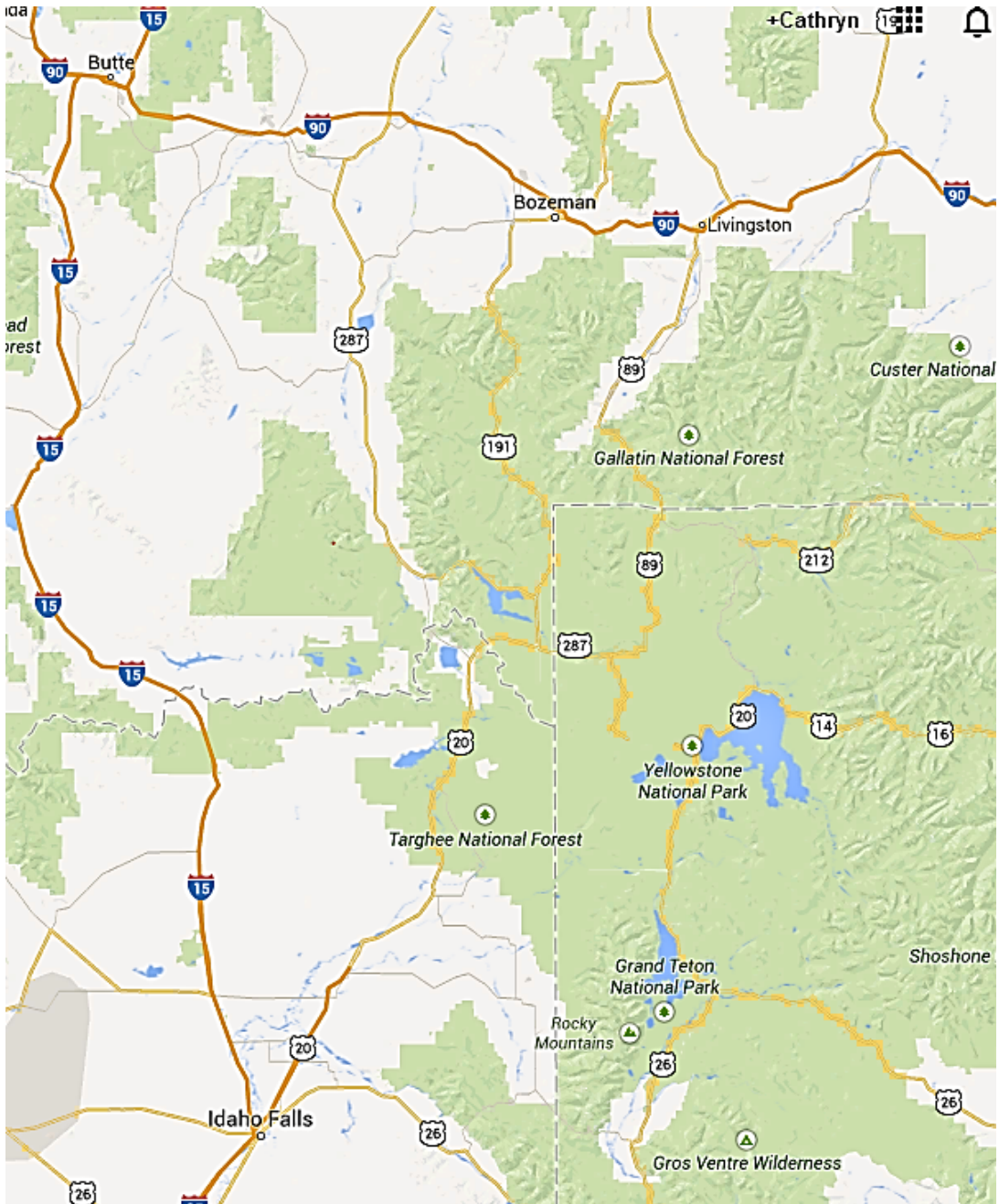


Vacation – Yellowstone
10-15-2014
Cathi, Merle, Dad and Xing



Butte, Montana - Mine Museum









Dinner at Metals Sports Bar & Grill, Butte (Use to be a bank)

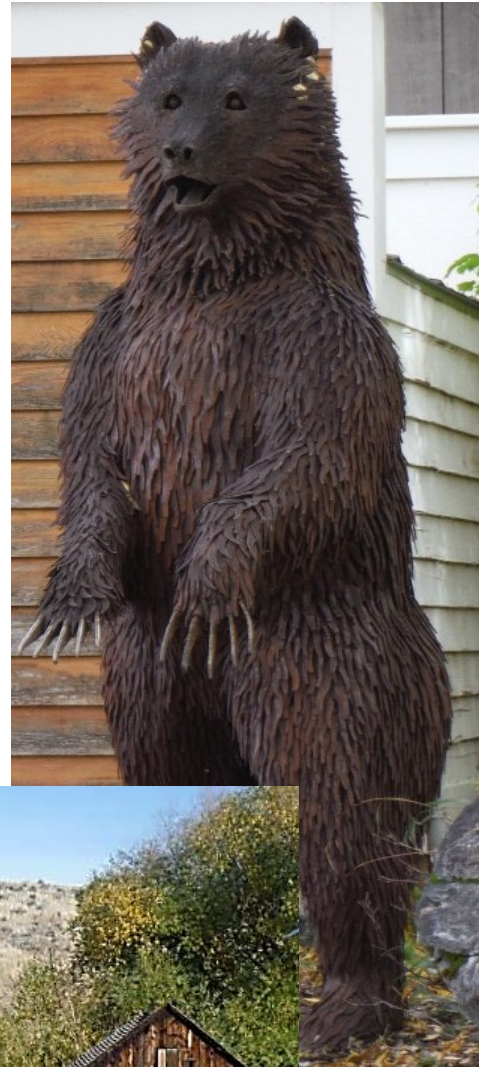
Old Historic Church



Virginia City - Montana



Ennis - Montana

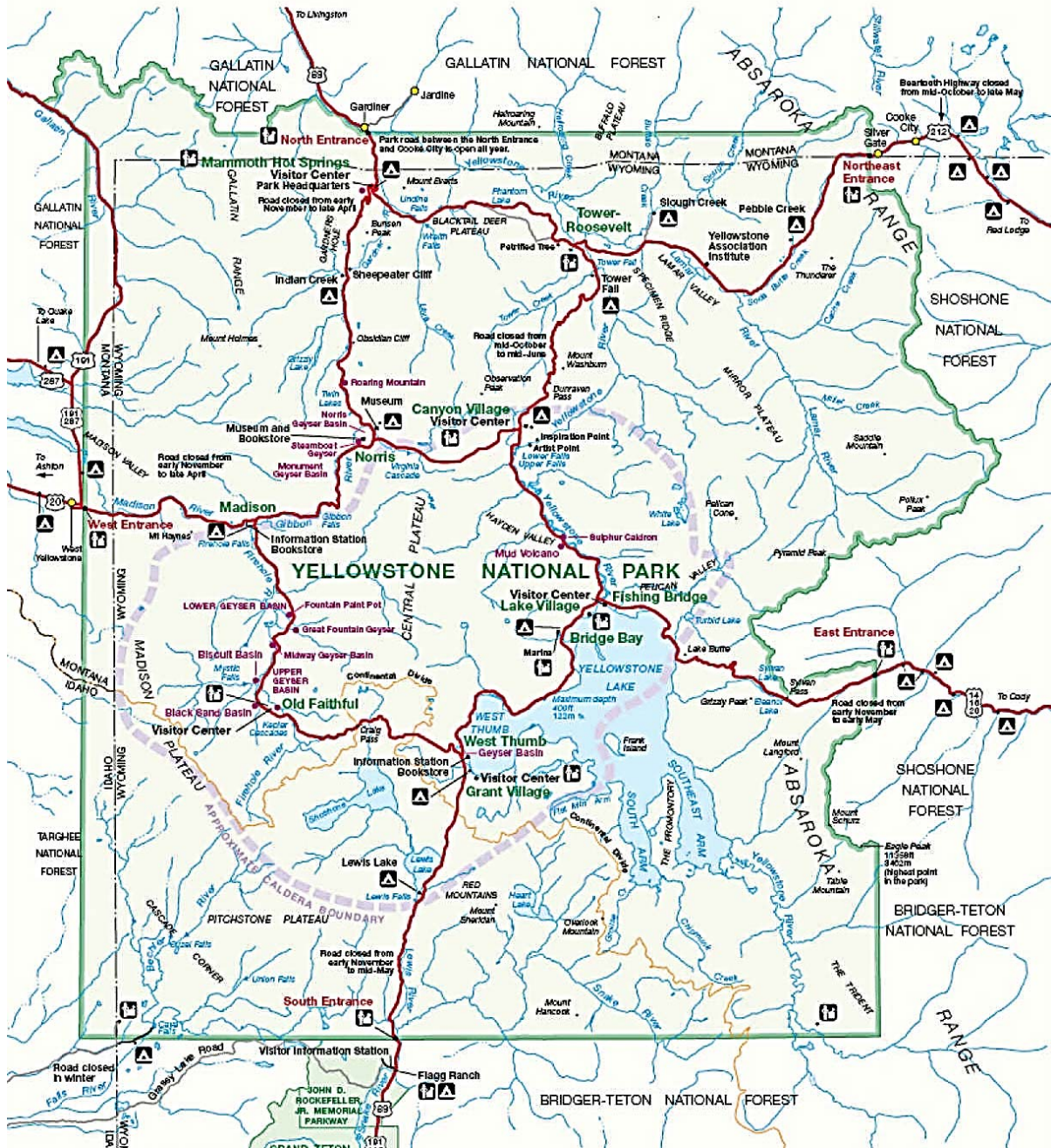


Earthquake Lake - Montana





Yellowstone National Park



Lower Geyser Basin



Midway Geyser Basin





Old Faithful



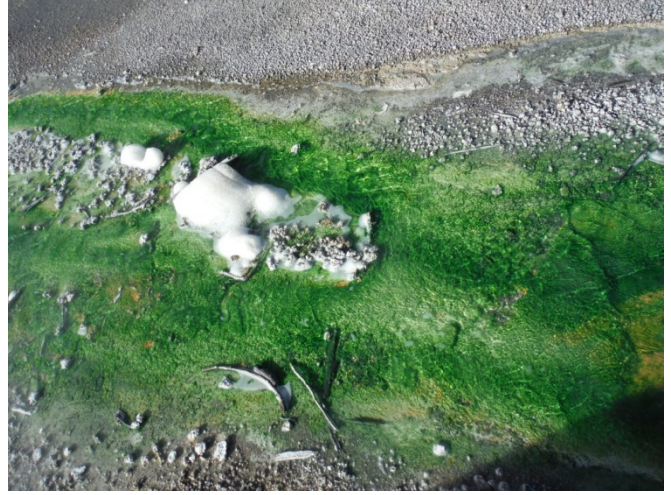
Bison





Norris Geyser



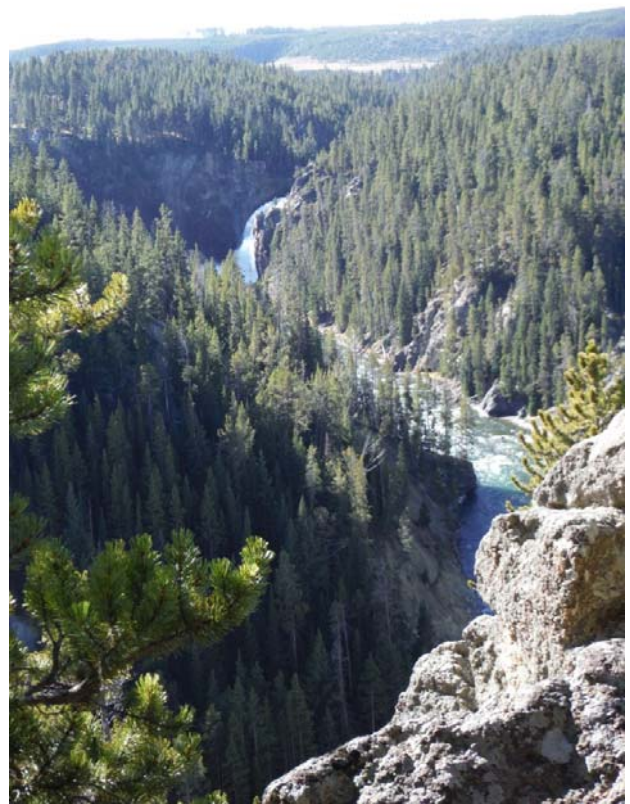


Grizzly Bear



Canyon Region

Grand Canyon of Yellowstone













Mammoth Hot Springs



Elk



Gibbons Falls



Sulphur Caldron

Ten times more acidic than lemon juice, Sulphur Caldron sits on the edge of one of the most active areas of Yellowstone's buried volcano. Sulphur-rich gasses rise furiously here, filling Sulphur Caldron with sulfuric acid. Incredibly, this muddy pool is teeming with life!

Home Sweet Home

Bacteria of thermoacidophiles thrive in Sulphur Caldron. They convert the pool's hydrogen sulfide gas into sulfuric acid.

The sulfuric acid breaks soil and rock into mud, making this spring a very muddy home.

What is a Thermoacidophile?

Thermo = Heat
Acid = Acidic
Phile = Love

Microorganisms that "love" to live in an extremely hot, acidic environment are called "thermoacidophiles."

pH Scale Basics

If you have ever had "heartburn" from eating acidic foods and used an antacid to relieve the pain, you can easily understand pH basics.

"pH" means "power of hydrogen." Acids release hydrogen ions, and alkaline solutions remove them. Acids and bases neutralize each other.

Thermoacidophiles thrive in an acidic environment that would be deadly to humans. Sulphur Caldron's microbes live in a pool that is almost as acidic as battery acid!

Heat Acids ↑

- pH 0 - Battery Acid
- pH 1 - Sulphur Caldron
- pH 2 - Lemon Juice
- pH 3 - Vinegar
- pH 4 - Orange Juice
- pH 5 - Black Coffee
- pH 6 - Milk
- pH 7 - Pure Water
- pH 8 - Baking Soda
- pH 9 - Antacids
- pH 10
- pH 11 - Household Ammonia
- pH 12 - Bleach
- pH 13 - Lye
- pH 14

↓ Heat Alkaline

Sulphur Caldron



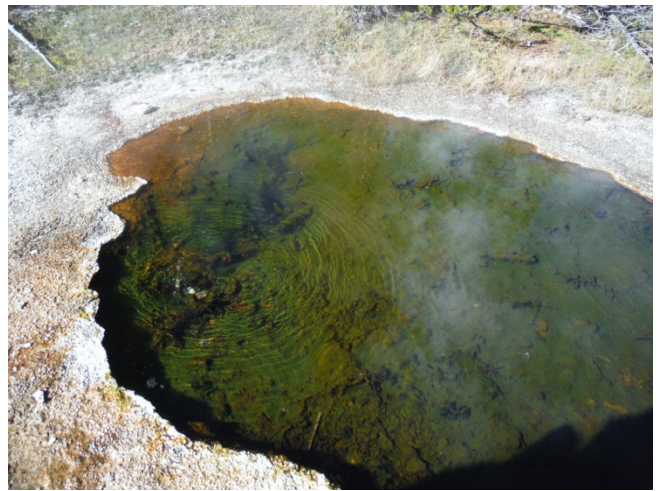
Mud Volcano





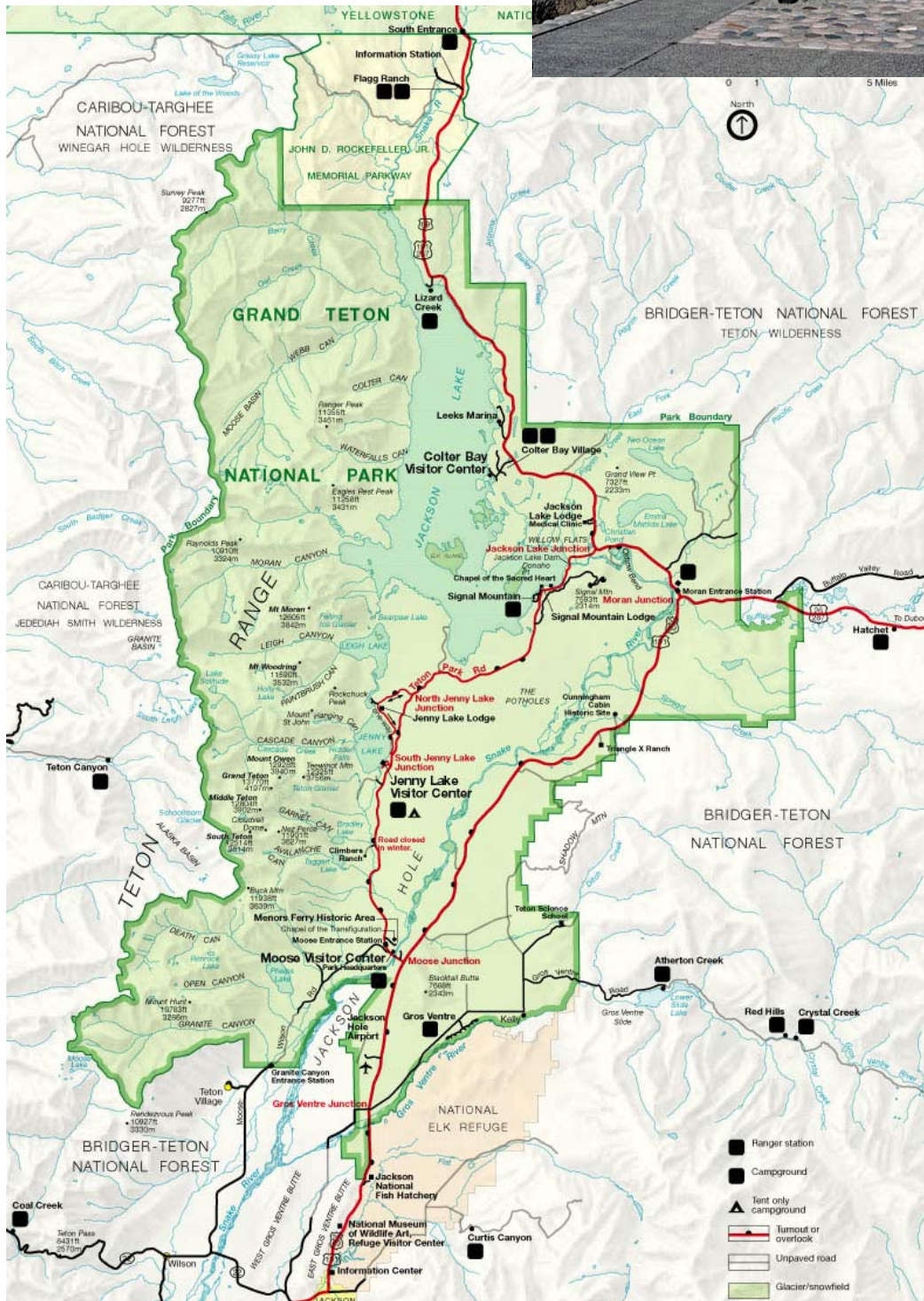
West Thumb







Grand Teton National Park









Pronghorn Antelope



Jackson,
Wyoming

