

Toyota | georgetown

TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.

**THE LOUISVILLE ZOO**  
**BACKYARD**  
**ACTION HERO**  
**2010 GUIDEBOOK 2011**

**IF I BUILT  
A ZOO!**



# WELCOME FUTURE HEROES

At Toyota Motor Manufacturing, Kentucky, Inc. (TMMK), we believe that protecting the environment is part of our mission to be a good neighbor across Kentucky. As we build cars in our plant in Georgetown, we are committed to protecting the environment, obeying the environmental laws, preventing pollution and continuously improving our processes. But the commitment doesn't stop there. It is everyone's responsibility to protect the environment.

Becoming a Backyard Action Hero is the first step in learning about how we all coexist with the plants and animals that make up our environment. Once you have learned about some of the things in this book, you will be ready to take conservation action in your own backyard and beyond. Good luck!

*Sincerely,*

*Your Friends at Toyota Motor Manufacturing, Kentucky, Inc.*

## WHAT IS A BACKYARD ACTION HERO?

A Backyard Action Hero – or BAH as they are called – is a kid or an adult who is really into wildlife and habitats and is ready to take action to protect them. They think being “green” is cool, and they know that to really make a difference you not only need to learn, but you also need to act! BAHs care about animals and habitats in their own backyards as well as all around the world. Since the

Louisville Zoo is a great place to learn

about all kinds of plants and animals, our BAH

crew will check out

what's going on

there and introduce

some of the Zoo's

real life conservation heroes!



**Wade**



**Skye**



**Tanya**



**Alden**

Produced by the Louisville Zoo

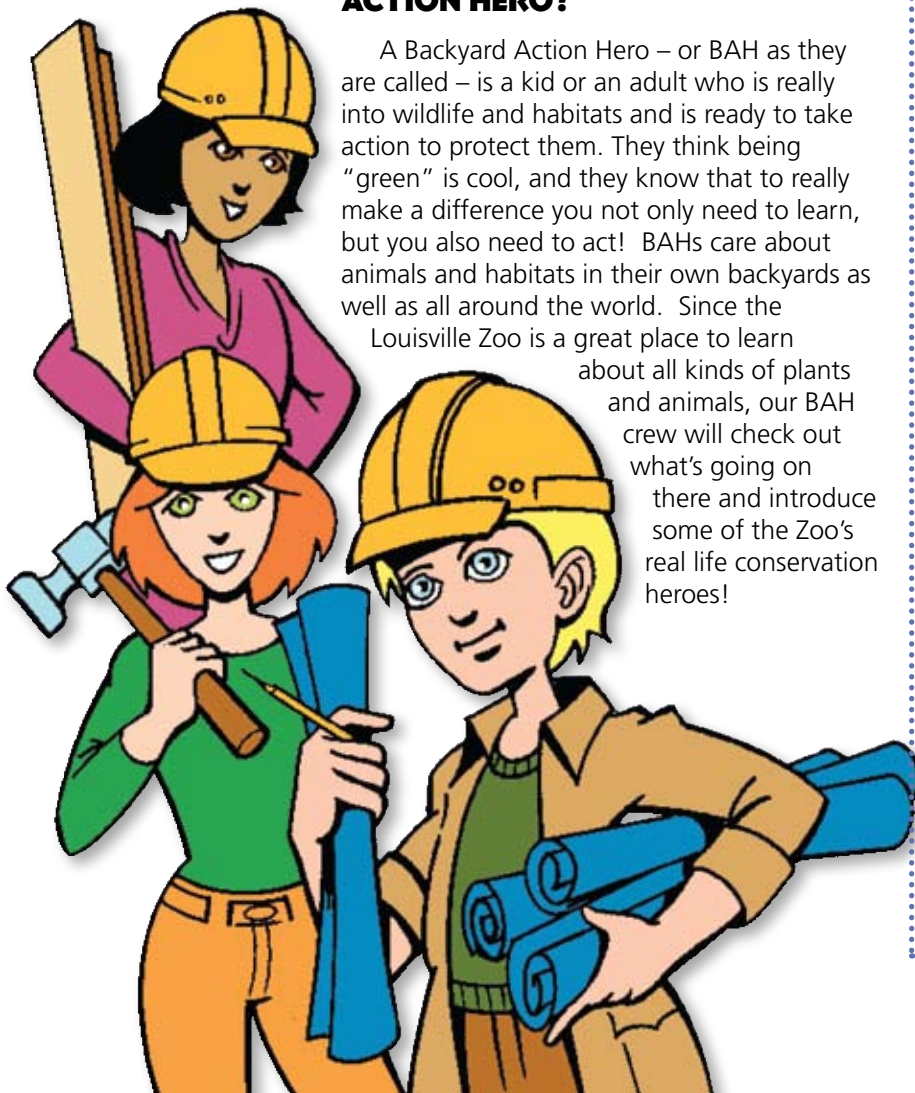
Written by Marcelle Gianelloni  
& Doug McCoy

Edited by Jennifer McMaster,  
Debbie Sebree & Grey Sebree

Design and art by  
Moonlight Graphic Works/  
Stephen Sebree

Printed by Publishers Printing

Cover photos: California sea lion,  
Steller's sea eagle (Photo by Clark  
Capps), polar bear,  
harbor seal





# LET'S BUILD A ZOO TOGETHER

**D**id you know that Egyptian pharaohs had their own private zoos? The earliest zoos were a way for people of great importance — pharaohs, emperors and kings — to show off their wealth and social status. In 1500 BC, Queen Hatshepsut of Egypt built her own zoo with animals collected from all over Africa. In 1100 BC, the Chinese emperor Wen Wang built an enormous zoo that was called “The Garden of Intelligence.”

Zoos have changed a great deal over the years. Today they are public centers of education, research and conservation, and they draw some 175 million visitors each year. That's more people than attend National Football League (NFL), National Basketball Association (NBA), and Major League Baseball (MLB) events combined!



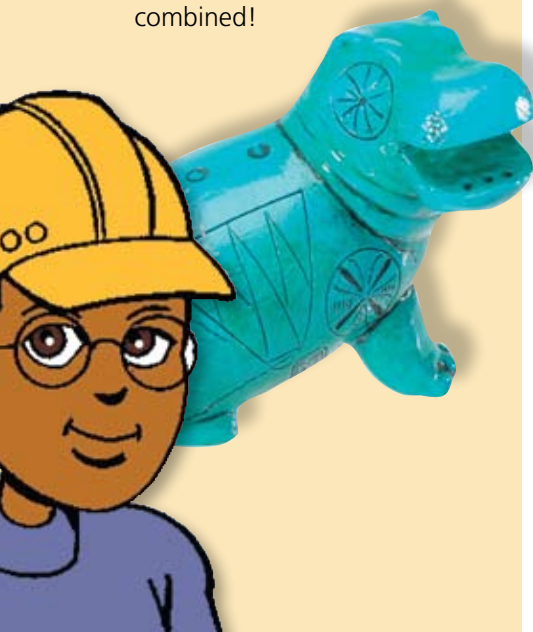
## BUT HOW DO YOU MAKE A MODERN ZOO?

One of the coolest things about most zoos is the diversity of animals and plants they exhibit, but that's also one of the biggest challenges to designing a zoo. Every exhibit has to be as unique as the animal (or animals) it houses.

Here at the Louisville Zoo, you can travel the globe and visit with animals from Africa, Indonesia, Australia and the Americas. From the endangered biodiversity of the Islands, where you can see orangutans, tapirs and babirusa, to the wilds of Africa in Gorilla Forest to the big cats of North and South America, each exhibit at the Zoo has been carefully designed to provide a safe and naturally stimulating home for each animal.

If you've visited the Louisville Zoo this past year, you've probably noticed some major construction going on right in the center of the Zoo. This new exhibit — Glacier Run — will let you experience what it's like to live on the edge of an Arctic wilderness. Sea lions, seals and bears will be the ambassadors of this harsh ecosystem.

Designing and building a new exhibit takes a lot of hard work and involves a lot of dedicated, knowledgeable people. Read on to learn more about the fascinating animals of Glacier Run and the real-life Backyard Action Heroes who are helping the Louisville Zoo build this exhibit designed to better the bond between people and the planet.



# INVASION OF THE PINNIPED

**G**lacier Run is the new state-of-the-art home for several species of pinnipeds. Nope — **pinnipeds** aren't creatures from some science fiction movie. They're mammals that have physical adaptations that make them terrific swimmers. When you visit Glacier Run, you'll have a chance to see seals and sea lions above and below the water. Just watch out for the Splash Zone — you might get wet, too!

The name "pinniped" literally means "fin-footed" — and that's a perfect way to describe these animals that have fin-shaped appendages to help them navigate the undersea world where they spend much of their time.

Pinnipeds can be found all over the world, in coastal areas ranging from the cold Arctic water at the Poles to warm, temperate areas along the coasts of California and Mexico. All pinnipeds are carnivores, and each species tends to enjoy specific delicacies, including fish, squid, shellfish and, in some cases, sea birds.

There are three families of pinnipeds: true seals (also called "earless seals" or "phocids"), eared seals (commonly known as sea lions and fur seals), and walruses. All the pinnipeds have very sensitive whiskers, known as **vibrissae**, that help them feel for their prey. A thick layer of blubber, especially in cold water dwellers, is also a major feature of being a pinniped.

Most of us can recognize a walrus by its large tusks (and, let's face it, large bodies). But how can you tell the difference between an earless seal and an eared seal? Well, of course, the obvious answer is their ears, or lack thereof.

But it's not likely that a seal or sea lion is going to pause while you look for external earflaps!

The best way to identify if you're looking at a sea lion or a true seal is to observe how it moves in and out of the water. Eared seals power themselves with their front flippers in the water, while steering with their rear flippers. On land, they're able to lift their bellies off the ground by rotating their hips and pushing up with their front flippers.

Earless seals, on the other fin, propel themselves with their rear flippers and steer with their front flippers. On land, they flop on their bellies, using the muscles in their back and stomach to move in an undulating or wriggling fashion. Let's just say true seals are much more graceful in the water than they are on land.

At Glacier Run, you'll see California sea lions, gray seals, harbor seals and a South African fur seal. Earless or not, all of these fun pinnipeds have plenty of splash power in their fins!



Harbor seal

## ZOOCABULARY

### **Adaptation**

A characteristic, feature or behavior that helps an organism survive in its environment.

### **Ecosystem**

A community of organisms and the interrelationships and interactions between them and the non-living world around them.

### **Pinnipeds**

An order of mammals including the "fin-footed" species, such as seals, sea lions and walruses.

### **Vibrissae**

The very sensitive whiskers used by some pinnipeds to find their prey.





*California sea lion*

## THE BIG PICTURE

If you were designing a new exhibit to house pinnipeds, where would you begin? Probably with a lot of questions — that's how the team at the Louisville Zoo does it!

For Glacier Run, and for all the exhibits at the Zoo, the team starts with the animals. What kind of living spaces do they need? How big an area do they need? How deep does the pool need to be? How will the keepers feed them? What types of enrichment and training will ensure the animals stay healthy and stimulated?

The team also thinks about the experience they want Zoo visitors to have. How will people be able to best view the animals? What will visitors be interested in knowing about these animals? What story can the Zoo tell?

These questions inevitably lead to more questions, and it's the job of the architect to find practical solutions to all of them.



Arne Judd.

Photo by Marcelle Gianelloni



### MEET ARNE JUDD,

***Associate Architect for Construction Administration with Arrasmith, Judd, Rapp, Choven Inc. Architects.***

Arne helped develop two recent major exhibits at the Louisville Zoo: The Islands and Gorilla Forest, and the team is fortunate to have him working on Glacier Run. Arne works with the animal experts at the Zoo to determine key points for the exhibit, like how high the pool walls need to be and what kind of water filtration system should be used. Arne also has spent many days out on the actual construction site, making sure that the architectural plans are executed as designed.

### ***Here's how Arne describes his unique perspective:***

"As an architect who oversees construction of zoo projects, my job is like a conductor of an orchestra; my musicians are the zoo staff, along with the design and construction team, who play the roles they do best. My job is to ensure that, when the project is completed, everything works together as a harmonious composition.

"Most importantly, our actions during construction must support what is best for the animals, visitors and keepers. Therefore, I have to look at every issue from these points of view and find solutions that meet the needs of all three.

"Each zoo project is challenging because we are creating environments from around the world for animals that have different requirements, from Indonesia and Africa to the Arctic of Glacier Run. If I do my job effectively, everything will look and work as it should. The result is that you will have more fun and experience the music created by the bond between ourselves and the planet."

— Arne Judd, Architect







*New Glacier Run Exhibit at the Louisville Zoo.*

*Photo by Robert Kemnitz*

## ACTIVITY #1

### CREATE YOUR OWN EXHIBIT!

Now it's your turn! Get markers, pens, cardboard, clay, fabric scraps, and any other materials you can use to draw or build an animal exhibit. You can create an architect's blueprint, or make a diorama from a shoebox. But before you let your imagination take over, here are some important questions to answer first.

*Send  
us a photo and  
description of your  
exhibit so we can share  
it on our website!*

1. What animal(s) will you have in your exhibit?
2. How big or small is your animal? Height and weight?
3. Should you include bushes, trees, rocks, ponds or other natural elements? If your animal is a herbivore, what will happen to the plants and trees?
4. All animals need an indoor space and shelter, even if they spend most of their time outdoors. What kind of indoor space would your animal need? How will the animal get in and out?
5. How will you protect your animal from the public? And how will you protect the public from your animal?
6. Is the animal social or solitary? How might that affect the design of your exhibit?
7. How will the exhibit space be cleaned?
8. Can this animal survive here in the Kentucky climate, or does it need to be in an inside exhibit?
9. How are you going to educate visitors about this animal? What kind of signage will you need? Will animal training sessions be open to the public?
10. Are there cultural elements you can include in your exhibit, items that help visitors understand more about the natural habitat of your animal?



## THE ANIMALS COME FIRST

**L**ong before the architectural blueprints are drawn up, the Zoo's animal staff consider the needs of the animals — in the case of Glacier Run, the seals, sea lions, and soon, the polar bears.

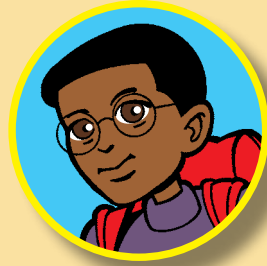
So, what do we know about our pinniped friends? We know they like to swim!

We also know that the Zoo's pinnipeds are good-sized creatures, so they'll need plenty of room. A female sea lion weighs between 200 and 400 pounds, and males weigh between 600 and 800 pounds. This also means they have hearty appetites, eating between 15 and 35 pounds of food every day.

*California sea lions basking in the sun*



### MEET JANE ANNE FRANKLIN, *Supervisor of Animal Training for the Louisville Zoo.*



In consultation with the veterinary staff and the pinniped keepers, Jane Anne is responsible for ensuring that Glacier Run is a safe habitat for both the animals and for the keepers that will care for them.

"We want to build an exhibit that provides the best possible living spaces for the animals so they are well taken care of, so they can display their natural behaviors, and so that the staff can be as close as we can and yet still be safe. Pinnipeds have teeth, lots of them, and they're a lot faster on land than you'd think!

"We have to take into account every activity the seals and sea lions will have each day, and how the keepers will need to interact with them. For example, we need to know how every animal will be fed, and how they'll move from one location to another, like from indoors to outdoors, and from the water to the "land" surfaces above the water.

"Training is our emphasis. While it's entertaining for Zoo visitors to watch, it's vital to how we care for the animals. Training offers us the opportunity to examine each animal — every day — to make sure it's healthy. So a major priority for the design of Glacier Run was to provide safe areas for training and observation.

"It's also important to us to share our knowledge of these wonderful, fascinating animals with our guests. Glacier Run features a large amphitheater so that Zoo visitors can watch our training programs and hopefully learn a little about the pinnipeds, many of which are threatened or endangered in the wild."

*— Jane Anne Franklin, Supervisor of Animal Training*

*Animal Training  
Supervisor Jane Anne  
Franklin working  
with Bart, a California sea lion*

*Photo by Robert Kemnitz*





# ACTIVITY #2

## SPACESHIP 2090

You are living on the planet Mars inside a climactically controlled dome. You have discovered a very rare creature on this planet and there are only 20 of them on the whole planet. Your job is to create a space for these endangered creatures so that you can establish a captive breeding program. Your goal is to breed enough of these creatures so that you can release them back out in their natural habitat on Mars.

- What will this creature look like?
- What does it eat?
- How does it communicate?
- What adaptations does it have for survival?
- What should this temporary space include?
- What will be the responsibilities of your keepers?



*California sea lion*



# PUTTING IT ALL TOGETHER

The Louisville Zoo, like most zoos, has a Master Plan. This plan helps chart the course of the Zoo's future, taking into consideration the animals of the world that need our help, and the local community that enjoys and learns from the Zoo.

Conservation is at the heart of every project the Louisville Zoo undertakes. Glacier Run is designed to highlight the challenges that animals living in a harsh but fragile **ecosystem** face, and the effects of habitat encroachment and poaching on these animals.

With this big picture in mind, someone has to keep track of the millions of details that go into the planning and construction of such an ambitious project!



**MEET MARK ZOELLER,**  
*the Louisville Zoo's Assistant Director, and  
the project manager for Glacier Run.*

Mark coordinates the efforts of Zoo staff — from keepers to educators to the horticultural experts — and the architectural and construction staff to make sure no detail is overlooked.

"As the project manager for Glacier Run, I coordinate all the different pieces that go into creating a successful exhibit, making sure that deadlines are met and that the project stays on budget. I try to see the exhibit from every perspective — including the community's. Our goal is to make an exhibit that's second to none, that keeps the Louisville Zoo at the forefront of animal care and conservation, and that provides Zoo visitors with an unforgettable experience.

"Zoo exhibits have many layers. First, an exhibit must be functional, serving the needs of the animals. Second, we want our exhibits to tell a story — in the case of Glacier Run, we're inviting you to experience a town that has learned to live in harmony with the natural life found in the Arctic Tundra, a biologically diverse environment that's so different from our own environment here in Louisville.

"There's one other thing I get to do as project manager: be around for the big deliveries. And with Glacier Run, let me tell you, there have been some enormous deliveries! What weighs 8,000 pounds, is five inches thick, 13 feet wide, 22 feet tall and transparent? Check out the photo (right) and you'll see."

— Mark Zoeller, Assistant Director



Animal	Shape of exhibit	Ground cover	Where is the food?	Are there other animals in the exhibit?
1.				
2.				
3.				
4.				
5.				





**MEET ROBERT BUCHANAN,**  
*President of Polar Bears International (PBI) and a great supporter of the Zoo's efforts in building Glacier Run.*

Robert Buchanan  
 Photo courtesy of PBI



## THE EVEN BIGGER PICTURE

**A**n important part of any exhibit is helping visitors understand what is happening to the animals and their natural habitats. Arctic **ecosystems** are quite delicate and the animals and plants that live there have specific **adaptations** for cold temperatures.

Many species of pinnipeds are depleted, threatened or endangered in the wild. Northern fur seals are still hunted in large numbers for their pelts. Gray seals get tangled in fishing nets. In the United States, all are protected under the Marine Mammal Protection Act.

Another species of marine mammal threatened by a variety of factors is the polar bear. The Louisville Zoo has partnered with Polar Bears International (PBI), an organization dedicated to assuring the survival of the polar bear.

You can learn more about the work of Polar Bears International at their website: [www.polarbearsinternational.org](http://www.polarbearsinternational.org).

"The Louisville Zoo is part of the PBI network of Arctic Ambassador Center zoos. These centers focus on animal well-being and enrichment, take a leadership role in carbon reduction in their communities, participate in PBI polar bear research efforts, and support polar bear conservation through the PBI Polar Bear Sustainability Alliance.

"We have a short timeframe to take action on the issue of climate change. With the help of zoos like Louisville, we can inspire people to lower their carbon footprint and arrest the climate warming that is causing the Arctic sea ice to melt. This will help assure that zoos are not the only places where polar bears will survive in the future.

"The Louisville Zoo has shown extraordinary leadership. Not only do they take part in our Teen and Zoo Keeper leadership camps, but they've produced the Grand Prize winners in our Project Polar Bear Contest for two years running."

– Robert Buchanan, President, Polar Bears International







## MEET SAM AND EMILY

*and learn what they have done to help protect wild places!*

"Hi! My name is Sam and I have been a Louisville Zoo volunteer since I was 13. I was given the opportunity to attend the 2008 Polar Bears International Teen Leadership Camp in northern Canada, where I spent six amazing days studying polar bears and learning how to protect our environment. Ever since that life-changing experience, I have dedicated myself to the conservation of the Earth. My experiences with polar bears and the natural world have influenced me to become a leader in my community. Through a program called Project Polar Bear, I and other teens have talked to multiple groups and companies about reducing their carbon footprint. My work with the Louisville Zoo, as well as other fantastic organizations around Kentucky, has truly made a difference in my life. I have learned that the only way to help this world is to protect the environment, which is something everybody can do."

— Sam Leist

## WE ARE ALL CONNECTED

**D**id you know that what we do here in Kentucky has an impact on wild places around the world? Let's meet two real-life backyard action heroes who are making a difference.

Emily Goldstein and Sam Leist are two teens that the Zoo helped send to Churchill, Canada, the Polar Bear Capital of the World, to participate in a Teen Leadership Camp that brought young adults together from all over the world.

*At top, Sam Leist viewing polar bears from a Tundra Buggy near Churchill, Canada.*

*At right, Arctic Ambassador Emily Goldstein.*



"Hello, fellow Backyard Action Heroes! I'm Emily, and I want to talk to you about how I am trying to help save polar bears, and what you can do to help, too. I've been to Churchill twice to study the bears as the Zoo's Arctic Ambassador, and I have seen how much they need our help. Both times I came home committed to making a difference

in climate change. I work with companies on reducing how much energy they use, and I give talks about polar bears and how to save them. After my first trip to Churchill, I came up with the idea for Project Polar Bear to get other teens involved in carrying the conservation message to our community. You can help, too! Convince your parents and friends to use less energy at home, and make a pledge on our website — [www.louisvillezoo.org/projectpolarbear](http://www.louisvillezoo.org/projectpolarbear). Maybe you could start a recycling program in your school, or give a talk to your class about polar bears. The important thing to remember is that you can make a difference!"

— Emily Goldstein

# PENNIES FOR POLAR BEARS!

## HELP BRING BEARS BACK TO LOUISVILLE!

**As a Backyard Action Hero, we're counting on you to help us spread the word about the tundra and incredible creatures that inhabit it.**

We know that in order for young people like you to care about animals and their environment, they must connect with nature and the world around them. Glacier Run focuses on arctic ecosystems such as the tundra, and offers information about how to help address some of the most important environmental issues of our time.

You can already see seals and sea lions at your Zoo, but we need your help to build the rest of the exhibit and bring the bears back. Your class, club, or entire school can help make Glacier Run possible by making a donation that you can raise with a little creativity and a whole lot of heart!

Here are some ways that you can raise funds to support your Zoo. (Be sure to get permission from your teacher or principal before you start.)

**Change for a Cause.** This is a great idea for a school-wide fundraiser. Each class can bring a container (coffee containers and clean milk jugs are two ideas) from home, and fill them with spare change. You'll be amazed at how quickly that change pennies, nickels and dimes will add up!

**Bake Sale.** Host a bake sale in your school's cafeteria with arctic-themed baked goods like "Polar Bear Brownies."

**Crafts for a Cause.** Get your talented friends together in the classroom or at home and make bracelets or tie-dyed t-shirts and sell them to family and friends.

### **Breakfast Benefit – Pancakes for Polar Bears.**

Work with your school cafeteria or local community center to try to set something like this up. You can charge a suggested admission price and you and your friends can serve up the breakfast – a fun way to raise some funds for furry and feathered friends.

**Involve Your Principal.** Enlist the help of your principal to provide a "prize" for the class that raises the most money for Glacier Run. Perhaps he or she would give the winning class a "no homework day" or an extra recess. They might even be willing to do something totally zany like dye their hair green!

**Polar Paws for a Cause.** Download the Polar Bear Paw from the Zoo's website. Anyone who donates to the Glacier Run campaign can put their name on one of the paper paws. Display them all in your cafeteria or in the school's hallways.

**Recycle for Glacier Run.** Help raise money for Glacier Run and help the environment too! Proceeds from the recycling can be donated to the Zoo.

To find out more about how you, your class or your whole school can participate in this program starting this fall, please visit [www.louisvillezoo.org/pennies4polarbears](http://www.louisvillezoo.org/pennies4polarbears)







## MEET ANGELA JOHNSON

You might be surprised that the Zoo's animal keepers enjoy learning just as much as our teen volunteers. Meet Angela Johnson, who has been a keeper for 13 years. She also had the opportunity to spend time in Churchill



participating in a Leadership Camp with keepers from zoos around the world. Here's how Angela and her colleagues took on a new project to protect the Arctic.

"I take care of a variety of animals, including tigers, ocelots, pumas, snow leopards, maned wolves, lions and lemurs. I also worked with the seals, sea lions and polar bears when they were last at the Zoo, before we started construction for Glacier Run.

"In October 2009, I had the opportunity to travel to Churchill, Canada, with several other zookeepers from around the U.S., Canada, and Denmark. We lived on the Tundra Buggy® for six days and learned about polar bears in their natural environment. Bears were right outside our bedrooms! The main goal of getting together with other zookeepers from around the world was to come up with a plan to help save the polar bears' habitat. Living in Churchill with the bears for almost a week was a real inspiration for us.

"We came up with a project called Acres for the Atmosphere. Each person that participated in the camp was responsible for going back to their zoo and implementing a plan to get one acre of trees planted. Trees help to take CO2 out of the earth's atmosphere, helping to decrease the potential for further warming of the Arctic. The polar bears' ice is melting quickly, affecting their ability to hunt for food. One mature tree can remove more than a ton of carbon in its lifetime! To learn more about how you can help save the bears' habitat, go to

**[www.acresfortheatmosphere.org](http://www.acresfortheatmosphere.org)**  
or **[www.polarbearsalive.org](http://www.polarbearsalive.org)**."

— Angela Johnson,  
Carnivore Keeper

*At top, Angela Johnson working to plant an acre of trees.  
Photo by Marcelle Gianelloni*

*At right, California sea lions*

## EXPRESS YOURSELF!

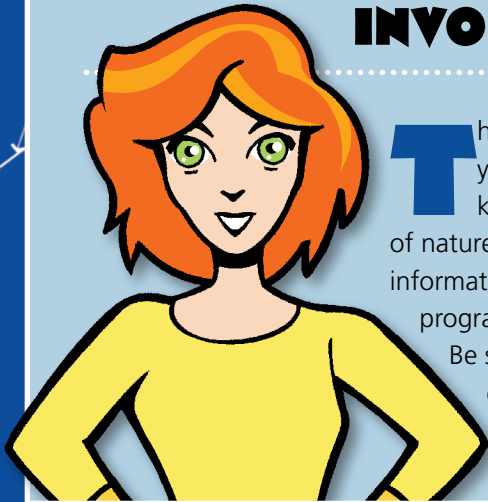
**N**ow that you've learned a little bit about the Zoo's new Glacier Run Exhibit and its residents, here are a couple of ideas that you could write about.

- Write a persuasive essay for your local newspaper in support of animal conservation. Pick an animal found in the tundra. Where does this animal fit into the food chain? Why is this animal important? What would happen to the environment without this animal?
- Select an animal found in the Arctic regions. Create a poem that describes the physical characteristics and adaptations unique to that animal.

Send us your finished essay or poem and we will include them on our website to share with other students. Mail them to the Louisville Zoo, 1100 Trevilian Way, Louisville, KY 40213 or email them to: [debbie.sebree@louisvilleky.gov](mailto:debbie.sebree@louisvilleky.gov).



# GET YOUR PARENTS & TEACHERS INVOLVED, TOO!



**T**he Louisville Zoo can be your partner in providing you, your family members & teachers with the knowledge & inspiration to be the future caretakers of nature & wildlife. Visit [louisvillezoo.org/education](http://louisvillezoo.org/education) for information about field trips, classes, camps, overnight programs, professional development and so much more.

Be sure to participate in the **Pennies for Polar Bears** campaign to help bring bears back to Louisville.

*Details are on page 14 of this booklet.*

Kentucky may seem like a long way from the tundra, but your efforts do make a difference. There are lots of ways a BAH and his or her family can get involved in protecting our planet. Here are some more things YOU can do!

## REDUCE, REUSE AND RECYCLE

- Organize a cleanup day and pick up litter around your school or in a local park.
- Find ways to conserve around your house. Turn off the water while you brush your teeth. Replace burned out light bulbs with compact fluorescents. Turn your thermostat up or down a couple of degrees (up in the summer, down in the winter).
- Try to buy products made of recycled materials. Also, choose to buy products with the least amount of packaging. That means there's less to throw away.
- Learn as much as you can about animals and their habitats and how to help preserve them. The Louisville Zoo is a good place to start.



PRESENT THIS COUPON AND RECEIVE

## ONE FREE CHILD'S ADMISSION

With the purchase of one regular adult admission  
at the Louisville Zoo

*Valid during regular Zoo hours.*

*Not valid with other offers or discounts. Expires 9/30/11*

The Louisville Zoo is a 501(c)(3) not-for-profit organization and the state zoo of Kentucky.

Presented by

**Toyota | georgetown**

[www.toyotageorgetown.com](http://www.toyotageorgetown.com)

