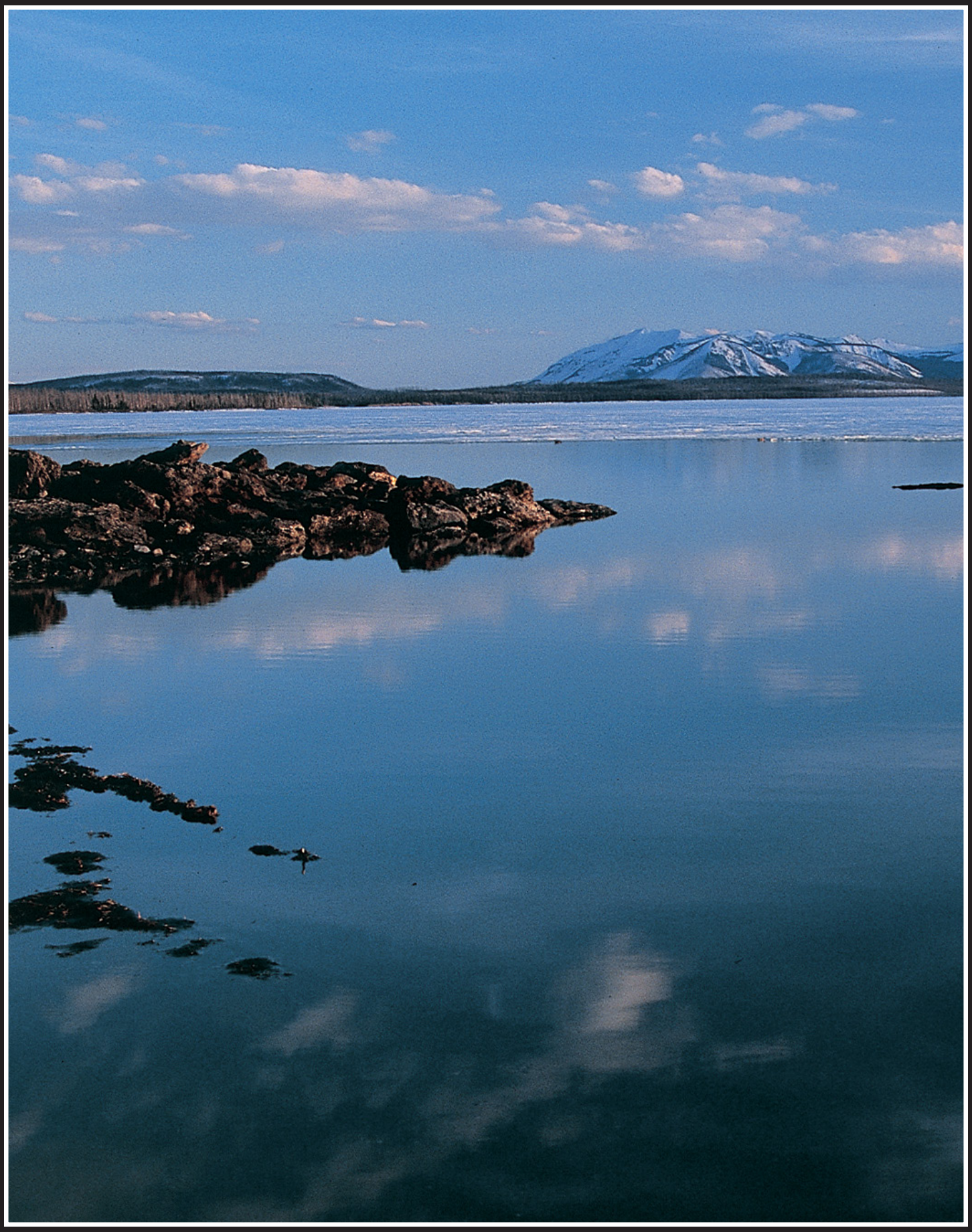
Grand Teton National Park.

Rick and Susie Graetz

At once charismatic and controversial, wolves have successfully been re-introduced to Yellowstone National Park. Rick and Susie Graetz



In the spring, the ice recedes quickly from Yellowstone Lake. Rick and Susie Graetz

Autumn dresses the lower slopes of the north face of the Absaroka Range and Mission creek.

Rick and Susie Graetz

THE MONTANA ARCHAEOLOGI

Seven Years and Counting for U

By Douglas MacDonald

At 2,362 m. (7,750 feet) above sea level, Yellowstone Lake, Wyoming, is North America's largest, high-elevation lake. Because of the numerous archaeological sites that ring its 200 km (124 mi) circumference, archaeologists have long sought to understand the lake's role in the seasonal subsistence and settlement patterns of the region's many Native American groups. The University of Montana Department of Anthropology and Yellowstone National Park are trying to understand the prehistoric Native American use of the Greater Yellowstone Ecosystem. Currently, our goal is to define the role of Yellowstone Lake among Native Americans who lived within the northwestern Great Plains, the northern Rocky Mountains, and the far northeastern edge of the Great Basin.

Using ethnohistoric (information derived from the

While there are many theories as to how early-day Natives reached the islands, today, UM archaeologists use canoes. Doug MacDonald

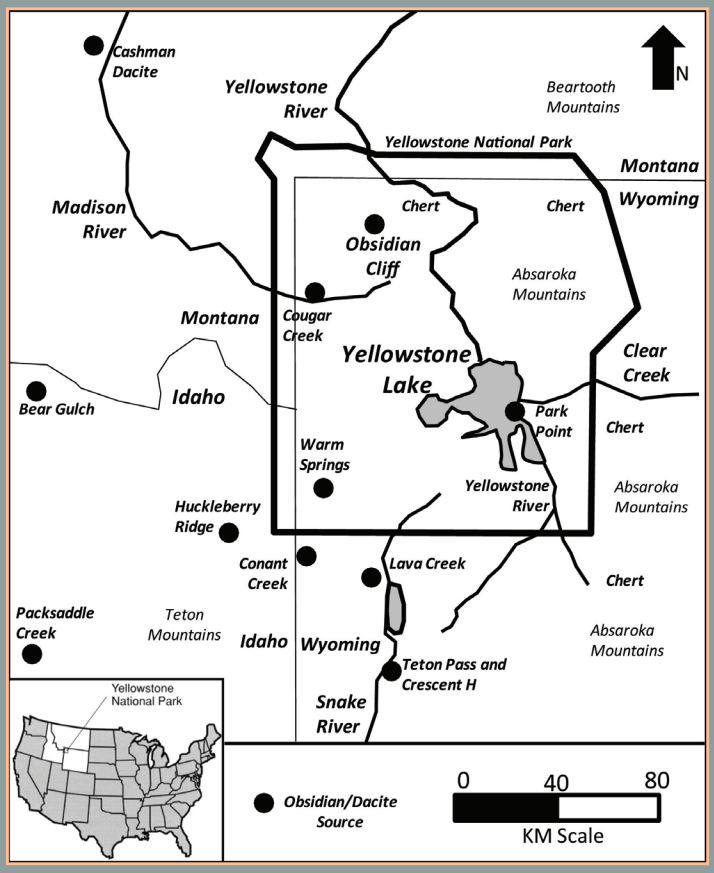
-YELLOWSTONE
ICAL PROJECT:
UM Archaeology at Yellowstone

study of native peoples from a historical and anthropological viewpoint), archaeological, and spatial data, UM and Yellowstone researchers are evaluating five key questions regarding use of Yellowstone Lake in prehistory: 1) Where did Native Americans come from to get to the lake? 2) How was subsistence structured, especially related to fishing, hunting, and gathering? 3) How did the earliest Natives get to the lake's islands? 4) What was the primary mode of travel at the lake? and 5) Ultimately, why were Native Americans attracted to Yellowstone Lake? What follows is a summary of our discoveries, discussions, conjectures, and conclusions thus far.

UM graduate students and Yellowstone archaeologist Elaine Hale examine the lakeshore for prehistoric artifacts. Doug MacDonald.

PROJECT OVERVIEW

In partnership with the Rocky Mountain Cooperative Ecosystem Study Unit (RM-CESU), UM faculty members and students are entering our seventh year of archaeological studies in Yellowstone National park. Called the Montana-Yellowstone Archaeological Project (MYAP), the first two years were spent in the Gardiner Basin in the Montana portion of the Park, and for the last five years, our research has focused on Yellowstone Lake. Sponsored by a series of grants totaling $500,000 from organizations such as the Yellowstone Park Foundation, UM researchers have worked with current and prior Yellowstone cultural resource staff to identify and evaluate the importance of all archaeological sites around the lake's shores. More than 75 undergraduate students from UM and across the country have participated in this endeavor. Additionally, to date, numerous UM graduate students have completed graduate theses on their work there. UM faculty—including Steve Sheriff, Marc Hendrix, and Michael Hoffman from Geosciences and I have produced dozens of published articles on this subject, highlighted by the two-volume *Yellowstone Archaeology* series.



Map of the Greater Yellowstone Ecosystem showing Yellowstone Lake and regional rock sources used by Native Americans in prehistory. Doug MacDonald

ENVIRONMENT AND RESEARCH

At an elevation of 2,362 m (7,750 ft) and measuring 30 by 25 km (18.6 by 15.5 mi), Yellowstone Lake is the heart of the Greater Yellowstone Ecosystem (GYE), which encompasses nearly 80,000 sq km (31,000 sq mi) within northwest Wyoming, south-central Montana, and northeastern Idaho. Bordered by the Absaroka Mountains to the east and the Teton Range to the south, it is North America's largest, natural, high-elevation lake. As the major lake tributary, the Yellowstone River has two confluences on the lake, one flows into it on its southeast corner and the other exits about 30 km (18 mi) to the northeast. Due to deglaciation and climate change, Yellowstone Lake levels have fluctuated during the last 13,000 years, resulting in a series of old terraces, or paleo-shorelines, that have been well-dated by scientists from both UM and Montana State University.

Our team's research questions originate from various hypotheses set forth during the last 50 years of archaeological studies at Yellowstone Lake. Over time, 285 archaeological sites have been identified along the shores and on the islands. Recent excavations by our UM team at dozens of lake-area sites confirm active use of the lake for the last 10,000 years.

Recent ethnographic and archaeological studies indicate that multiple regional tribes spent extensive time here. Based on UM's research, the stone tool data gathered suggests that Native American groups from the north (Blackfeet, Salish), south (Shoshone, Bannock), east (Crow, Shoshone) and west (Nez Perce) visited Yellowstone Lake, probably following routes still used today along the Madison, Yellowstone, Gardiner and Shoshone rivers.

Peoples camping on the north shore were likely Plains-adapted hunter-gatherers spending most of their time in the northern Yellowstone Valley and vicinity. Those camping on the east shore of the lake were likely occupants of the Plains as well, including the hot-dry portions of northwestern Wyoming, such as the Big Horn Basin. Natives on the southeast lakeshore were probably residents of the Jackson area and points south, while those on the southwest and western shores may have come from the north, south, and west, including the northern Great Basin of eastern Idaho. Our data, then, do not support the hypothesis that the Greater Yellowstone Ecosystem was the center of a large territory used by a single group. Rather, the GYE and Yellowstone Lake were at the crossroads of multiple tribal and/or band territories.

So, while we know Native Americans used the lake extensively, we still do not fully understand its function within hunter-gatherer settlement and subsistence systems. Yellowstone Lake is frozen several feet thick between approximately early December and mid to late May, leading most researchers to conclude that Native Americans would most likely have utilized the lake's resources in the other six warmer months.

The shores of the lake contain several vegetative zones, including a mesic subalpine fir zone, a forested riparian zone, as well as graminoid riparian and sagebrush or shrub and grass habitats. Interspersed among the extensive pine forests that enclose the lake, these open meadows and riparian areas are extremely diverse, containing as many as 400 plant species. During 2009, research focused on ethnographically-recognized plant resources utilized by Native Americans for medicinal, spiritual, and subsistence-based purposes. Fifty-two different plant species were identified within an 8-hectare (20-acre) meadow on the northwest shore of the lake alone, of which 15 were food sources, 17 medicinal, and 8 species were known to be spiritually important.

This diversity of plant resources supports more than 60 mammal species, including bison, elk, moose, big horn sheep, deer, antelope, grizzly and black bear, mountain lions, coyotes, and wolves. As far as hunting and gathering went, the lake area was a cornucopia for subsistence purposes.

Another seasonally migratory resource in Yellowstone Lake is cutthroat trout (Oncorhynchus clarki bouvieri), one of only two surviving original native cutthroat trout species left in North America. Traditionally, Yellowstone cutthroat were abundant at the lake, and especially easy to catch in the spring when they ran up the lake's creeks to spawn (see the article in this issue titled "Lake Trout Suppression and Yellowstone Cutthroat Trout Recovery in Yellowstone Lake"). However, Native Americans may not have actively fished at the lake, instead taking advantage of the plethora of other wild fauna and flora available there.

In concert with ethnohistoric data compiled by Peter Nabakov and Lawrence Loendorf, we provide archaeological and spatial data to evaluate whether Native Americans fished at Yellowstone Lake. Prior research had suggested that fishing for the plentiful cutthroat trout was the main reason Native Americans came here. While it is clear the Shoshone and Bannock knew that the lake contained fish, it is not clear that these tribes fished specifically at Yellowstone Lake. The GIS and archaeological data collected by UM are at odds with the ethnohistoric thought that fishing was a popular subsistence strategy at the lake in prehistory.

Past research proffered that the presence of archaeological sites at stream confluences supported the idea that these were fishing camps. However, our comprehensive lake data—collected by UM graduate student Jordan McIntyre for his 2012 master's thesis—does not corroborate this hypothesis. Jordan proposes that stream confluences are not a good predictor of site location at Yellowstone Lake. Rather, open/riparian habitats are a much better predictor because they provide abundant plant and animal resources for hunter-gatherers. Blue camas was especially attractive for the Bannock and Shoshone, one of the key

UM archaeological excavations near Lake Lodge. Doug MacDonald.

edible plant species within the lake's shoreline meadows. Other plants, including bitterroot, which also ripens in spring, likely inspired movements into the uplands from winter base camps in lower-elevation valleys.

In addition, only one of the lake-area sites yielded fish bones and those remains are intrusive (non-native sucker at one archaeological site). Only one lithic (stone tool) from the lake has yielded fish protein and that is of a species that is also non-native (rainbow trout), likely indicating that the tool was used on rainbow trout somewhere else and transported to the lake or that the lithic was recently contaminated (e.g., a site excavator who fished for rainbow trout recently).

Another means by which to identify fishing activity at lake-area archaeological sites would be the presence of fishing tools. However, to date, the dozens of lakeshore studies have found no net sinkers or fishhooks or other procurement tools at any of the lake's sites. The most proximate site with a net sinker is on Malin Creek, some 32 km (20 mi) downstream on the Yellowstone River near Gardiner. Also, while the Smithsonian Institution has two fishing artifacts supposedly from Yellowstone Lake—a notched stone/net sinker and a possible prehistoric fishing lure—these are not well documented and are of uncertain provenience, age, and cultural association. We find it problematic to cite the Smithsonian fishing artifacts as evidence of fishing, not only because of their uncertain origins, but also in light of the fact that not a single net sinker (or other fishing tool) has ever been recovered during professional survey of more than 200 km (124 mi) of lake shoreline, nor during excavations at dozens of sites.

Based on sound archaeological data, we have no reason to believe that fishing comprised a substantial portion of the prehistoric diet for Native Americans at Yellowstone Lake. However, the absence of fishing evidence does not necessarily refute the hypothesis that fishing occurred at the lake. Tools produced from organic materials could have been exclusively used for fishing, and the refuse from fish predation may be lost to the vagaries of the archaeological record as well. While fish weirs have never been conclusively identified at feeder streams of the lake, it is likely that such rock features would easily be lost to heavy spring run-off and not preserved in the archaeological record. In conclusion, our research suggests that Native American subsistence was oriented around land-based resources within open/riparian habitats, with fishing perhaps representing a minority subsistence strategy by the Shoshone (if at all).

High, wide and handsome aptly describes Yellowstone Lake and its surrou

If archeological sites were found on the islands, how did the earliest visitors get there?

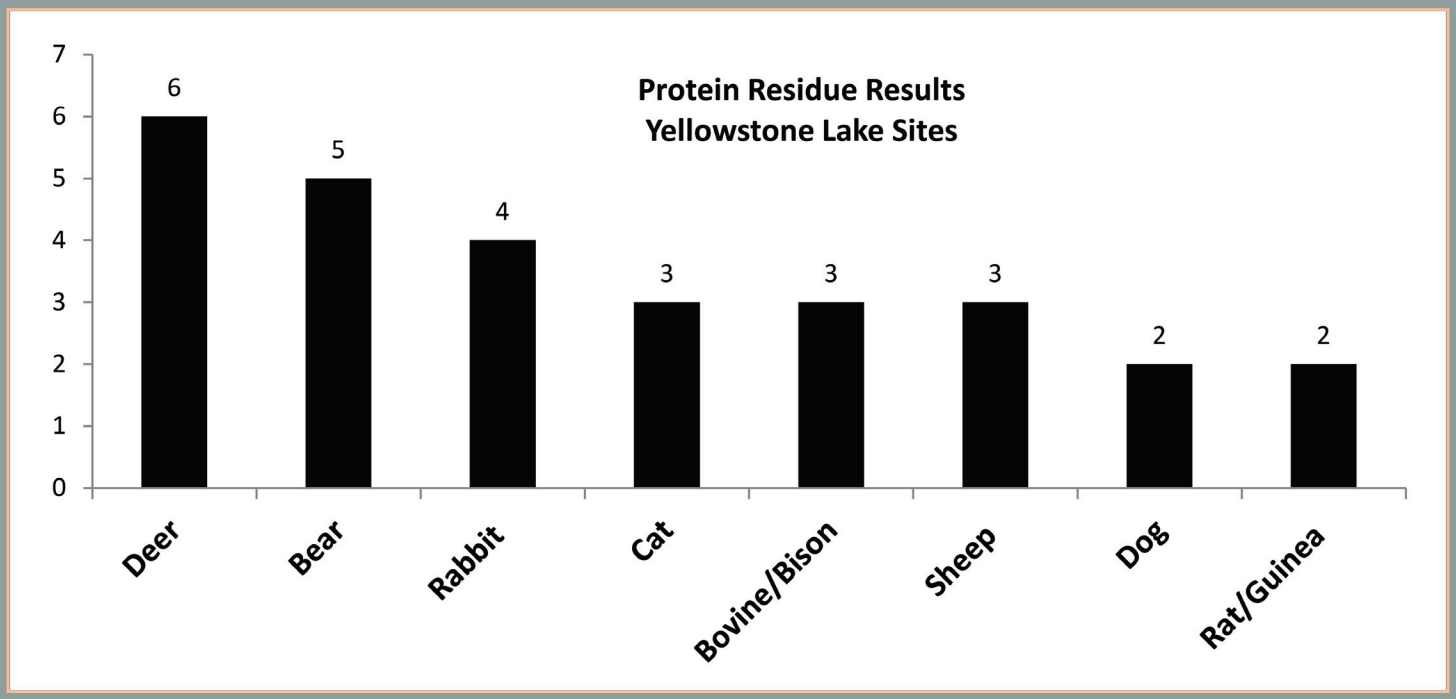
Ann Johnson, a retired Yellowstone archaeologist, speculated that travel to, and population of, the islands was in the warm months via boat rather than swimming (too cold), and not across the ice in winter (conditions too harsh). However, similar to fishing, no archaeological evidence of boats or boat-building tools has ever been found at sites around the lake. While small, simple boats may have been used, there is no evidence that canoes or other heavy-duty boats were employed for extensive travel around the lake. Access to the lake's islands was most likely on foot across ice in early spring.

Hunting bears just as they emerge from hibernation was widely incorporated into the rounds of northern-latitude hunter-gatherers. Thus, archaeological sites likely developed on the islands simply by Native Americans walking across the early spring ice to scout or hunt for bears. In support of this supposition, Yellowstone National Park's

undings. Rick and Susie Graetz

current bear management officer, Kerry Gunther, notes that he has observed bears on three islands and recorded one (Stevenson Island) with a bear hibernation den. Hibernating bears certainly would have encouraged humans to traverse ice, especially if the hunter had pre-scouted the presence of a den in the late-fall or early-winter. Among many Native American cultures, the killing of a bear was often not just for food, but also perceived to bring wisdom and strength to the hunter. In support of this notion, bear is the second-most-common type of protein identified on stone tools at Yellowstone Lake sites, suggesting that bear hunting was fairly common (see figure below).

Finally, mobility around the lakeshore was unlikely via boats, as best evidenced by the stone artifact fall-off at archaeological sites on the lake's south shore compared to the north shore. The north shore is the portion of the lake closest to the famous Obsidian Cliff stone source, far and away the most popular location for collection of stone for Native Americans in northern Yellowstone. In total, UM's lithic material study encompasses more than 24,000 artifacts from 28 well-studied sites at the lake. Our data shows a substantial lessening in the quantity and mass of stone artifacts from the north to south shore, as shown in this graph (on page 43). This fall-off pattern would not be expected if Native Americans used boats to travel from one shore to the other since they could fit lots of stone in their boats (and even would have used it as ballast). The data suggests that walking was the main form of transportation around the lakeshore.



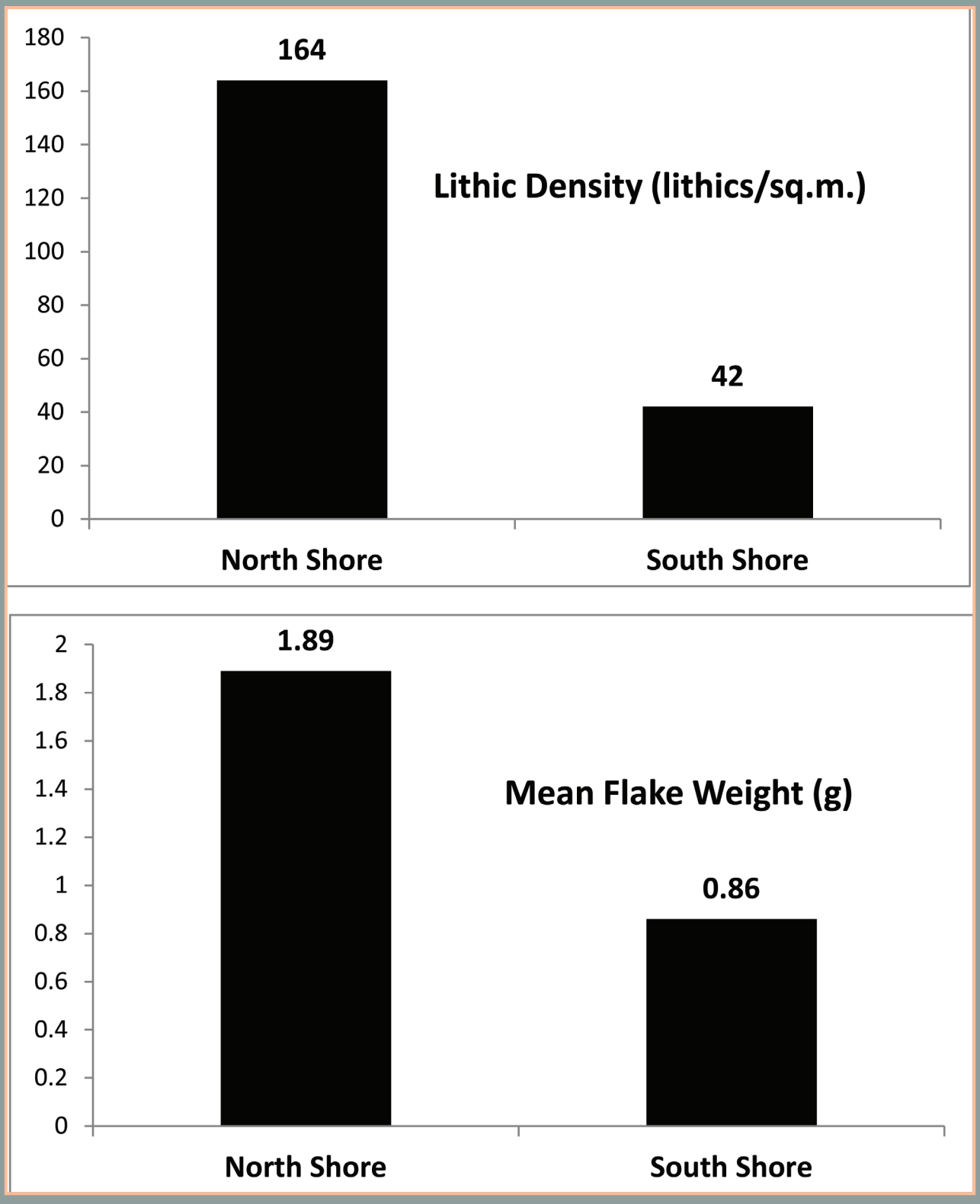
Types of protein-residue found on stone tools excavated at Yellowstone Lake sites. Doug MacDonald

This large knife from a site near Lake Lodge tested positive for bear protein, as well as cat and deer. Doug MacDonald.

The lithic artifact data also suggest that Native Americans did not travel extensively around the lakeshore. Once they arrived at the lake, they stayed pretty much in one place, and then likely left in the same direction from which they came. This is supported by obsidian source analysis, which shows, for example, that hunter-gatherers arriving from the south used mostly stone from the south, while those in the north used mostly stone from the north. Based on our data, it is entirely possible that many different groups used the expansive lake area at various times and may have not regularly encountered each other. Conversely, it is clear that at other times, Native Americans from different regions actively traded and socialized with each other, as small amounts of exotic stone are present at most lake-area sites. These stones were most likely procured through trading networks.

Overall, the University of Montana's archaeological research is helping to resolve some key questions about Native American use of Yellowstone Lake. In conclusion, based on our team's research, we know that Native Americans have used the lake and its vast resources for at least the last 11,000 years. We also recognize that Native Americans traveled from the north, south, east, and west to take advantage of seasonal resources at the lake, and that most travel around the lake was on foot. These trips were likely initiated by hunters in the early spring hoping to kill bears coming out of hibernation, and this may be what attracted hunters to islands on the frozen lake. Moreover, archaeological data do not support the idea that Native Americans actively fished at the lake or actively used boats. Instead, what attracted the peoples were the hundreds of plant and animal species readily available on the land around the lake. Future research here will attempt to resolve the question of just how long cutthroat trout have lived in the lake, a question still unanswered.

The University of Montana Department of Anthropology and its faculty and students look forward to further research and to solving this and other fascinating questions.



Comparison of the north and south shore sites as to the amount and weight of stone artifacts found. Doug MacDonald

Douglas MacDonald, Ph.D., RPA is an associate professor in the University of Montana's Anthropology Department specializing in North American archaeology, cultural resource management, lithic technology, paleoindians, hunter-gatherer behavior, and evolutionary theory. He is head of the UM Anthropology Department's study as to the use of the Yellowstone region by prehistoric hunter-gatherers. UM's Department of Anthropology has published two volumes (called Yellowstone Archaeology) on this research. douglas.macdonald@mso.umt.edu

A commercial netting crew from the Hickey Brothers Fishery of Bailey Harbor, Wisconsin set deep-water trap nets that keep the fish alive. The cutthroats are returned to the lake and the lake trout are killed. Jay Fleming. Courtesy of the Yellowstone Park Foundation

Lake Trout Suppression and Yellowstone Cutthroat Trout Recovery in Yellowstone Lake

By Ken Barrett

When non-native and decidedly predatory lake trout were illegally introduced into Yellowstone Lake in the mid-to-late 1980s by some unknown person or persons, the stage was set for an ecological disaster. The result has been a very costly lake trout suppression campaign and the creation of the Yellowstone cutthroat trout recovery program.

The first lake trout caught in Yellowstone Lake and brought to park officials was in 1994. Within a decade, the highly-effective predators took a huge toll on cutthroat, which had inhabited the lake without competition from finned-mauraders for over 10,000 years. The lake trout were like foxes let loose in the proverbial hen house as they went on a feeding and reproducing spree. In just over a decade, they reduced the historical population of four million cutthroats by more than 90 percent, leaving fewer than 400,000 in their wake.

Gone were the days of catching dozens of the beautifully spotted native trout from the lake and Yellowstone River below Le Hardy Rapids, where generations of visitors came to view the spawning fish. And the bears, ospreys, bald eagles, otters, and nearly 40 other species, which depend to one degree or another on Yellowstone cutthroats for food, were forced to look elsewhere for sustenance. In their place, deep-water dwelling and spawning lake trout, largely unavailable to these same critters… swam unmolested while posing an ever-increasing menace to the ecological integrity of what is referred to as the entire Greater Yellowstone Ecosystem. At first, biologists and other officials weren't sure what effect the lake trout would have on Yellowstone Lake and its cutthroats. Some thought they would have a relatively minor impact and even if it proved to be a major threat it would take decades to develop. Others were far more alarmed by the potential hazard and called for immediate action. Within a year of the discovery, gill netting for lake trout had begun. But with limited financial and human resources and technical know-how, the reduction effort went on for more than a decade before the magnitude of the problem was fully recognized.

By then the cutthroat population had been decimated. The lake trout were on the march, and years of drought and the impact of a newly-introduced whirling disease into Yellowstone National Park waters only added to the cutthroat's woes. That year Clear Creek, once home to spawning runs of 50,000 to 70,000 cutthroat trout as recently as the 1990s, produced exactly 218 spawning fish.

Yellowstone Lake was losing its cutthroats at an alarming rate and with them the integrity of the park and its surrounding ecosystem was threatened. A more aggressive and effective approach was needed.

So a group of the country's leading fisheries' biologists was brought together, and in 2008 they released a nearly 400-page environmental assessment identifying the best alternative actions the park could take to recover the cutthroat trout. Among those put forth and unanimously agreed upon was a full-scale lake trout suppression plan. The biologists called for a heavy-duty netting program that would eliminate 50 percent or more of the catchable population of lake trout for five to six consecutive years. If successfully carried out, it would crash the lake trout population and allow natural recovery of the Yellowstone cutthroat population to an estimated 75 percent of their previous population of four million fish. Thereafter, a well-targeted suppression program of netting and egg destruction, based on information gathered from lake trout implanted with radio transmitters, would allow biologists to control their numbers far less expensively than the $2 million per year needed during the initial five-to-six-year campaign.

By 2011, the stepped-up suppression program was off and running, and Dan Wenk, YNP Superintendent, and his senior staff had identified lake trout suppression as their number one natural resource priority. In response to a request for monetary assistance from the park's official fundraising partner, the Yellowstone Park Foundation, a $1 million grant was awarded in March of 2012, and the suppression program shifted into high gear. In 2012, over 300,000 lake trout were eliminated by two national park and two contracted, commercial fishing crews from the Great Lakes. That brought the total number of lake trout, eliminated in just the last two years, to 525,000—equal to the total number caught in the previous 15 years combined.

Adding to the growing pressure on the lake trout was the identification of a primary lake trout spawning area near Carrington Island by biologists using radio transmitters implanted in female lake trout. In October 2012, using an improvised egg vacuuming device, biologists eliminated tens of thousands of eggs. A proposal to lay a metal grid over the entire area and electrocuting the eggs next fall is currently under study and consideration.

Of all the positive news coming from the biologists, perhaps the most encouraging is the increase in the number of juvenile cutthroat trout now seen. In 2011, approximately 8,800 juveniles were counted in an annual population sampling that has been done in Yellowstone Lake since 1945. In 2012, the number jumped to nearly 21,000 and resulted in the highest count in over a decade.

While it is too early to say we have turned the corner on eliminating lake trout and saving Yellowstone's cuthroats, the news is most encouraging. Will we ever completely rid Yellowstone Lake of lake trout? Probably not, but if we stay the course and keep at it until the lake trout population crashes and then maintain a surveillance and containment program, our children and their children's children may look down from Fishing Bridge and see spawning cutthroat trout once again. And Yellowstone National Park will continue to function as a fully integrated ecosystem and remain the magical place that has inspired generations of people from around the world.

To learn more about the Help Save Yellowstone Cutthroat Trout program and to watch a 3-minute video on the lake trout suppression campaign, please go to ypf.org.

Ken Barrett is the campaign manager of the Native Fish Conservation Program for the Yellowstone Park Foundation.

(Left) A big, beautiful Yellowstone cutthroat trout is pulled from the Clear Creek spawning migration trap. Brian Ertel, courtesy of the Yellowstone Park Foundation
(Above) Caught in a trap net, the ravenous lake trout eats 40-50 Yellowstone cutthroat trout a year. Courtesy of the Yellowstone Park Foundation

The Yellowstone Park Foundation www.ypf.org has served as Yellowstone National Park's official fundraising partner since 1996. Its mission is to fund projects and programs that protect, preserve, and enhance the natural and cultural resources, and the visitor experience of the Park. YPF has raised more than $70 million and funded more than 200 important projects and initiatives since 1996 that include wildlife research, cutthroat trout restoration, trail maintenance, and youth education.

The Nature

By Bebe Crouse

Conserving the Greater Yellowstone and Beyond

In 1976, The Nature Conservancy made its first real mark in Montana with a conservation easement on 1,800 acres of land in the exquisite Blackfoot Valley — the first ever in the state's history. Still, it would be another decade before an official TNC chapter was opened in Montana.

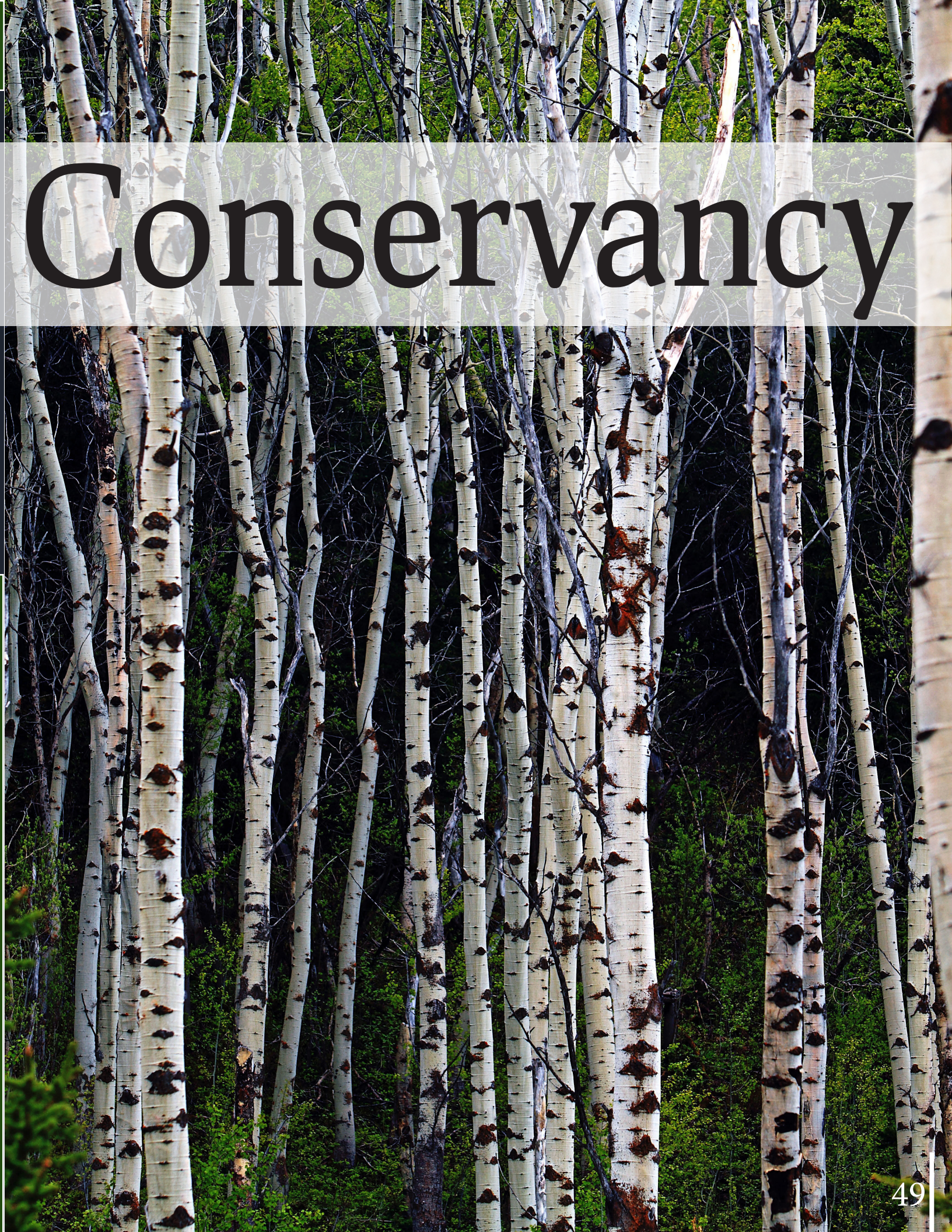
In those early years, the focus was on creating nature preserves; saving pieces of special habitat, rare plants, or a disappearing animal. But, since The Conservancy's work is guided by science, it soon became clear that it wasn't enough to just safeguard isolated islands of nature. Land and water needed to be protected at a scale large enough to sustain healthy populations of plants, animals, and people over many generations. In a place as big and varied as Montana, that means working with a broad set of tools on enormous sweeps of land. It also takes a large grouping of partners — from individual landowners and community advisors to the foundations and public agencies who offer both expertise and funding.

The TNC's combination of science, protection, and partnership has proven to be a winning formula. Those first 1,800 acres protected in the Blackfoot Valley have grown to nearly a million acres conserved across the state —from the Crown of the Continent on into the Greater Yellowstone and on to the broad Northern Prairies.

The Nature Conservancy's work in Southwest Montana

Conservation in Southwest Montana is dominated by one big name: Yellowstone National Park. Millions of people are enticed to the park for the chance to see its extraordinary wildlife. What many may not realize is that the vitality of this very entity that draws them here depends on the tens of thousands of acres that lie outside its boundaries. The Centennial Valley is one of most remote and undeveloped reaches of the Greater Yellowstone Ecosystem and lies at the heart of our work in this part of the state. Its broad grasslands, sagebrush steppe, and a rich mosaic of wetlands provide critical habitat for a variety of animals ranging from grizzly bears, wolves, elk, pronghorn, and moose to graceful trumpeter swans, sandhill cranes, and greater sage-grouse. Populations of disappearing Arctic grayling still spawn in the waters of the Centennial and the Big Hole Valley to the northwest. Equally important, the region provides vital links for wildlife that must migrate or disperse across a far-reaching landscape—into Central Idaho and on to Canada — in order to remain resilient. Partnership with private landowners and public land managers is a key to our success here.

Aspen Grove. Kenton Rowe



Conservancy

The Threat

Centennial Valley. Kenton Rowe

The American Farmland Trust listed Southwest Montana's Beaverhead, Gallatin, and Madison counties as places where ranchland is at serious risk from subdivision. Through its history, harsh winters and difficult access have limited development in the Centennial, but you need only go one pass away, to the subdivisions around Henry's Lake, to see how quickly that would change with an action as simple as improving the rough roads. In the Big Hole, the threat is even more pressing. The valley's prized fishing waters, magnificent scenery, and paved highways have already resulted in far more development pressure. Both valleys are also still feeling the impacts of past land use practices including year-round grazing in the early 1900s that damaged streamside vegetation.

Our Vision

Pronghorn. Kenton Rowe

Our goal is to ensure a viable future for wildlife, for clean water, and for family ranches by conserving the natural connections between parks, private land, and wilderness across state and national boundaries. We couple land protection, community partnerships, and science-based stewardship and restoration to achieve success that endures for the long-term.

Tools and Strategies

Our core strategy in Southwest Montana is working with private landowners to place voluntary conservation easements on their land. These agreements limit subdivision that fragments wildlife habitat and can disrupt operations of multi-generation family ranches. Since much of the most productive valley land is held by large, private cattle ranches, conserving them ensures the viability of a much broader area, including the surrounding public lands. To date, we have protected more than 60 percent of the private land in the Centennial, and we are working with a diverse team of partners to advance a similarly successful program in the Big Hole.

Stewardship staffer Tyler Rennfield samples grass in the Centennial Valley. Kenton Rowe

The second arm of our work is restoration. Livestock grazing by early settlers devastated streamside willows and damaged banks and channels. By building relationships over more than a decade and finding common ground on problems such as invasive weeds, local ranchers have become vital partners in restoring habitat on their land.

Centennial Sandhills Preserve

The Conservancy's Centennial Sandhills Preserve protects a unique habitat of wind-deposited sand that supports uncommon sagebrush steppe communities and several globally rare plant species. Besides monitoring the plant and animal life there, we use the preserve as a living laboratory to test management practices such as controlled burns and different grazing regimes.

Natural Values

The richness of the Centennial Valley's wildlife is directly linked to several factors. 1. The nearly 50,000-acre Red Rock Lakes National Wildlife Refuge and other largely undeveloped public lands provide vital native habitat and minimal disturbance. 2. The Centennial Valley hosts the largest wetland complex in the entire Greater Yellowstone Ecosystem, supporting 261 bird species. It is the site for regional trumpeter swan recovery efforts and contains the densest breeding population of peregrine falcons and ferruginous hawks in Montana. 3. Red Rock Creek is critical spawning habitat for the last native population of adfluvial (fish that live in lakes and spawn in rivers) Arctic grayling in the lower 48 states. 4. The valley is an essential pathway connecting wildlife to habitat both north and west of Yellowstone.

The near-by Big Hole Valley embraces a world-renowned native fishery and the only river in the lower 48 states that still supports native fluvial (live and spawn in rivers) Arctic grayling. The valley's abundant wetlands support a broad range of wildlife including moose, elk, deer, bears, and birds. The Big Hole is a key connection between wildlands in Idaho and Montana's Crown of the Continent.

People and Partnerships

Our work would be impossible without collaboration and partnership with innumerable people. Ranching in Southwest Montana, as in much of the west, is a labor of love—love of the land and the wildlife it supports. In the Big Hole, nearly a dozen ranchers have signed on to efforts to restore habitat for Arctic grayling. Throughout the region, landowners have helped us protect stream banks from grazing, modified irrigation systems to improve water efficiency, and given us access to their property for stream and grassland surveys. Equally important have been the public land agencies and scores of scientists, volunteers, and foundations who have lent us their expertise, financial support, and elbow grease to achieve success in this truly remarkable part of the state.

Trumpeter swans. Donna Dewhurst

The Nature Conservancy of Montana is an affiliate of The University of Montana's Crown of the Continent and Greater Yellowstone Initiative and will provide articles in future publications.

Subdivision of family ranches poses a threat to the rich habitat of the Big Hole Valley. John Lambing

Why the Nature Conservancy?

The Conservancy has the skills, resources, and experience to achieve conservation at the scale needed to make a difference in places as vast and complex as Southwest Montana. Our work begins with a strong foundation in science and is carried out with an invaluable team of partners. We're proud of our long history of respectful partnerships with landowners, local communities, public agencies, and a broad array of other organizations. Along with our dedicated members and donors, it's a winning combination.

Sage-grouse. John Carlson

Bebe Crouse is the communications director for the Montana Nature Conservancy

Greater Yellowston

Saving the ecosyst

Gallatin Crest: Stretching from Bozeman to YNP, the Gallatin Range gives hikers views worth working for. Courtesy of GYC.

ne Coalition:

tem one step at a time

By Jeff Welsch

Here's an argument that might elicit a double-take from those accustomed to hearing doom and gloom: the 20-million-acre Greater Yellowstone Ecosystem is ecologically healthier now than at any time since Yellowstone became the world's first national park in 1872.

How could that be, you ask? With human population squeezing from all sides? With energy and other development carving up landscapes? With more than 3 million visitors annually stressing the resources?

Well, yes. Consider:

With the restoration of a wolf population in 1995, Greater Yellowstone now has its full complement of native wildlife for the first time since the mid-1920s. The mighty grizzly bear, on the brink of extinction in Greater Yellowstone by the 1970s, has rebounded from fewer than 200 to nearly triple that number. The American bison, down to its last two-dozen animals in the early 1900s, now numbers more than 4,000 and for the first time in generations is allowed to roam outside Yellowstone's boundaries.

Greater Yellowstone is now the last great largely intact temperate ecosystem on the planet, and the Greater Yellowstone Coalition (GYC) has played a major role in that evolution.

GYC was founded in 1983 on a simple premise: An ecosystem will remain healthy and wild only if it is kept whole. Fueling our creation was the plight of the grizzly, which was in peril because of habitat fragmentation and the decline of food sources.

Since then, GYC has emerged as America's voice for Yellowstone—a nationally known advocate for ecosystem-level sustainability based on sound science. This is a vast ecosystem, with 20 million acres of mostly wild lands that include Yellowstone and Grand Teton national parks, portions of six national forests, five national wildlife refuges, and state and private lands in Wyoming, Idaho and Montana.

With four strategically placed offices—Bozeman, Montana, Cody and Jackson, Wyoming, and Idaho Falls, Idaho—we are uniquely positioned to work locally with a broad spectrum of interests to protect the lands, waters, wildlife and quality of life in Greater Yellowstone, now and for future generations. Perhaps the best measure of our leadership and influence is our base of more than 40,000 supporters worldwide.

Today, as advocacy needs in the region change, so does our focus. Where once we strived to ensure that grizzly bears, wolves and bison survived in Greater Yellowstone, now we are working on building tolerance, acceptance and, ultimately, appreciation for their place on the landscape and their inextricable position in the region's wild fabric.

As such, our major campaigns today revolve around protecting some of our most treasured wild landscapes. To wit:

Wyoming's Absaroka-Beartooth Front: This astoundingly wild region between Cody and Yellowstone is home to the largest concentration of grizzly bears outside the park. We are fighting to protect this region against energy development.

Parks to Park: Greater Yellowstone is on an ecological island, its migratory and dispersal corridors for wildlife cut off by an interstate highway and social intolerance. The so-called High Divide region straddling the Montana-Idaho border is a vital landscape for connecting Yellowstone's wildlife with the Crown of the Continent region and wilds of central Idaho. We are working to create safe passage for wildlife seeking refugia in a warming climate.

Montana's Gallatin Range: The last significant unroaded area adjacent to Yellowstone still without permanent wilderness protections is in the Gallatin, a wild range stretching from Bozeman to the park's boundary. It is home to

critical populations of free-ranging grizzly bears, wolves, elk, wolverine, pika and other charismatic Yellowstone creatures. We are pushing for permanent wilderness designation of the Hyalite-Porcupine-Buffalo Horn Wilderness Study Area.

Southeast Idaho's phosphate district: Better known as the two-headed trout district, this vast area—which still includes roadless country—with its 17 federal Superfund sites due to selenium poisoning of streams and vegetation is the most polluted landscape in Greater Yellowstone. We are striving to force the industry to clean up its messes before new toxic mines are permitted.

Yellowstone Lake: It is here that our efforts to save the imperiled Yellowstone cutthroat trout are centered. Since the illegal introduction of lake trout in the 1980s, the cutthroat population has declined by 99 percent. We are actively supporting and funding an increasingly successful effort by the National Park Service to suppress lake trout numbers—to the tune of 300,000 in 2012.

For three decades, GYC's focus has been protecting the untamed landscapes so that the iconic wildlife of Greater Yellowstone—grizzly bears, wolves, bison and others—will thrive long into the future. Having achieved a great measure of success in the recovery of those species, GYC is now focusing on the next 30 years within the framework of new challenges: Human population growth in the region, climate change and energy development.

Find out what we are doing today to ensure that the Greater Yellowstone Ecosystem continues down a positive path, and how you can help play a part in maintaining its future, by visiting www.greateryellowstone.org.

The Greater Yellowstone Coalition is a partner in the University of Montana's Crown of the Continent and Greater Yellowstone Initiative.

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Photo: Trailwork building a backcountry highway. Courtesy of GYC