

Discover Haystack Rock

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Haystack Rock is...

- ▲ one of Oregon's most recognizable landmarks
- ▲ home to colorful tidepools and diverse bird life
- ▲ part of the Oregon Islands Nat'l Wildlife Refuge
- ▲ 235 feet high from the edge of the shoreline
- ▲ the result of lava flows millions of years ago
- ▲ an Oregon-protected Marine Garden

At low tide, walk right up to it and find colorful and fascinating creatures. Use this guide to help you get the most out of your time at "The Rock" while helping to protect it for generations to come.

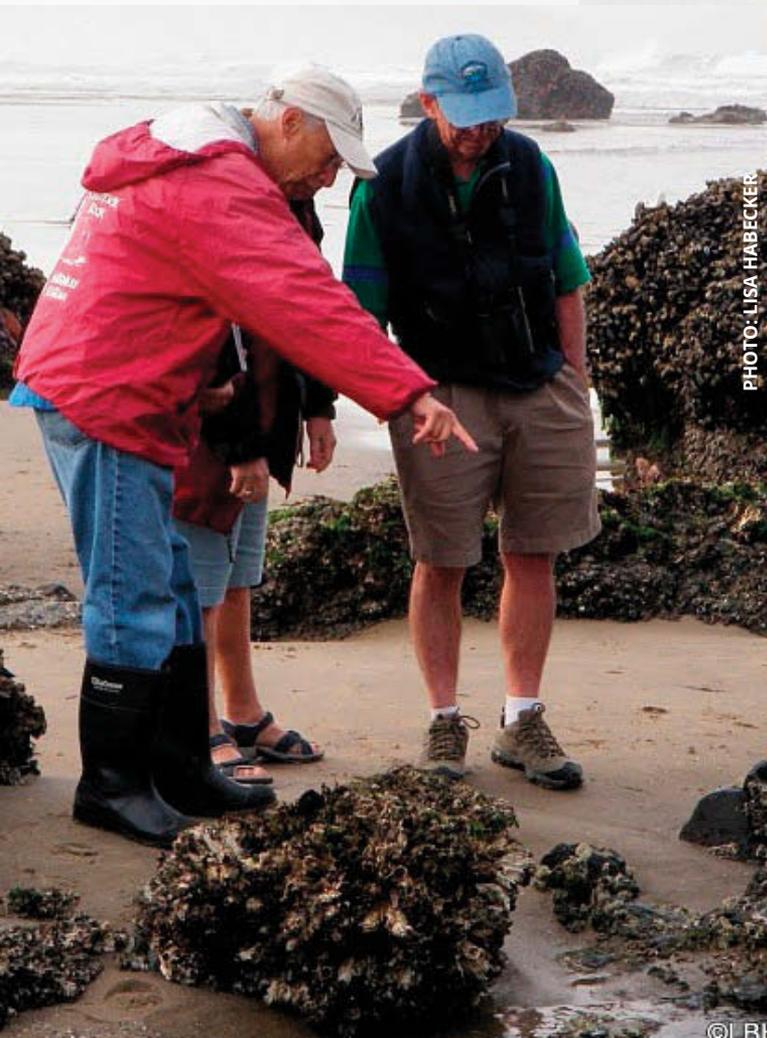
Visiting Haystack Rock

Timing Is Everything

The Haystack Rock Awareness Program (HRAP) provides educational wildlife programs on the beach beginning President's Day weekend in February and running through the end of September. Interpretive specialists wearing red are on the beach in front of Haystack Rock during most spring and summer low tides. Look for the HRAP truck and trailer, along with tables with aquaria displays and spotting scopes for bird viewing.



Can you tell the difference? To spot a puffin look for an orange bill and feet, and white only on the face. Common murres have white bellies.



Both of these images feature anemones. In one the anemone is open (left) and in the other all closed up at low tide.

Tidepools are exposed twice a day during low tide. When planning your visit to Haystack Rock, check friendsofhaystackrock.org.

Home Sweet Home in the Intertidal Zone

Like a rainbow painted across the bottom of Haystack Rock, intertidal animals and algae thrive between the high and low tide line. Twice a day the water along the shore slowly recedes exposing the ocean's marvelous world. Giant green anemones display their beautiful tentacles in tidepools while purple and orange sea stars cling to rocks.

All these animals are waiting for tidal water to return so they can breathe easily and feed. When visiting move slowly and look closely, some animals are hard to see and others, like fish and octopi, are perfectly camouflaged.



Intertidal = between the tides

Intertidal animals can survive out of water twice a day during low tide. Shells that keep water in allow barnacles, limpets, and mussels to live in higher locations which are exposed to the air for longer periods of time. Soft bodied predators like sea stars, nudibranchs, and anemones rule the lower zones, where incoming tides cover them sooner.

Bands of life at Haystack Rock

High Tide Zone: Most of the animals have shells and eat algae off of the rocks (limpets) or out of the water (barnacles and mussels). Feeding time for these animals is limited due to its long exposure twice a day, but luckily it is too high for hungry predators to climb.

Mid-Tide Zone: Here, mussels are found in large numbers. Lower on the rock, they are more likely to become food for sea stars, and they struggle to survive the long exposure of the high tide zone.

Low Tide Zone: Exposure to air is minimal, and the food is more plentiful here, making it a good place for many kinds of marine animals and algae. At low tide, life is still as creatures focus to conserve water for survival. As the water rises, intertidal animals become active and ocean fish return.



Herbivores: Vegetarians of the Intertidal

Many of the animals at Haystack Rock stick to one spot for most of their life. **Mussels** attach themselves to rocks by secreting a liquid that hardens, forming a thread in the cold sea water. These byssal threads are so strong that people have copied the formula to make surgical and industrial glues. Mussels rely on the strength of their byssal threads to withstand crashing waves and prying predators. Remarkably, mussels can disconnect and reconnect byssal threads to move slowly across rocks.

Mussels clean water! A feeding California mussel will filter three liters of water per hour. Mussels move tiny hairs to pump water through their bodies, eating edible bits and tiny algae called **phytoplankton**. Tiny phytoplankton in the sea make fifty percent of the oxygen we breathe!



Mussels use byssal threads to stay attached to the rock when birds and waves work to remove them.



Pink coralline algae growing on a giant acorn barnacle displaying its cirri.

PHOTO: SUSAN GLARUM



Mossy chiton

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Chitons and **limpets** use their tiny rows of teeth to scrape algae off rocks. Unlike mussels and barnacles, these plant eaters are movers. They crawl around on a foot that makes up most of their body. Limpets leave “home scars,” sites on rocks that fit their shell perfectly sealing water inside. When the tide is in, limpets look for food, then return to their “home scar” before low tide.



Keyhole limpet

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Peculiar Predators!

Predators usually have sharp teeth, claws, and move very fast. Most intertidal predators, however, do not have eyes or ears, and some do not even have a mouth!

The **Ochre sea star** is a hungry predator at the top of the intertidal food chain. Sea stars do not have eyes nor a brain, but they can easily grab moving prey. During high tide they search for crabs, snails, barnacles, and mussels. They put their stomach into shelled animals liquefying them before they slurp them up. Sea stars pump water in and out of their madreporite to fill up their arms and tube feet. This allows the sea star to cling and move.

Anemones sit and wait for food to come to them. Their colorful tentacles are equipped with cells, called nematocysts. These cells release barbs filled with toxins to paralyze and capture prey that passes by. Nematocysts also serve as protection from most predators.



Opalescent **Nudibranchs** or **sea slugs**, feed on the tentacles of anemones with rows of tiny teeth. They are able to eat the nematocyst cells without being harmed. Once ingested, the cells are transported to the nudibranch's back, where they are again utilized for defense. **Sea lemon** nudibranchs feed on sponges instead of anemones. Sponges have little spines all over their bodies. The sea lemon consumes and uses these spines as its own defense. The nudibranchs' vibrant colors act as a warning to lurking predators.

Colorful tentacles of anemones

Opalescent nudibranch

Barb coming out of a nematocyst.

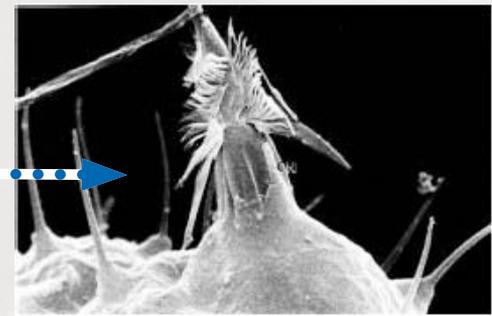


PHOTO: LISA HABECK

Watch For These Sea and Shorebirds

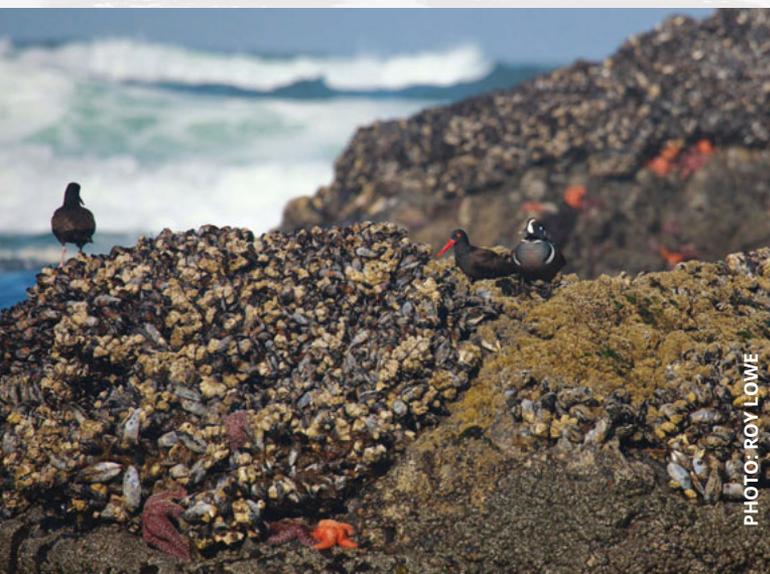
Haystack Rock is part of a larger ocean ecosystem. Many migratory animals, such as fish, crabs and birds use the intertidal as feeding and nursery grounds. Harlequin ducks and surf scoters are often seen braving the winter in the turbulent waters around Haystack Rock. These birds are using the intertidal ecosystem as a buffet, grabbing shelled animals with their robust bills as they dive under waves.

Surf Scoters nest on shallow lakes in the arctic tundra, but winter along our coast. The male is velvety black with two white spots on its forehead and nape. His bill is yellow and red, with a black patch near the base. Females are plain dark brownish with a greenish-black and gray bill.



^ Surf Scoters

v Black Oystercatchers



Harlequin Ducks are strong swimmers that winter on the Oregon coast. The striking male Harlequin has slate blue body feathers, chestnut-brown flanks, and white on their face and neck. Females have brown bodies with white patches on their face and head.



^ Harlequin Ducks

Black Oystercatchers are shorebirds who wander the intertidal at low tide using their long beaks to poke and prod the rocks in search of loose limpets, snails, chitons, and barnacles.

The Black Oystercatcher is a special shorebird because it spends most of its life in one intertidal area. With less than 400 on the Oregon coast, the Black Oystercatcher is a Species of Concern. In the summer, these birds nest just above the high tide line, making their eggs and chicks very vulnerable to predators and human disturbance.

The Great Seabird Migration

Once a year seabirds return to coastal islands and rocky cliffs to nest. From April through September, Haystack Rock is shared by many colorful and charismatic seabirds. Tufted Puffins can be seen on the north grassy slopes high above the tidepools. Black and white Common Murres gather on areas of bare rock, Western Gulls meticulously build their grass and stick nests, and Pelagic Cormorants with purple sheened feathers cling to the cliff sides.

There are three species of cormorants that nest at Haystack Rock. The smallest is the pelagic cormorant, and the largest the Double-crested. Cormorants use their feet to propel them when pursuing small fish in underwater dives. Unlike other seabirds, their feathers are not as waterproof. This reduces buoyancy allowing them to dive deeper. Cormorants will build their nests out of seaweed and grasses and cement it to the cliff side with their guano (bird poop).

Brandts Cormorant (male)



PHOTO: ROY W. LOWE / USFWS



IMAGE: RAM PAPISH

Pelagic Cormorants are the smallest cormorant on the Pacific coast with thin necks and a pencil-sized dark bill. Breeding birds have a bold white patch on their thighs and also a hard-to-see red throat patch. They nest singly or in groups on narrow shelves of steep cliffs and use guano as cement to construct nests of seaweeds and grasses. Cormorants use their feet to propel them when pursuing small fish in underwater dives.

Double-crest cormorants have a throat pouch of yellow-orange that is sometimes called a golden throat pouch.

Brandt's Cormorants nest in colonies among Common Murres. They build their nests with seaweed, marine flowers and grasses and cement it together with their guano (bird poop). Brandt's Cormorants are striking in the breeding season when the male's gular, or throat pouch, turns a bright cobalt-blue and his neck and back sport showy white plumes. The male chooses a nest site and displays to ward off rivals and attract a mate by drawing back his head, extending his blue throat pouch and spreading his tail and fluttering his wings.

Predators of Nesting Birds

Hundreds of nesting birds attract an awful lot of attention! Bald Eagles and Peregrine Falcons hunt seabirds at Haystack Rock. Bald eagles that nest in the surrounding forests visit frequently to feed their young. Once fledged, young eagles accompany their parents to Haystack Rock where they learn how to fly, hunt, and avoid hundreds of dive-bombing Western Gulls.

PHOTO: RAM PAPISH

Bald Eagle with Common Murre

Auklets

Auklets, a group of football shaped seabirds, include the **Tufted Puffin**, **Rhinoceros Auklet**, **Pigeon Guillemot**, and **Common Murre**.

These excellent swimmers can dive hundreds of feet using their wings to push them through the water! They eat small fish like smelt, herring, and anchovies.

Auklets return to the coastline to nest every year. The **Tufted Puffin's** journey is the farthest. Puffins spend the winter hundreds of miles offshore. In early spring they return to former nesting sites where they reunite with their life-long mate.



PHOTO: RAM PAPISH

Tufted Puffin

17 Winter storms make a mess of their nesting burrow so the Puffins go to work. They use their feet and beaks to clean out dirt and grass.

Parents take turns caring for their single egg. Once the chick hatches, parent Puffins fly up to three miles offshore searching for food. Luckily, Puffins have backward barbs on their tongues that let them hold twenty or more fish in their mouths!

PHOTO: RAM PAPISH





PHOTO: SUSAN GLARUM

Pigeon Guillemot coming out of cliff side nest

Pigeon Guillemots feed their chicks one fish at a time—about 16 times a day! They feed in the intertidal around Haystack Rock, where it is easy to visit their nests tucked into crevices on the rock's lower walls.



PHOTO: SUSAN GLARUM

Low tides April through September are best for visitors to see many of these seabirds in the wild.

PHOTO: RAM PAPISH



PHOTO: RAM PAPISH

Common Murres lay one egg high on the rock. They do not build a nest, because of this their eggs are pear-shaped. If bumped, the egg rolls in a circle instead of off the rock. After the chick hatches, the mother murre leaves for the open ocean leaving the father to guide the chick down the rock and out at sea where it learns to swim and feed.

PHOTO: RAM PAPISH



How Was Haystack Rock Formed?

Composed of basalt, Haystack Rock is a sea stack or monolith that formed underwater 10 to 17 million years ago. What is currently marked as the Oregon-Idaho border was a site of violent volcanic activity. Fissures spewed molten hot lava that reached the coast in only a few days! The lava flow that formed Haystack Rock, seeped through the sediment and re-erupted through the seafloor, forming a deep submarine volcano.

Tectonic plate movement pushed the basalt formation upwards, and erosion carved away the softer sediments and stones, leaving the dramatic rocky coastline that is still in transition today. Haystack Rock was once part of the coastline, but millions of years of erosion have separated the monolith from the land mass, making the area “intertidal” (meaning it can be reached by land).

The view below, from Ecola State Park, illustrates the Oregon Coast’s geological past. High mountains from lava flow tower over the shoreline. They are continually uplifted by the subducting oceanic plate below and eroded away by the sea. You can see Haystack Rock furthest back, on the right.



Two Groups, One Mission

This guide is produced by the City of Cannon Beach and the Friends of Haystack Rock in support of the Haystack Rock Awareness Program whose mission is to protect, through education, the intertidal and bird ecology of the Marine Garden and Oregon Islands National Wildlife Refuge at Haystack Rock.

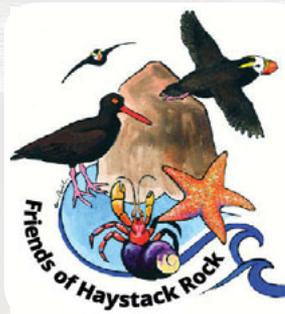
Haystack Rock Awareness Program (HRAP)

The Haystack Rock Awareness Program was initiated by a group of Cannon Beach citizens in 1983. The group brought spotting scopes to the tidepools for visitors to use and answered questions about the wildlife.



In 1985, the Haystack Rock Awareness Program was incorporated by the City of Cannon Beach. HRAP is run by professionals, driven by volunteers, and funded by the City. Generous donations and grants through the Friends of Haystack Rock help HRAP continue and expand. The program also receives guidance and support from U.S. Fish and Wildlife, Oregon Department of Fish and Wildlife, and Oregon State Parks.

Friends of Haystack Rock (FOHR)



The Friends of Haystack Rock (FOHR) is a non-profit organization providing guidance and support for the Haystack Rock Awareness Program in cooperation with the City of Cannon Beach.

FOHR promotes the preservation and protection of the intertidal life and birds that inhabit the Marine Garden and the Oregon Islands National Wildlife Refuge at Haystack Rock. FOHR also presents “The World of Haystack Rock” Library Lecture series from November to April. Look for the schedule at www.friendsofhaystackrock.org.



National Wildlife Refuge

To preserve wildlife for future generations, Haystack Rock became part of Oregon Islands National Wildlife Refuge in 1968. Haystack Rock is one of the 1,853 rocks, reefs and offshore islands on the Oregon coast that are set aside for nesting habitat and marine mammals.

The Refuge includes everything above the mean high tide line (the barnacle line).

Climbing is not allowed on Haystack Rock, and there can be no low flying aircraft or flying toys near the rock. In fact, the U.S. Fish and Wildlife Service recommends pilots maintain a 2,000 Above Ground Level altitude to make sure they do not disturb nesting seabirds.

North Face of Haystack Rock >



High Tide Line

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You can help protect wildlife by following state and federal laws. The changing tide makes signage a challenge for local, state, and federal agencies that manage the area. Learn the laws so you don't unknowingly impact wildlife.

Marine Garden



In 1991, Haystack Rock was designated as one of only seven protected Marine Gardens on the Oregon Coast. Marine Gardens are set aside for educational programs and public visitation.

The Marine Garden includes the rocky area in front of Haystack Rock that shows at low tide. It includes all the tidepools and sand beaches between the mean high tide line (the barnacle line) and an extreme low tide line. Imagine a ring, fanning out 300-yards from the base of Haystack Rock (the size of three football fields). This entire area is CLOSED to collecting.



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Remember three things when you visit:

- ▲ NO COLLECTING
- ▲ NO CLIMBING
- ▲ NO HARASSING

Get Involved

Thousands of people visit Cannon Beach every summer, many because of our local monolith, Haystack Rock. With a small seasonal staff team and limited funds, volunteers are essential to carry out our mission. Volunteers play a crucial role in educating the public and visiting school groups while promoting stewardship of the environment.

What do volunteers do?

On the Beach with the Haystack Rock Awareness Program – Most visible are the beach interpreters who educate visitors about the amazing marine and bird life at Haystack Rock. Some on the beach duties include: setting up the trailer display, manning bird scopes, guiding tidepool tours, and reminding people of the rules of the rock. Volunteers also help organize potlucks, update educational materials and many other activities. We offer full and partial shifts; all help is welcome!

Other ways our volunteers help HRAP are by maintaining beach supplies, offering expertise in education or the environment, and doing data entry.

Behind the Scenes – Less visible are the many people who help with volunteer activities away from the beach. The Friends of Haystack Rock Board is looking for volunteers with time and talent to share. Especially needed are volunteers to help with:

- ▲ Public Relations (newsletters, thank-yous)
- ▲ Social Media (Facebook monitoring)
- ▲ Website Management
- ▲ Grant Writing
- ▲ Event Assistance (lectures, networking)



Why volunteer?

Volunteers are part of an exciting outdoor education program! Our staff and volunteers have diverse backgrounds and talents making our team dynamic and interesting. Volunteering is a great way to meet people from all over and to learn more about this special part of the world. The Haystack Rock Awareness Program (HRAP) was initiated by a group of volunteers in 1983.

Can kids volunteer?

The Haystack Rock Awareness Program provides excellent opportunities for school groups. And, of course, kids of all ages are welcome to take part in our beach activities. Until the age of 16, children need a parent or guardian's permission, and an adult chaperone when volunteering.

I know nothing about tidepool life or birds. Can I still help?

Of course! The only requirements are interest and enthusiasm! On the beach, the staff is always present to help answer questions. Many of our volunteers start with little knowledge but gain a lot quickly by simply volunteering. If you are not sure about being on the beach, we can still use you! Serving on a committee, donating equipment or services, and assisting with mailing. Until the next training, check out our Resources page to find websites that provide basic marine biology, fun tidepool tidbits, photos and seabird information.

Who do I contact?

Volunteer with the Haystack Rock Awareness Program

hrap@ci.cannon-beach.or.us

503-436-8060

PO Box 368, Cannon Beach, Oregon 97110

Volunteer with the Friends of Haystack Rock

fohrap@gmail.com

PO Box 1222, Cannon Beach, Oregon 97110

Online Resources

Visit friendsofhaystackrock.org where you can sign up to receive the FOHR newsletter, check the summer beach program and lecture schedules, and download the new Discover Nature mobile app!

Join us on [Facebook](#) and [Flickr](#) for the latest photos and information.

Stay connected to the tidepools by visiting hrapnatureblog.blogspot.com.

For more information about the Haystack Rock Awareness Program, volunteering, or job openings visit www.ci.cannon-beach.or.us.

Make a contribution

Donations are tax-deductible; Friends of Haystack Rock is a 501(c)3 non-profit organization.

Be a Supporter. Your donation to Friends of Haystack Rock supports the vital work done by the Haystack Rock Awareness Program.

Suggested Support Levels:

\$ 25 – Hairy Hermit Crab

\$ 50 – Giant Green Sea Anemone

\$ 100 – Black Oystercatcher

\$ 200 – Ochre Sea Star

\$ 500 – Tufted Puffin

\$ ____ – Other

Every contribution makes a difference in our efforts to share the wonders of Haystack Rock with visitors. Consider how you can make a difference with your support such as:

- ▲ Signs protect nesting birds and bird scopes allow visitors at the bird scope station to see baby chicks or birds in flight
- ▲ Microscopes, tables and stools allow visitors to see tidepool inhabitants such as skulpin fish, plankton or Hairy Hermit crabs up close
- ▲ HRAP interpreters point out unique tidepool inhabitants, various birds and share Haystack Rock geology creating a special experience
- ▲ Citizen Scientists participate in studies on the Sea Star Wasting Syndrome to help scientists understand how the outbreak is affecting sea star populations and the ecosystem.

**Make a difference today.
Be a Supporter and donate now.**

www.friendsofhaystackrock.org or

PO Box 1222, Cannon Beach, Oregon 97110



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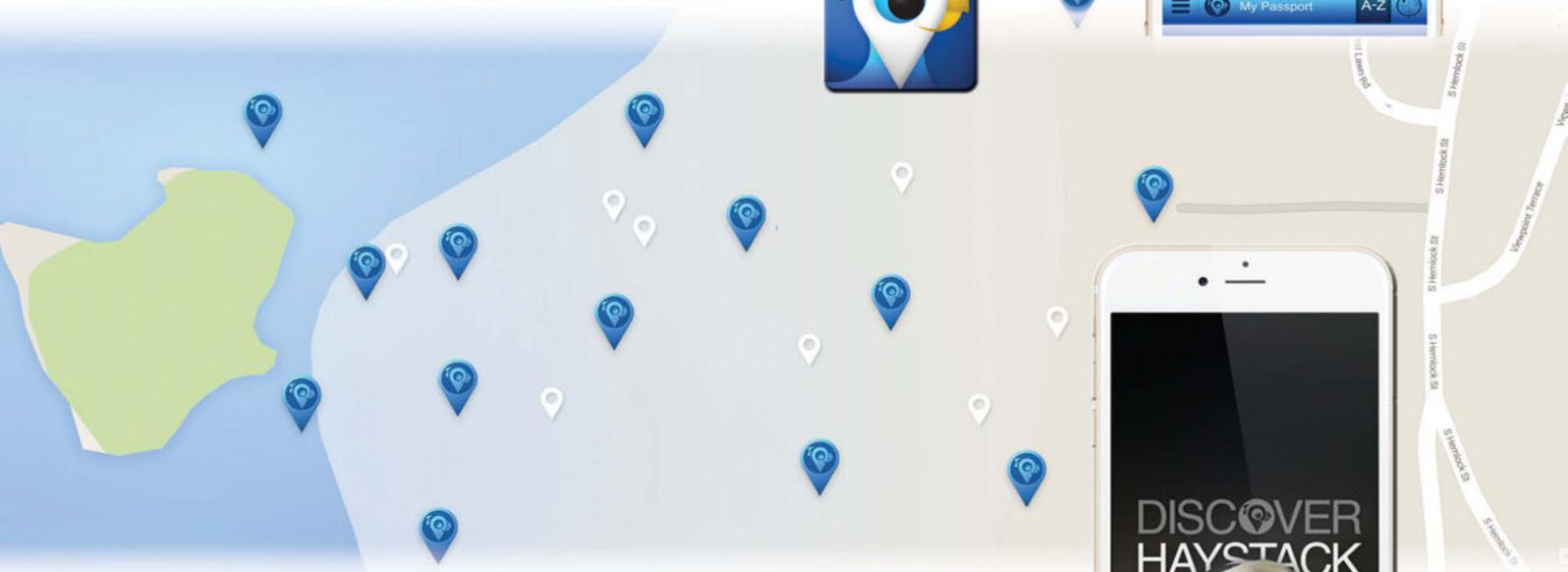
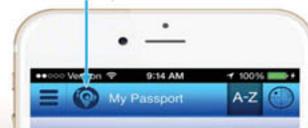
AVAILABLE FOR IPHONES AND (MOST) ANDROID DEVICES

1 Download **Discover Nature**
FROM THE APP STORE OR GOOGLE PLAY

2 Load **Discover Haystack**
FROM WITHIN DNA'S AVAILABLE SITES

3 Head to **Haystack Rock**
IF YOU'RE ALREADY THERE, MAKE YOUR WAY TO WHERE
THE DNA SYMBOLS ARE SHOWN ON THE MAP

(AND IF THE MAP DOESN'T POP UP WHEN ON SITE,
TAP THIS SYMBOL TO GET STARTED)



**Download the app and start
playing the game today!**

