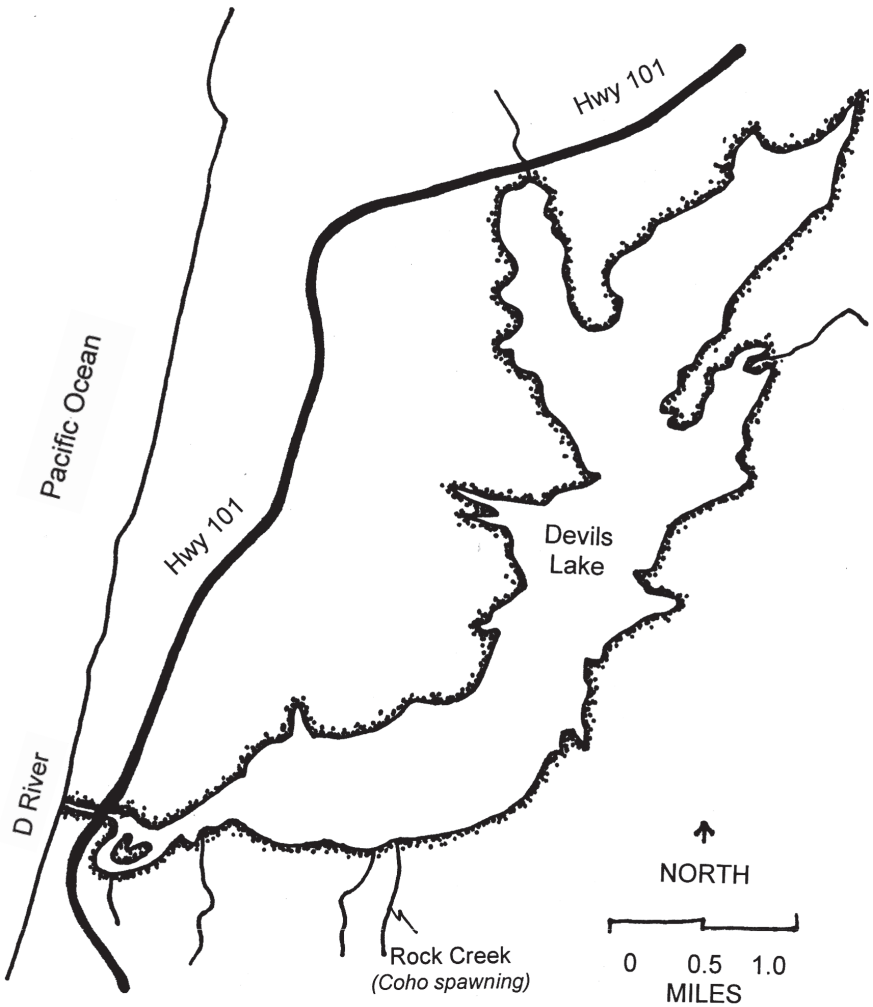
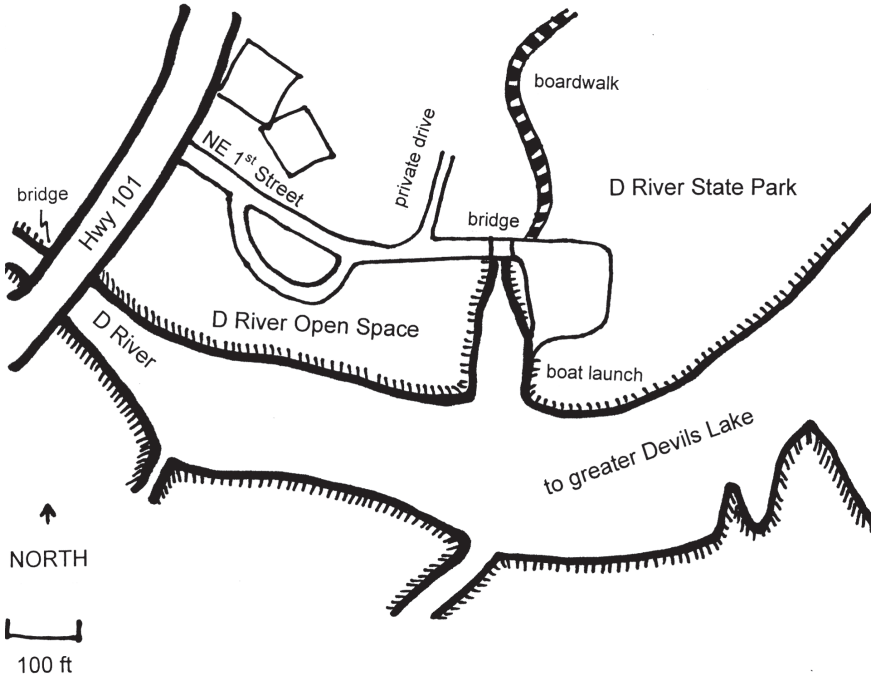


D River Invasive Species Quest

Use this map of Devils Lake in Lincoln City and the close-up map of the D River area on the next page to help you solve the D River Invasive Species Quest, which starts on page 46!



Close-up map



Quest Partners



Devils Lake
Water
Improvement
District

Nature
HISTORY
Discovery



D River Invasive Species Quest

Established: 2008 by Cait Goodwin

Box Monitors: Paul Robertson of Devils Lake Water Improvement District, with Jane and Doug Holbrook

Begin your Quest at the parking lot of the D River Hostetler Park, located off NE 1st Street in Lincoln City, on the north bank of the D River channel, east of Hwy 101. Follow the directions and collect the letter clues to fill the numbered squares on page 51. The Quest will take about 45 minutes to complete, and the route covers both City Park and State Park lands. Dress for wading, if desired. There are lots of neat fishing spots and even a boat access point to discover. Consider bringing a canoe or kayak with you so you can check out the rest of Devils Lake by boat after you finish the Quest!

As you explore the parks, the Quest will help you recognize some of the nonnative species that live here, and the various impacts that have resulted from their introductions. Hidden in the Quest are tips about what you can do to curb the spread of invasive species.

This Quest was created with support from the “Nab the Invader” Aquatic Invasive Species grant, National and Oregon Sea Grant, and NOAA. It complements the statewide “Stop the Invasion” campaign.

Here lies the “World’s Shortest”;
it’s D River’s proud claim.
Between Devils Lake and the sea
is where we’ll start our game.

Humans use this space
to live and work and play.
We swim, hike, picnic,
boat, and fish here — Hooray!

Human impacts can sometimes
change species distribution.
We can cause a lot of problems
but we’re also part of the solution.

Question for the Curious:

How short is the D River?

The answer is in the Quest Box at the end of your journey!

On this Quest, you'll find animals and plants aquatic. Some species are native, while others are exotic.

Some of the alien species cause scientists much concern. They are *aquatic invasive species*; about them there is much to learn.

- **Native (or indigenous) species** are organisms that are naturally found in ecosystems.
- **Nonnative (or exotic, or alien, or naturalized) species** are organisms that have been introduced to ecosystems from other places, often by human activity.
- **Invasive species** are nonnative organisms that cause significant negative impacts in the habitats into which they have been introduced, usually by out-competing native organisms for resources. Not all nonnative species are invasive.

These unwanted invaders — outside their natural range — take over habitats from natives and may cause damaging change.

First find the sign that announces the name of this open space. Put the first blue letter of the name in the clue number 1 place.

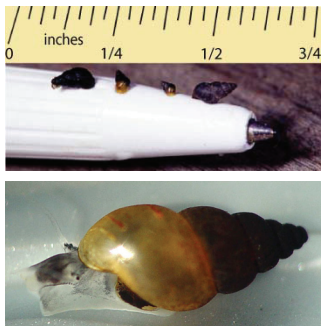
Now venture to the water's edge and take a look around. Signs of invasive species, with skill, may be found.

For example, there's the Asian clam. It's smaller than a plum. It competes with native mussels. In these waters can you find some?



Count any bivalve shells you see in the water or on the shore. Among natives and the invaders, which shells number more?

Another invasive species is small in size, but it numbers many. The New Zealand mudsnail thrives where once there were not any.

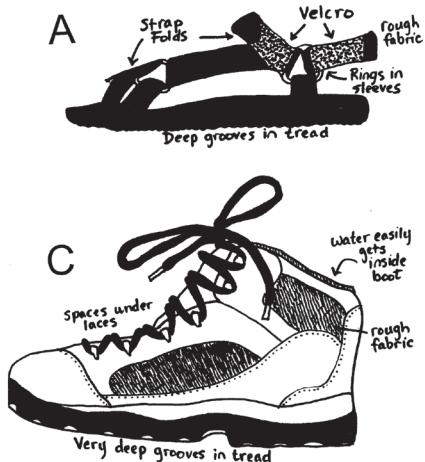


New Zealand mudsnail photos by Jane and Michael Liu.

These tiny snails can be found under objects where they can hide. But be careful to rinse your shoes, or the mudsnails might hitch a ride!

In fact, this snail may have come to these shores in the tread of a boot. They multiplied quickly and spread, taking over, despite being minute.

Of the types of footwear shown here, which would be the best to wear to avoid spreading mud snails further? Put the clue in the number 2 square.



Rinse and scrub your aquatic footwear before you leave this location! Which shoe is least likely to trap and spread New Zealand mud snails to other areas?

Right by a big gnarly stump, many native coho once ran. Their numbers dwindled soon after nonnative fish stocking began.

Beginning back in the '30s, bass were introduced. Then perch, crappie, catfish, and trout gave sport fishing a boost.

But some native coho still spawn in a Devils Lake tributary. check your map for that creek's first letter and place it in square number 3.

A sign near the bridge tells us more of another nonnative brought here. Again, this one was deliberate and the reasoning was quite clear.

For not long ago, Devils Lake was choked with aquatic weeds. Invasive milfoil and elodea cut down on boating speeds.

What sustained the weeds?
(along with the sun, it's true).
The first letter of the answer
is also your number 4 clue.

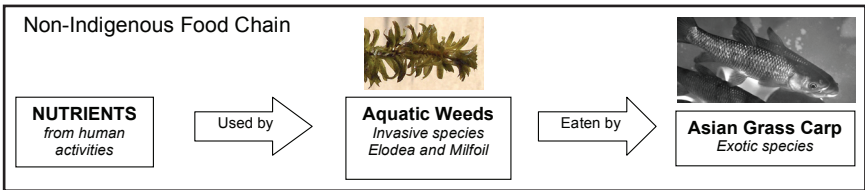
Solution? Bring in an exotic;
a grass carp for "biocontrol."
They ate up the invasive weeds,
thus accomplishing the goal.

Asian carp eat plants of all kinds
in this aquatic cafeteria.
So nutrients now support
blooms of cyanobacteria.

Check the tables before you leave
for clue 6. To find it, get low.
Then head to a stand of trees
surrounded by where cars go.

Are there signs of invaders here?
English ivy may try to climb trees.
Land managers pull, dig, and whack
to bring these plants to their knees.

Follow 1st Street to the east
and enter an Oregon State Park.
Look over the left side of the bridge.
How high is today's water mark?



From which continent did the carp
hail originally?
The third letter of your answer
fits in square 5 perfectly.

Now sit at the picnic tables
and ponder this next thought:
if you don't plan to eat what you've hooked,
don't release elsewhere what you've caught!

Another way invaders
can reach this place, you see,
is when people release their pets
thinking they're "setting them free."

Mail-order frogs, fish, and turtles
can be fun at home or in class.
But please don't leave nonnatives here;
they could take over *en masse*.

Venture onto the boardwalk
stretching out over land that is wet.
To the biodiversity here
invasives could pose a threat.

Native skunk cabbage, willow, and sedges
inhabit this natural poor-fen.*
Having evolved together, they're able
to respond to threats from within.

But an intruder brought here from afar
may gain the upper hand.
Novel traits or lack of enemies
could allow its range to expand.

***What is a "poor-fen"? The
answer is on one of the
three interpretive signs!**

Pause at the upright railing and enjoy this natural place. Then search here for a letter that goes in the clue 7 space.

Since this path dead-ends at a campground, turn around and go back to the lot. Don't cross back over the little bridge, though, as we're not done exploring this spot.

Check out the neat big logs that jam the waterway. From where did these logs come, and how long do you think they'll stay?

Question for the Curious:

What species has caused the most significant changes to Devils Lake?

The answer is in the Quest Box at the end of your journey!

Near the primitive boat launch, find a map of Devils Lake and D River. Point to where you are standing now. Of the lake, you've just seen a sliver.

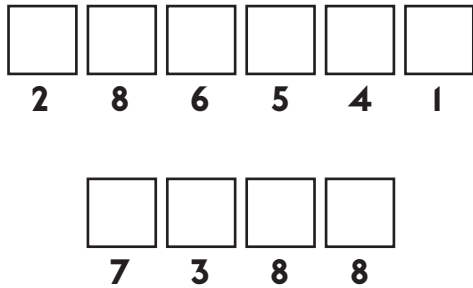
How can we stop invaders? See what the sign advises. Our behavior keeps invaders from causing more surprises.

To protect Oregon's habitats from invasive species, take note: be aware of the issue, and rinse your shoes and boat!

Mug shots show some invaders. The snail is already here. The first vowel from its country of origin is clue 8. Now your phrase is clear.

Now that you have all the clues, the letters together make sense. Go now and find the Quest Box (hint: it's close to a fence).

Many thanks to all who contributed materials, feedback, and advice on this Quest, including Dr. Samuel Chan from Oregon Sea Grant and Paul Robertson of the Devils Lake Water Improvement District.



Stamp page 206 of this book to record your find!