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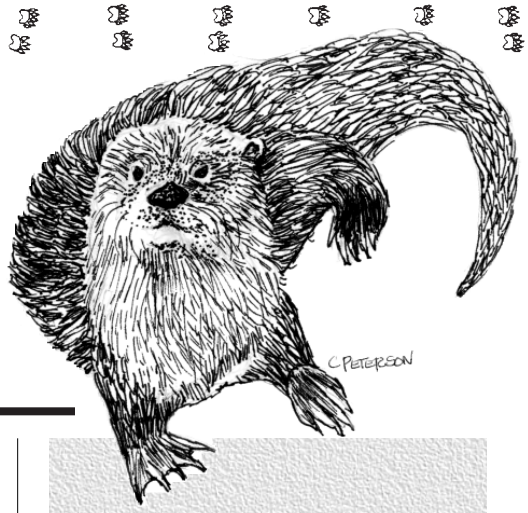

River Otters, Cutthroat Trout, and Their Future in Yellowstone National Park

By Jamie Crait, University of Wyoming

As the first and probably best-known national park in the world, Yellowstone National Park (YNP) remains a treasured place for its unique natural features and abundant wildlife. Nearly three million people visit the park each year to view spectacular creatures such as moose *(Alces alces)*, wolves *(Canis lupus)*, eagles *(Haliaeetus leucocephalus)*, grizzly bears *(Ursus arctos)*, and of course, river otters *(Lontra canadensis)*. For more than a century Yellowstone has afforded safe refuge for otters at times when their populations in other parts of North America were diminished under human pressures. However, recent changes in the natural food web of Yellowstone Lake may threaten several of the park's species, including the otter.

Yellowstone Lake is the largest lake in the park and is home to a resident population of native cutthroat trout *(Oncorhyncus clarki bouvieri)*. Cutthroat trout in Yellowstone Lake migrate in early summer (May-July) into tributary streams and rivers to spawn. Such runs can be composed of up to 60,000 adult trout per season into individual streams. Up to 15% of these spawning trout are consumed by avian, terrestrial, and semi-aquatic predators such as brown bears, bald eagles, river otters, mink *(Mustela vision)*, pelicans *(Pelecanus erythrorhynchos)*, and osprey *(Pandion haliaetus)*. After spawning, the surviving trout return to the lake until the following spring. Cutthroat trout serve as not only

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Female Otter Grooming
Photo by Merav Ben-David

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THE RIVER OTTER JOURNAL is a semi-annual publication of the River Otter Alliance. Look for the next edition of THE RIVER OTTER JOURNAL in Spring 2003!

River Otter Alliance Mission

The River Otter Alliance promotes the survival of the North American River Otter *(Lontra canadensis)* through education, research and habitat protection. We support current research and reintroduction programs, monitor abundance and distribution in the United States, and educate the general public through our newsletter, THE RIVER OTTER JOURNAL, on the need to restore and sustain River Otter populations.

Our goal is to be a center of communications among wildlife biologists, environmental organizations, fishermen, and all interested parties on a national and international basis, in order to ensure the healthy future of the North American River Otter.

River Otters, Cutthroat Trout, and Their Future in Yellowstone National Park

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an important food source for many of these fish predators but are also a popular sport fish.

In the early 1990s park biologists discovered an illegally introduced population of exotic lake trout *(Salvelinus namaycush)* in Yellowstone Lake. Discovery of the introduced lake trout has raised concerns because these large fish prey on juvenile cutthroat and may hinder recruitment of young to the native fish population. Indeed, computer models constructed by Paul Stapp and Greg Hayward from the University of Wyoming, as well as monitoring efforts by YNP biologists Todd Koel and Dan Mahoney, indicate that a decline in Yellowstone cutthroat trout may be under way. Such a decline has implications for a variety of species, but especially the river otter.

Diet analyses conducted by Bill Wengeler, from UC Davis, on otter feces collected in the Yellowstone Lake region indicate that otters feed on the trout throughout the year. Cutthroat trout become even more important in early summer when their spawning runs coincide with rearing of otter pups. Spawning cutthroat trout in smaller tributary streams constitute an easy-to-catch, highly nutritious food source to lactating female otters. In addition, later in the season, spawning trout provide young otters with an opportunity to hone their fishing skills. Lake trout, which live in deep waters of Yellowstone Lake and do not conduct spawning runs, appear to be an unlikely food source for otters and would therefore not be a substitution for cutthroat trout. Thus, a decline in numbers of Yellowstone cutthroat trout through the effects of lake trout will likely change activity and diet of river otters in the Yellowstone ecosystem, ultimately leading to a decline in their population.

Female Otter Swimming
Photo by Merav Ben-David

In addition to their importance to otters, cutthroat trout may also influence terrestrial vegetation around Yellowstone Lake. When trout-fed otters use terrestrial latrine sites for scent marking, they can deposit a significant amount of trout-derived nitrogen (N) and thus naturally "fertilize" plants along streams and lakeshore. M. Ben-David (my graduate advisor) and colleagues pioneered investigations of the effects of otters on coastal forests in Alaska and demonstrated that river otters deposit large amounts of marine-derived N into forests; N that is assimilated by terrestrial plants. A reduction in number of spawning cutthroat trout through the effects of lake trout will likely reduce the amount of N transported by river otters either because of changes in the animals foraging behavior, or declines in otter numbers.

The potential negative effects of a decline in Yellowstone cutthroat trout motivated us to examine the status and behavior of river otters around Yellowstone Lake. We started our work this summer from early June to late August. Surveying the lake and tributaries for otter activity allowed us to compare otter activity on tributary streams during the cutthroat runs and after trout had returned to Yellowstone Lake. Survey methods were similar to those used for the bi-annual otter census in Rocky Mountain National Park (RMNP; see spring 2002 issue) and were performed on foot and by boat. Four main tributary streams and six smaller ones, as well as the entire shoreline of Yellowstone Lake except for the South Arm, were surveyed during two sampling periods, from June to early July, and again from late July to mid-August.

In all, we found 41 latrine sites and several additional sites with otter signs, including rubbing sites, tail drags, and tracks. Sites were primarily associated with typical otter habitat, such as large rock slabs along the lake and secluded, shady forests in riparian zones. While we found most sites and higher activity in the more remote parts of the lake, we did find some active latrine sites in areas

of heavier human use, including marinas and popular angling spots. We did not document a seasonal difference in otter use of tributaries from early to late summer, indicating possible negative effects on otter recruitment.

At each latrine site we collected fecal samples for DNA fingerprinting and vegetation samples for stable isotope analysis to determine the amount of trout-derived N in plants. In addition, we drilled and collected small cores for tree ring investigation. By comparing historical records of cutthroat trout abundance in Yellowstone Lake with tree ring growth, we hope to be able to make a stronger case for the importance of otter fertilization to plants. In other words, if trees on latrine sites show better growth during high-trout years and less growth during low-trout years, one could argue that high numbers of otters are important for tree growth.

To those that follow otter research in other systems, it may seem that 41 latrine sites for such a large area is a low number. Indeed, when we compare our findings to the results of surveys in RMNP and the Green River (see article by J. Hashcke and M. Ben-David in this issue) it does seem that otter activity in the Yellowstone Lake area is low. We were disappointed and quite worried that we did not find more. Therefore, we contacted Bill Wengeler, who collected otter feces in the lake area several years ago, and Bob Landis, who filmed the Nature special "Yellowstone Otters." Both provided valuable advice and pointed us to the areas where they previously found otter sign. Mr. Landis had noticed that many of the Yellowstone Lake sites where he had filmed otters in the early 1990s were now abandoned. This was not the case for other places in YNP, such as the Lamar Valley, where Mr. Landis led us to an amazing, 45-minute observation of a mother otter with four pups! During our countless hours of surveying the Yellowstone Lake area we had no such sighting. Together with Wengeler and Landis, we came to the conclusion that otter numbers around the lake have declined in recent years. Our conclusion was supported by conversations we had with park employees and others who have been associated with the park for many years. Almost every person we interviewed said they had noticed a real decline in otter sightings in the last few years.

So what does the future hold for cutthroat trout and river otters in Yellowstone Lake? It appears that there is a change in the number of otters around Yellowstone Lake. That otter numbers and sightings in the rest of the park seem unchanged suggests that a decline around the lake is real and localized. Is the change in otter numbers in the Lake area a result of reduced recruitment? Or maybe over-winter survival of otters is on the decline? If otters rely heavily on cutthroat trout during the winter, and these fish become scarce, some animals may not make it through this energetically taxing time. Will otter numbers continue to decline with declining trout? Could efforts by park personnel to reduce the numbers of lake trout improve the numbers of cutthroat trout? Will otters from other locations in the park re-colonize the lake?

The good news is that we should know more soon. If DNA fingerprinting of feces yields results, we can estimate the number of otters actually living around Yellowstone Lake. Diet analyses will give us greater insight into the importance of different fish species to the diet of otters. We are also excited to explore the aforementioned influence of otters on annual tree growth. Additionally, we plan to survey during winter months for seasonal changes in latrine site density and location. We will also repeat our study next summer in order to compare year-to-year findings.

Our work in the Yellowstone Lake region constitutes one of the largest studies of river otters in the park's history. Yellowstone National Park Service personnel have been very helpful and shown great interest in the results of this study. Through their continued support we hope to continue this project for quite some time. We hope that results from this study will not only assist park biologists in their efforts to maintain viable otter population in Yellowstone Lake, but also add new information on North American river otters, and the potential impacts of invasive species at multiple trophic (food chain) levels.

Otter Pups Scent Mark
Photo by Merav Ben-David

President's Message

Dear Readers:

Welcome to the Fall 2002 edition of The River Otter Journal.

In this issue, we have articles written by University of Wyoming students. The first is by Jamie Crait on the illegal introduction of lake trout and its negative affect on the river otter and cutthroat trout populations in Yellowstone Lake. The second is an article from Jon Haschke on a river otter population study conducted along the Green River in western Wyoming and northeastern Utah this August. We also have an update from Dr. Paul Polechla on his study of river otters in Colorado's San Juan River drainage. In addition, we have an article from Margaret Ferguson of California's Sonoma County Wildlife Rescue, on her experience caring for abandoned two-week-old river otter pups. (I had the unique pleasure of enduring one of the pups, Llie's non-stop chirps, grunts and thumb-sucking noises during a lengthy drive from Northern California to Southwestern Colorado last June.)

Llie gets ready for her trip to Colorado.
Photo by Lissa Margetts

Also this summer, I had the pleasure of meeting Jordan, one of the river otter pups born at Pennsylvania's Otter Habitat this past March. Jordan likes an audience to whom he can show off his swimming skills and demonstrate antics with his favorite toys.

Jordan shows off at Pennsylvania's Otter Habitat.
Photos by Tracy Johnston

In closing, I would like to express thanks to you, our members, for your continued support of The River Otter Alliance (ROA). As a non-profit, volunteer group, 100% of your donations and membership funds go produce and distribute educational and scientific materials to interested persons or groups. Each member of our Board of Directors is personally involved in the care, research or advocacy of otters in some manner, and through all of you, the ROA has become a unique network of persons contributing to the preservation of the North American River Otter and its habitat.

— Tracy Johnston, ROA President and Newsletter Editor

River Otter Survey of the San Juan Drainage

By Paul J. Polechla Jr., Ph.D.

The best interpretation of sketchy records available at the Colorado Division of Wildlife (C.D.O.W.) indicated that 16 to 24 river otters were translocated from Wisconsin and possibly Nova Scotia onto the Piedra River (a tributary of the San Juan River) in 1979 or possibly 1978. Colorado was the first state to translocate otters in the U.S. After an initial follow-up by Mark Robert in 1980, no formal survey had taken place to document the outcome of the release. Nearly 23 years had elapsed and the C.D.O.W. still received reports from the general public and wildlife biologists indicating that otters were extant in the San Juan drainage. In late winter of 2002, the C.D.O.W. contracted me to determine the credibility of these reports on the Los Pinos, Piedra, and San Juan Rivers of southwestern Colorado.

I surveyed approximately 110 miles of the three rivers from 24 March to 28 May 2002. Weather conditions included snow, sleet, rain, hail, and sunshine. Tracking substrate varied from snow, ice, mud, sand, algae covered rocks, and dry soil. I searched for 13 different types of otter sign. I also made notes about indicators of good water quality and occupied otter habitat.

Colorado and much of the Southwest, as you may remember, experienced low snow pack and low spring precipitation. This drought resulted in lower water levels and high fire hazards followed by a crown fire in the Los Pinos drainage originating on 9 June 2002…called the Missionary Ridge Fire. Historically, cool forest floor fires controlled the amount of fuel buildup. General fire suppression for the last 70 years has resulted in a dangerous fuel buildup increasing the likelihood of devastating crown fires such as this. The loss of property and human misery and inconvenience was great. Ecologically, the jury is still out on how this might affect a fledgling otter population on the Los Pinos. Logistically, this drought meant that I changed my survey from a floating survey by kayak and raft to a walking survey. The water level was so low that I could not paddle a kayak 20 feet without continually scraping bottom. Although this meant that I had to expend a lot more energy, it also meant that this walking survey was more thorough than the floating survey.

I found a total of 31 instances of river otter sign (mostly tracks and scats) from 29 different localities on the Piedra River from San Juan National Forest to Navajo Reservoir near the New Mexico state line. I also observed a set of tracks (under water) on the middle part of the San Juan River. I gathered some additional hearsay records of otters on the Los Pinos, Piedra, and San Juan Rivers, adding onto the hearsay records previously collected. Since, the bona fide otter sign has persisted past the average life span of wild otters, I concluded that the otter sign I observed this year is probably that of offspring (one, possibly more generations removed) of the original translocated population. They seemed to have faired well on the Piedra River, and spread to, but not fully established themselves, on the Los Pinos and San Juan Rivers. I encouraged additional collaborations between individuals and agencies whenever possible. A more detailed paper is forthcoming. I would like to thank the C.D.O.W. for funding and assistance—especially Scott Wait, Pam Schnurr, and many wildlife officers. Colorado's Ocean Journey provided my first introduction into Colorado otter habitat. Tracy Johnston of the River Otter Alliance provided a key reference, and Carol Peterson and John Mulvihill offered moral support.

Photo by Eric Peterson©

Yellowstone Otters

All photos are courtesy of Eric Peterson and copyrighted 2002.

Otter Updates

By Tracy Johnston

The Colorado Division of Wildlife reports viable river otter populations on the Green River, Gunnison River and San Juan drainage—likely the offspring of translocated otters from the state's reintroduction program. Tracks, prey remains and scat were recorded at 32 locations, at a frequency of 0.4 - 0.6 otter sign/km, for the survey route along the Green River in a July 2002 survey. Tracks, including those of otter pups, prey remains and scat, were recorded at 42 locations, at a frequency of 0.15 – 0.6 otter sign/km, for the survey route along the Gunnison River in a May 2002 survey. Tracks, scat and other sign were recorded at 31 locations for the survey route along the Piedra River in a March – May 2002 survey. (See "River Otter Survey of the San Juan Drainage" article in this issue.)

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A possible link between sea otter deaths and cat feces was reported in the July 2002 issue of the International Journal for Parasitology. Melissa Miller, the lead author of the study which took place at the University of California's Davis campus, reported "Otters sampled near areas of coastal freshwater runoff were almost three times more likely to test positive for toxoplasma." Cats are the only animals known to excrete the resilient eggs laid by toxoplasma parasites, which can cause fatal infections to the brain. The contamination could have occurred from cat feces transported by freshwater runoff from landscape irrigation and following storms, or from sewage if it were flushed down toilets. It is unknown whether the otters ingested the parasite through water or by eating contaminated shellfish, although humans can also be affected by toxoplasma by consuming crabs and other shellfish. Monterey Bay Aquarium veterinarians have successfully treated some sea otters with toxoplasma infections using the drug diclazuril, although there is no known cure.

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Regrettably the southern sea otter pup born at Colorado's Ocean Journey on 5/11/02 did not survive. The male pup reportedly had numerous health problems and was separated from his mother after he had trouble nursing. He was euthanized in early June following treatment at the aquarium, The Denver Zoo's special mammal care center, and Colorado State University's School of Veterinary Medicine.

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Design architects White Hutchinson Leisure & Learning Group broke ground on a new river otter habitat this summer. The display will be part of a children's adventure play garden within Paradise Park, a family entertainment center located in Lee's Summit, Missouri. It will tie in with the center's new environmental theme and river otter mascot character. The 6,000-square-foot habitat will include native vegetation and a 6-foot-deep pond that will be approximately 40 by 45 feet in size. (See *Otter Updates* in Spring 2001 River Otter Journal for information on White Hutchinson Leisure & Learning Group's Totter Otterville project.)

Courtesy of White Hutchinson Leisure & Learning Group

Photo by Eric Peterson©

A Second Chance for Llie

By Margaret Ferguson

On March 20th of this year, Sonoma County Wildlife Rescue (SCWR), our wildlife rehabilitation group based in Santa Rosa, California, received three orphaned 2-week-old river otters. The last surviving otter's story opened a new chapter this June 24th, when Melissa Margetts of the Rocky Mountain Ark and Tracy Johnston, president of the River Otter Alliance, took Llie (pronounced 'Ellie') to her new life in Telluride, Colorado. We (SCWR) intended to raise three wild river otters and release them back into the wild in Sonoma County. Sending a solitary otter to Colorado was not our goal, and yet, for those of us privileged to work with the otters this spring, it is not a completely sad ending: Llie will never be a wild otter, but she is in a safe home where she may be part of a program to reintroduce otters to the wild in the Four Corners area, where they had been extinct since 1905.

Photo by Margaret Ferguson

It is rare for otters so young to come to wildlife rehabilitators and we would not have received them without the intervention of a construction crew. A wastewater treatment facility in the county, renovating their facility, demolished a condemned house on their property.

Photo by Tracy Johnston

After removing the debris, the work crew found the three otters in the foundation of the house and called SCWR for assistance. We picked up the otters and attempted to reunite them with their mother that night, but sounds of predators in the area discouraged us from leaving the babies unattended for too long. We also searched the area for signs of adult otters but saw nothing more current than about 24 hours and concluded that the general construction noise had frightened the mother away. At this point, fostering officially began.

The challenge of fostering otters this young for release is to keep them healthy—intestinal problems and pneumonia are the most immediate threats—and to raise them wild. Despite the loss of their weakest sister on Easter, Llie and her sister Arie were still candidates for release into the wild until Arie's sudden death in May. There were no other pups Llie's age with whom she could be fostered, and because of young otters' highly social nature, she soon bonded to us, her human caregivers—something we had avoided until then. An otter habituated to humans is at risk to the dangers of domestic predation if released, so captive placement for her had to be found. After some research into a few facilities seeking captive otters and several conversations, we decided Llie would be best off with Melissa Margetts at the Ark; Melissa, the rehabilitation liaison for ROA, is a passionate advocate for otters and one who has worked with them for many years. Her knowledge, skills, facility, and contacts are unparalleled.

Llie will have a full life. Now, she is busy growing up—she is 'fostered' by an adult female otter and has other juvenile river otters to keep her busy, she is learning the nuances of hunting and swimming and being an otter among otters. Melissa is currently 'target training' Llie, teaching her to respond to verbal commands using a ball on a stick and food rewards as a way to encourage cooperative behavior and to provide environmental enrichment. Melissa learned this technique from a trainer at Colorado's Ocean Journey, a Denver aquarium, and will use it to teach Llie, and eventually other of her otters, more sophisticated behaviors useful for day-to-day health maintenance (dental exams) or field research (such as a reintroduction study.)

When Llie is older, she will be an 'educational ambassador,' going with Melissa to schools and other forums to teach about the significance of river otters as an indicator species of a healthy watershed. If she responds well to the training, she may also be part of a study evaluating the feasibility of reintroducing river otters into the Grand Canyon. Perhaps she may even be a mother in a reintroduction program—while she will not live in the wild, her pups might live wild in waters where there have been no otters for nearly a century.

How the Rabbit Stole the Otter's Coat

From Cherokee Animal Tales, Scheer, 1968

In early times, as now, the animals were of different sizes and various colors and patterns. They were always arguing about who had the best looks, particularly the best coat. So, at last they agreed to hold a council to decide who had the finest coat.

They had all heard a great deal about the Otter, who lived so far up the creek that he seldom came down to visit the other animals. It was said that he had the finest coat of all. But no one knew just what it was like.

Now, the Rabbit wanted to be chosen the best dressed. So when it began to look as though the Otter might be judged to have the finest coat, the Rabbit made a plan to cheat the Otter out of the prize. He traveled four days up the creek to meet the Otter, telling the Otter that the other animals had sent him to bring Otter to the council.

As they went back down the creek, the Rabbit began to pick up wood and bark and load it on his back. When the Otter asked what this was for, the Rabbit said it was to make them warm in camp. Then, after supper, the Rabbit got a stick and shaved it down to a paddle, telling the Otter that he had good dreams when he slept with a paddle under his head. When the paddle was finished, the Rabbit began to make a path to the creek.

The Otter asked about this and Rabbit said, "Sometimes it rains fire here and the sky looks a little that way tonight. You go to sleep and if the fire does come, as soon as you hear me shout, you run and jump into the creek. Better hide your coat under that stone so it can't be burned."

The Otter did as he was told and went to sleep. After a while, the fire died down to red coals and the Rabbit filled the paddle with the coals and threw them up into the air, shouting, "It's raining fire! It's raining fire!" The hot coals fell all around the Otter and he jumped up. "To the water!" cried Rabbit and Otter ran into the creek.

Rabbit took the Otter's coat from under the stone, put it on, and dashed off. All the other animals were at the council. They said, "We don't know where Rabbit is, but this must be Otter coming." They showed Otter to the best seat, but wondered why he kept one paw over his face. Otter would not talk or look up and at last Bear went over and pulled his paw away. There, instead of Otter, was Rabbit with his split nose. The animals howled at the trick and Bear struck at Rabbit, pulling off most of his tail. Though Rabbit got away he has had only a stumpy tail ever since.

Meanwhile, Otter discovered that he really liked the water, but that he needed a warmer and even finer coat. He did not even look for the coat that Rabbit had stolen, but made himself the warmest and most beautiful coat that any animal ever had or ever will have. Putting it on, he made the path into a slide, then slid into the water to fish and play. And so he does, even to this very day.

— Contributed by John Mulvihill

Photo by Eric Peterson©

Row...Row...Row Your Boat, Gently Down "the Green"...

By Jon Haschke and Merav Ben-David, University of Wyoming

The University of Wyoming Student Chapter of The Wildlife Society (UW-SCTWS) conducted a six-day river otter survey of the Green River in western Wyoming and northeastern Utah this August. This survey is part of an effort to evaluate the status of otter populations on the headwaters of the Colorado River. Knowledge of occurrence and density of otters in these streams and rivers as well as evaluation of whether dams are barriers to otter dispersal are important for the building of a model simulating natural recolonization of the Grand Canyon (see Spring 2002 issue). Thirteen students, the chapter advisor Merav Ben-David, scientist Nate Nibbelink of the Wyoming Geographic Science Center, and biologists from Seedskadee National Wildlife Refuge participated in the survey.

Using rafts and enthusiastic wildlife students, a total of 65 kilometers was surveyed for river otter slides, den sites, and latrine sites. Of these, 37 km were above the Flaming Gorge Dam and reservoir, and 28 below the dam. This study design called for complicated logistics. First, to accommodate 15 people and their camping gear we needed 5 rafts. We were fortunate to get 2 rafts on loan from Mark McKinstry of the Wyoming Cooperative Fish and Wildlife Research Unit, who generously provided us with his personal rafts, trailer, and other critical equipment such as cooking gear and "porta potty." Additional rafts and equipment were rented from the guiding company River Runner's Transport of Vernal, Utah. Funding for our expedition was kindly provided by the University of Wyoming President Advisory Council for Women and Minority Affairs and the Department of Zoology and Physiology. Second, after rafting the upper part of the Green for 2 days, we had to move our entire operation below the Flaming Gorge Dam. Leaving vehicles on both ends of the rafted sections required a lot of driving!

Water level in both sections of the survey was relatively low. Water discharge from the Fontanel Dam and the Flaming Gorge Dam was adjusted because of the recent drought in the region. For us this proved to be a blessing. For many of us, this trip was the first rafting experience and the relatively calm waters made it a great place to learn some rafting skills. The few rapids we had to negotiate would have been a lot harder if water levels were higher. We also had the opportunity to experience first-hand the effects of changes in water discharge from dams on downstream sections of the river. During the first day, water discharge from the Fontanel Dam was low and we had to paddle and oar nearly the entire 20 km we surveyed that day. A difficult task, especially on those bends of the river where the wind was blowing upstream. The following day water discharge increased (to accommodate a white water kayaking competition downstream), and our rafting turned easy.

Three to four people were in each raft. This allowed for two people to look for likely otter activity sites while one person maneuvered the raft. Although many of us have participated in the surveys in Rocky Mountain National Park (see spring 2002 issue), we were unsure how well we would be able to detect otter latrines from the rafts. This was the reason why Gaia and Dida (Merav's dogs) were allowed to join the trip. Gaia has experience finding otter sign from her work with Merav in Alaska, and we hoped that Dida would learn the job too. Indeed, both dogs quickly figured the routine and were a great help in sniffing out otter latrine sites. The only problem was that Dida insisted on rolling in the fresh feces and we had to race to her and collect them before she contaminated them with her own DNA. We soon developed a search image for the otter latrines and were efficient in finding them even without the help of the dogs.

While surveying above the Flaming Gorge reservoir, within Seedskadee National Wildlife Refuge, we were accompanied by refuge biologist, Lamont Glass, a biological technician of the refuge, and even the refuge manager Carol Damberg! They were a great help in telling us more about the refuge and helping search out otter activity sites. It was an excellent opportunity for the students to work side-by-side with wildlife professionals in a field setting.

What did we find? Above the Flaming Gorge Dam and within Seedskadee National Wildlife Refuge we found numerous latrines. In fact we had to skip quite a few or we would have not made it through that stretch. Therefore, we described the habitat characters only for sites that had den sites associated with them or sites in which we collected fresh feces. This amounted to 42 latrines or 1.14 sites per km of river. Below the dam we found only 22 sites (and these included all sites we encountered) or 0.79 sites per km of river. The difference in levels of activity was also evident from the total number of feces we counted. Above the dam we counted 658 feces and below the dam only 311. When converted to feces per site, however, numbers were similar: 16 feces per site on average above the dam, and 14 per

site below the dam. This suggests to us that visitation rate of latrines in both areas is similar but the number of otters may be lower below the dam. Comparing these results with those of our survey of Rocky Mountain National Park in fall 2001, we find that we detected less latrines per km of stream on the Green but higher number of feces per sites. In RMNP in fall 2001, we recorded 1.4 sites per km of stream, but only 4.6 feces per site (see spring 2002 issue). One has to remember, though, that we skipped quite a few sites on the upper stretch of the Green, so the lower number of sites per km is a gross underestimate for that section.

Interestingly, there seems to be a major difference in diet of otters above and below the dam. Above the dam most feces contained remains of crayfish, whereas below the dam the majority contained fish bones. Indeed, we observed numerous crayfish of various sizes in the upper stretch of the survey but few below the dam. Also, we caught quite a few fish (trout) on the lower section, but none above. We are planning to conduct a more detailed analysis of the feces in the near future.

Our survey yielded an abundance of fresh feces (more than 40.) Our plan is to extract DNA from those feces and obtain an individual fingerprint for each one. By doing so we will be able to identify individual river otters and obtain a count of individuals on each stretch that we floated. It will also allow us to estimate how many otters disperse over the dam and reservoir. New methods for establishing dispersal rates from DNA fingerprinting are now available and we hope to use them in our analysis.

The best part of the survey was the observation of two otters within the first 7 km below the Flaming Gorge Dam. That observation together with observations of other wildlife such as white pelicans, bald eagles, pronghorn, deer, and moose made this trip a real treat! And that's not all. On the slower parts of the river, we had a great time throwing a Frisbee between rafts and splashing each other with the oars, as well as doing a little fishing. The beautiful weather throughout the trip made for a great camping-out experience (I, Jon, never set up a tent the entire trip.) It was an amazing setting, and a great way to end the summer and fire up the new school year for the Wyoming Student Chapter of The Wildlife Society. We thank all those who supported our expedition and hope that we can make these surveys an annual event.

Photo by Eric Peterson©

Visit the River Otter Alliance Web Page at www.otternet.com/ROA

River Otter Alliance Board of Directors

The River Otter Alliance is a non-profit, tax-exempt group organized to promote the survival of the North American River Otter *(Lontra canadensis)* though education, research, reintroduction, and habitat protection.

All work and efforts for this organization and newsletter are on a volunteer basis by those who share a common concern for the welfare of the river otter and its habitat. We invite all interested persons to contribute their time at any level of the organization.

The River Otter Alliance

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INSIDE:
Otter research and photographs from Yellowstone National Park, otter rehabilitation, and other interesting stories!