), to the Artic, to Quebec, back to northern Brazil, to Tierra Del Fuego (Argentina).
- Following the route for banding and flags.
- Shorebird pioneers and scientists featured in vignettes.
- Reader travels with the bird, amazed at the endurance and transformations.
- Excitement at spotting the Moonbird over and over again.
- Learns with the Moonbird. – page 88
- Placing geolocators, tracking hurricanes,
- Mapping and discovering stepping stones
- Meet kids working to save Moon Bird and his kin.

Biologist Patricia Gonzalez
COMMON CORE/AASL

- **CCSS.ELA-Literacy.W.5.9**
  Draw evidence from literary or informational texts to support analysis, reflection, and research.

- **CCSS.ELA-Literacy.RI.5.3**
  Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

- **MS-ESS3-4**
  Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

- **AASL 4.1.8**
  Use creative and artistic formats to express personal learning.
<table>
<thead>
<tr>
<th>ROLE</th>
<th>AUDIENCE</th>
<th>FORMAT</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>Author</td>
<td>Letter</td>
<td>Explain what adventure most impressed you – whether of the scientist or the Moonbird – and why</td>
</tr>
<tr>
<td>B95</td>
<td>Student</td>
<td>Telegrams</td>
<td>Write telegrams from B95 explaining the conditions upon landing at his stopping points</td>
</tr>
<tr>
<td>Student</td>
<td>Friend</td>
<td>Friendly account</td>
<td>Write an explanation of B95’s journey to a friend unaware of this amazing athlete</td>
</tr>
<tr>
<td>Student</td>
<td>Tri-athlete</td>
<td>Letter</td>
<td>Write a letter to an Olympian tri-athlete explaining why Moonbird is an inspiration</td>
</tr>
<tr>
<td>Scientist</td>
<td>Public official</td>
<td>Letter</td>
<td>Write a detailed letter as to why the Moonbird’s habitat must be protected by law</td>
</tr>
<tr>
<td>Student</td>
<td>Parents</td>
<td>Memo</td>
<td>Write your parents a memo as to why it is important for the family to take walks and make observations of birds within your community</td>
</tr>
<tr>
<td>Self</td>
<td>Self</td>
<td>Diary Entry</td>
<td>Write down your thoughts as to what action you wish to take to support and protect B95 and his kin</td>
</tr>
<tr>
<td>Student</td>
<td>Scientist</td>
<td>Observation</td>
<td>Write a detailed observations to a scientific career that fits your psychological “habitat” or learning style and interests</td>
</tr>
</tbody>
</table>

MOONBIRD RAFT
READING PROMOTION

• TAKE A READING JOURNEY

Argentina – Isol – *La Bella Griselda*
Brazil – Ana Maria Machado – *Bisa Bia, Bisa Bel*
Artic – books on the ecosystems of the Poles and why they are important to the rest of the earth

Track process of reading on a map similar to that at front of book. After reading for each destination, have a culturally-based parent catered meal in the cafeteria. As a final award, go on a community bird counting expedition.
STORY 8 – Our World Is Without…

BOSTON GLOBE WINNER, NON-FICTION

RACE TO SAVE THE LORD GOD BIRD, by Philip Hoose
AWARENESS

• Considered extinct until possible sighting in 2004 in Arkansas
• Native Americans ornamented belts with their tufts and bills; fastened to watch chains; loggers destroyed in an hour what it had taken nature a century to grow, to the point restricted, by 1896, to Gulf States and Lower Mississippi Valley
• Other roads to extinction – specimen hunting; the plume war; hunting for sport
• Finally, the culprit was logging and the unconcern of officials at Singer Sewing Machine and Chicago Mill, at WWII and German Prisoners of War
THE ADVENTURE

- Jim Tanner and Cornell University took last images and recorded last sounds
- Jim worked at ETSU from 1940-1946, and ETSU has one of the original copies of his work in the rare book collection. It is a treatise on conservation efforts, still used today.
- We hear about Audubon’s efforts, Tanner and Cornell’s carrying of sound reflectors into the swamps with mule teams, Singer’s initial conservation efforts, Chicago Mill’s statement at a hearing organized to conserve the Singer area “We are just money grubbers.”
- The expeditions have given us the ability to understand how to save endangered species – page 156
- The Lord God Bird may still be with us!
COMMON CORE/AASL

- **CCSS.ELA-Literacy.RI.11-12.6**

Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

- AASL 3.1.2 Participate and collaborate as members of a social and intellectual network of learners.
- AASL 3.1.3 Use writing and speaking skills to communicate new understandings effectively.
- Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. **HS-LS2-7**

Working with the theatre director, hold several “Did You Know” skits in the library or theatre, for a period of time, about conservation efforts in our Country. Start with the book and determine particularly poignant stories within the text which are conducive to theatrics, based upon the power, content, and beauty of Hoose’s text. During the skit, play the parts of the conservationist or author and read the story aloud as Hoose presented it, presenting the same power and beauty within the performance. Find other conservation stories to include within the skits presented.
1) Read about the most important conservation efforts in our country at the present
   Award: Invite a local Congress person to the library to speak about conservation efforts at the national level
2) Read about America’s endangered species
   Award: Hold biology based career fair days
3) Read about the importance of swamps and black-water areas
   Award: Buy each student a personal copy of this book and invite Phillip Hoose to speak
4) Read about trees which are being preserved at the present and the destructive nature of logging, even today
   Award: Take kayaking expeditions into the nearest swampland.
IMAGINE A WORLD WITHOUT...

...SNOW LEOPARDS...(SO BEAUTIFUL)!
IMPROVING THE NATURAL WORLD

STORY 5

2010 ORBIS PICTUS RECOMMENDED

Saving the Ghost of the Mountain
An Expedition Among Snow Leopards in Mongolia

Text by Sy Montgomery
Photographs by Nick Bishop
AWARENESS

• Only about 3,500 remain – a third of which live in Mongolia
• Hunted for beautiful fur
• Killed for bones to be used in Asian medicine (which doesn’t work)
• Domestic sheep and goats drive away wild goat, the ibex
• Forced to eat livestock, they are poisoned
• Their demise would really effect livestock, for removing predators changes the soil, prey animals overpopulate, and spread disease to livestock.
THE ADVENTURE

• Intriguing text which reads like you are there! Danger Man and Company are introduced
• Airplane flight, van across the Gobi desert, visiting the people, learning about the culture, photos of Mongolian people, setting up a Ger (temporary housing)
• Climbing desert mountains replete with shale as professor of poop, explaining what all can be found about the animal therefrom (number and type of animal, what they ate), setting up wildlife cameras, stories of other expeditions at night, milking yaks, and helping the locals while dispelling myths
As a class, 1) take an expedition into the woods to find materials to make crafts which can be sold at PTA meetings. 2) Use the funds to adopt a snow leopard at the Snow Leopard Trust. 3) As a culminating assignment, ask students to write about their unique experience within the project, using dialogue amongst friends, teachers, or parents, detailed description, and a logical choice of pacing.
1) Read about the big cats that live in your area
   Award: Take a trip to the local animal shelter to talk about means of saving domestic cats
2) Read about big cats in danger of extinction around the world
   Award: Take a trip to a local park inhabited by wild cats and speak with a ranger
3) Read big cat lore and compare it to the truth
   Award: Check into reading programs in which kids read to cats at the shelter
4) Read about other expeditions
   Award: Culminating trip to the zoo.
IMAGINE A WORLD WITHOUT...

...KAKAPOS (SO STRANGE)!
Kakapo Rescue: Saving the World’s Strangest Parrot, by Sy Montgomery
AWARENESS

• Parrot that travels on foot, flightless and night-active – Native only to New Zealand
• Whiskers help it navigate the dark, soft feathers
• All sorts of noises, and honey smelling feathers (is the bacteria “good”) 
• Climb and jump with wings spread 
• Live 70-100 years 
• New Zealand used to have no mammals but seals and bats – survival mechanism was sleeping during day when raptors were active
• With humans arrived mammals – rats and dogs and cats, ferrets and stoats, wild rabbits who destroyed ground cover 
• 1995 – fifty-one left on Earth 
• Department of Conservation formed National Kakapo Recovery Team 
• Lots to be learned about behavior – like what encourages them to mate
THE ADVENTURE

• Wash everything with Trigene to kill bacteria, viruses, and fungi
• Bumpy plane ride to Codfish Island
• Walk on trails preserved for researchers only (Horror, Heinous, Humbug)
• Each kakapo treasured with name, history, mapped territory, feed stations, and monitoring of any eggs lain.
• Trials and triumphs – one chick dies due to a seed
• Triangulation with telemeters
• Solving mystery of chick dying and adult male
• Learning history of those who tried to save beforehand – Richard Henry
• Kakapo encounters
COMMON CORE/AASL

- **CCSS.ELA-Literacy.W.8.1.c**
  Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

- **CCSS.ELA-Literacy.RI.8.8**
  Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient;

- Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. HS-LS4-6
  - AASL 3.1.5
    Connect learning to community issues.
ENTER THE DEBATE

Show the video first presented. Ask the class to serve as those members who will be arguing why the kakapo should be saved at all costs. As a group, write a group counterclaim, based in the text provided in the book, which will hopefully squelch the first professor’s argument. Divide the book into sections and the class into sections as a means of organization. Bring all parts together and decide, collectively, upon organization, style, syntax, etc. Ask each student to recite a line of the debate in an oral presentation to the principal, PTA, another classroom, etc. using voice inflection and demonstrative tactics to make the point.
READING PROMOTION

1) Read about New Zealand’s other birds
   Award: Trip to the zoo or raptor center

2) Read about New Zealand’s topography and ecosystems and geology
   Award: Forest walk to discern the plants, etc. growing on trees in your area

3) Read about New Zealand culture
   Award: Masks or face painting party

4) Read about scientific instrumentation
   Award: Trip to ranger stations to examine instrumentation
IMAGINE A WORLD WITHOUT...

...TREE KANGAROOS...(SO CUDDLY)!
IMPROVING THE NATURAL WORLD

STORY 6

2007 ORBIS PICTUS AWARD, 2007 SIBERT HONOR

QUEST FOR THE TREE KANGAROO: AN EXPEDITION TO THE CLOUD FOREST OF GUINEA, by Sy Montgomery
AWARENESS

• Hunted by dogs and bow and arrow for food and ceremony
• Little is known about them
• Hunted by tens and twenties at a time
• Locals did not understand this locale was the only place in the world the animal could be found
• Locals did not understand the need for conservation but are now partners
THE ADVENTURE

• “We’ve got shots to prevent tropical disease. We brought pills to protect us from malaria. We stuffed our backpacks with rain gear and fleece jackets, water bottles and bug repellent. We’ve got hiking boots and sleeping bags, flashlights and walking sticks, clothespins and safety pins, lip balm and Band-Aids.”

• Climbing into the cloud forest amidst leeches and nettles and 300 species growing on a single tree!
• Twelve hours of hiking – mud, rivers, holes, rotten logs
• Measurements, because so little is known about the species
• Data sheets, radio collars, microchips, health exams, pluck fur for testing, radio-tracking
COMMON CORE/SCIENCE

• **CCSS.ELA-Literacy.RI.7.3**
  Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

• **CCSS.ELA-LITERACY.RST.6-8.7**
  Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

• Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. **MS-ESS3-3**

- Create a jigsaw activity in which students fit pieces of the puzzle together. One group studies Lisa, where her ideas to become an environmentalist came from, and how her ideas are helping the tree kangaroo (childhood, experiences, education). Another group studies how the interactions between the group and the peoples of Papua New Guinea helped the expedition to succeed.

- The last group determines how the group’s ideas have influenced the events and ideas of the peoples of Papua New Guinea.

- The groups then come back together to collectively create a Cause and Effect Fishbone chart which details how the Tree Kangaroo Conservation Program began and developed into a worldwide conservation partnership.
1) Read about the Cloud Forest as an ecosystem
   Award: Hike to document plants in local forest
2) Read about the culture of Papua New Guinea
   Award: Create headdresses with art teacher
3) Read about the fascinating plant and animal life of Papua New Guinea
   Award: Program by local nature guides – how they help visitors navigate
4) Read about marsupials
   Award: Physical education hop, jump, and skip day (field day)