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DEPARTMENT OF GAME, FISH & PARKS





South Dakota Conservation Digest

DEPARTMENT OF GAME, FISH & PARKS

Volume 81, Number 3

Dennis Daugaard
Governor of South Dakota



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Lake Oahe Walleye Tagging:

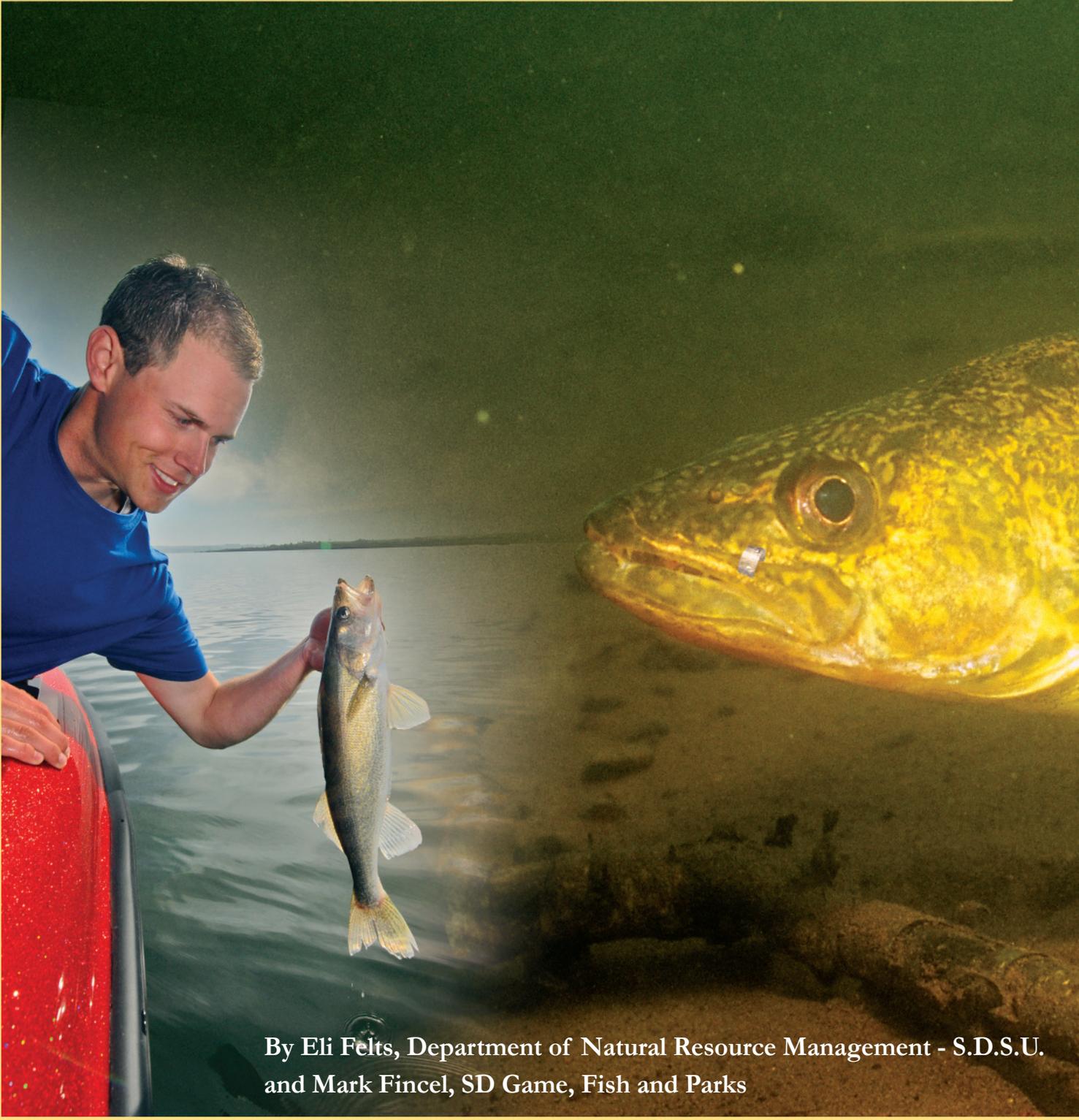


Photo © Chad Coppess | travelsd.com

By Eli Felts, Department of Natural Resource Management - S.D.S.U.
and Mark Fincel, SD Game, Fish and Parks

Understanding a Flagship Fishery in the Face of Constant Change



Lake Oahe is one of South Dakota's crown jewels. Anglers spent over one million hours fishing Lake Oahe during 2013, with most anglers targeting walleye. However, as most of those anglers probably know, Mother Nature likes to wreak havoc on Lake Oahe and its walleye population, producing periods of booms and busts. Above average reproduction and abundant food in the early to mid-1990s had Lake Oahe booming with high numbers of large walleyes. Severe flooding in 1997 greatly reduced the rainbow smelt population in Lake Oahe, causing an imbalance between predators and prey. Liberalized harvest limits were in place from 2001 through 2003. Drought during the mid-2000s had anglers wondering if the reservoir would ever fill back up, and had managers scrambling to extend boat ramps. There were also some positives stemming from the low water. During the drought years of the 2000s, Lake Oahe's shorelines grew up with vegetation and when water filled back in during 2009 this vegetation provided nutrients and habitat. These features are ideal for young walleyes, and helped to produce one of the largest year-classes of walleye ever seen in Lake Oahe. The boom was back on. However, there was another flood around the corner. Following severe flooding in 2011, a large percentage of rainbow smelt were lost from Lake Oahe, prompting concerns from managers and anglers. Would the problems following the 1997 flood repeat themselves?

Understanding Walleyes

Walleye populations are constantly changing, both in terms of the total number of individuals and the size of those fish. One thing driving these changes to a population is the rate at which fish are being lost (often called a mortality rate). Walleyes die for a number

of reasons; including angling and several natural causes like disease, starvation and old age. There are many questions researchers have about how Lake Oahe's walleye population has responded following the 2011 flood. With the predator-prey imbalance, has natural mortality increased due to starvation? Has angling mortality increased (hungry fish tend to bite more)? Do increased bag

limits help to restore balance between walleye and rainbow smelt? How quickly will natural and angling mortality change when the forage base bounces back? These are just a few of the questions we are hoping to answer.

A tagging study was quickly proposed because managers realized a need to answer these questions. Tagging a sample of the population over multiple years allows for estimates of mortality rates and to separately estimate

angling and natural mortality. In the current study, walleyes are being outfitted with tags placed on their jaw that are visible to anglers who can then report harvesting a tagged fish. The percentage of tagged fish returned by anglers is used to estimate the rate of angling mortality. The rates of encounters after the first year of being tagged are used to estimate natural mortality rates. An added benefit of tagging studies provides information on how fish move throughout the reservoir. The study will take place over four years (2013-2016) with a goal of tagging 10,000 fish each year. We are cooperating with North Dakota fisheries staff who will be tagging Walleyes on the North Dakota side of the border, so results can be applied to the entire reservoir. Tagging fish over four years will allow assessment of management actions, like the increased bag limits in 2013, as well as natural changes in Lake Oahe. Hopefully, the next four years captures the start of the next boom period, and we can track the walleye population through that process.

Year One-Tag Returns

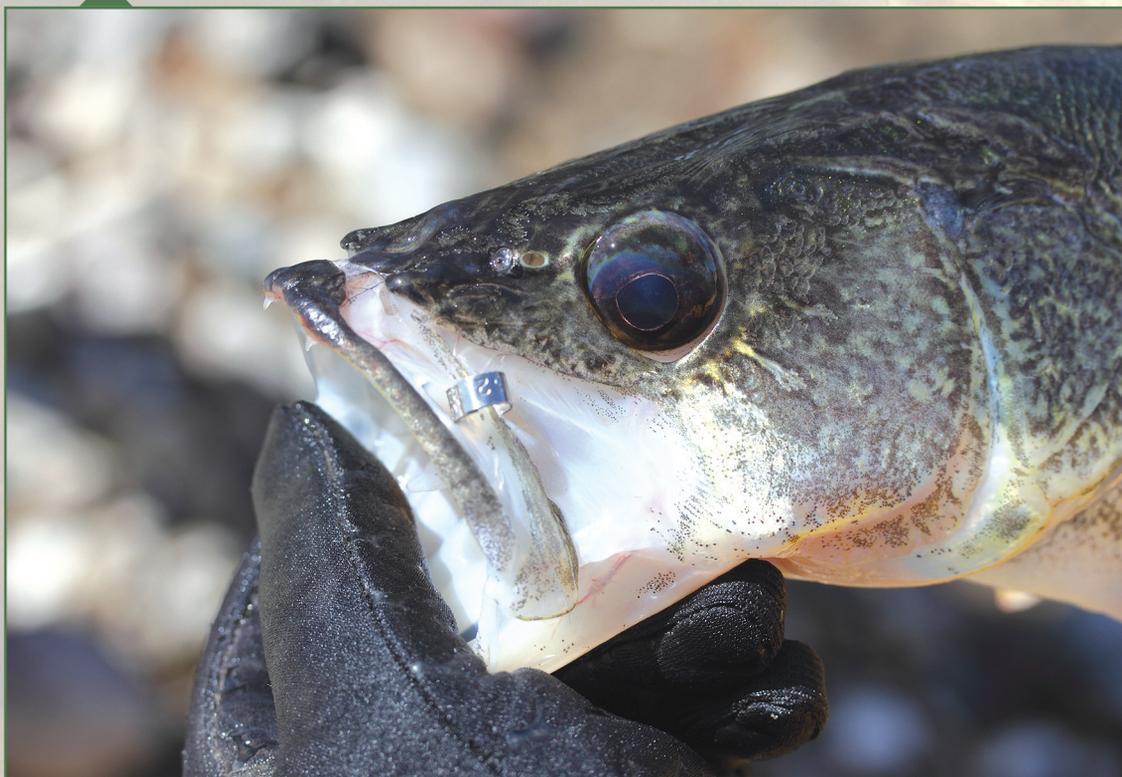
During April and May 2013, we tagged 9,176 walleye with an individually numbered metal jaw tag. Fish were tagged throughout the reservoir at 20 different locations from just below

the Garrison Dam to the West Shore boat launch at the face of the Oahe Dam. The distribution of tags will tell how fish in different areas and habitats of the reservoir respond differently to the dynamic nature of Lake Oahe.

One of the main questions the study is designed to answer is what percentage of the population is harvested in a given year. Creel surveys estimated that in 2013, anglers harvested an all-time record 781,874 walleyes! Sure, three-quarters of a million walleyes sounds like a lot, but there are A LOT

“(a walleye) was tagged at the Garrison Dam on April 29 and was caught at Okobojo Point on June 1; that’s a journey of 298 miles!”

If you catch a walleye on Lake Oahe with a tag like this, contact SD Game, Fish and Parks and you may be eligible for a reward.



of walleyes in Lake Oahe. The tagging data in the study was used to estimate that approximately 25% of the walleyes in Lake Oahe were harvested during 2013. While this number may sound high to some, it is actually below what managers would consider too high for a walleye population.

Walleye fishing on Lake Oahe was outstanding during 2013, but success seemed to be concentrated in the typical peak months. Tag returns started pouring in as soon as we started tagging in April, and the number of returns increased through June. Success started to tail off in July, and there have been very few tag returns since. Based on our data, 85% of walleyes harvested during 2013 were taken from May through July, and 43% were taken during the month of June alone!

Year One-Movement Patterns

Talk to five different Lake Oahe walleye anglers and you will probably get five different theories about how walleyes move throughout the reservoir. This study will shed some light on this fascinating topic, and some interesting patterns have already developed.

So far, about half of the walleyes in the study were caught by anglers within 10 miles of their original tagging site, but keep in mind that many of these fish were caught shortly after being tagged. The longest movement was a fish that was tagged at the Garrison Dam on April 29 and was caught at Okobojo Point on June 1; that's a journey of 298 miles! In general, fish tagged in the upper part of Lake Oahe and the Garrison Reach in North Dakota moved much further than those tagged downstream in South Dakota. Fish tagged in North Dakota moved 40 miles on average, compared to South Dakota fish which moved an average of about 10 miles. Interestingly, the North Dakota fish seemed to be moving both upstream and downstream after tagging. For example, fish tagged just north of the SD-ND border in Beaver Bay were just as likely to show up in Bismarck as they were to show up in Mobridge.

The first year has provided some intriguing results, but it is important to realize that there is still a lot to learn about how these fish are moving. A large majority of the tag returns



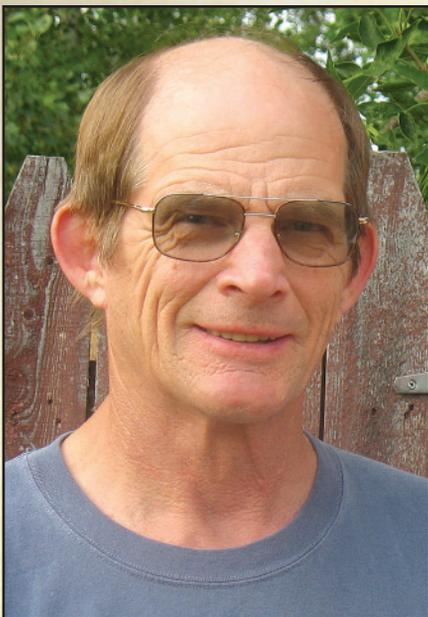
(85%) were from May through July, meaning that there's not much information about where these fish went through late summer, fall and winter. We are on the edge of our seats to see where the tags show up this coming spring and summer. In many populations walleyes return to the same spawning sites each year, so we are anxious to see if that is the case in Lake Oahe.

SD Game, Fish and Parks, along with ND Game and Fish, tagged approximately 10,000 walleyes in Lake Oahe last year. They will tag approximately 10,000 walleyes per year for the next 3 years.

Year Two and Beyond

Tagging efforts have already begun on Lake Oahe in 2014. This year will be very similar to last year with a goal of tagging 10,000 walleyes throughout the lake. Tagging efforts will continue through spring 2016. Anglers can report catching a tagged fish by calling 605-223-7656 or sending an email to oahetags@gmail.com.





Artist Donald A. Soderlund Jr. paints mostly decoys these days, however, it was his original watercolor paintings from 1974 that peaked the interest of some SD GFP employees.

The dusty storage room is quiet, as it should be at this early hour. Three locks and a fence have been defeated and now The Artist is about to hit paydirt. Some feet above the cement floor, he spies a box. It doesn't look like much, but its contents have been believed gone for nearly 40 years. The Artist carefully shimmies up the rickety shelves to acquire his prize. A blanket of dust covers everything, including The Artist. He sneezes, then freezes, hoping not to trip an alarm or waken an unseen security guard.

The Artist is back in his office, the crushed, dusty box sits on the floor at his feet. He is hesitant to open it and reveal the contents to the light of day. His fear of the contents being destroyed by 40 years of improper storage fills his mouth with an acrid taste. He has come too far however. He lifts the box lid to reveal...

By Chris Hull, SD GFP Information Specialist
Paintings by Don Soderlund Jr.



The Artist

This photo was used in a South Dakota Conservation Digest article in 1974. The photo shows Don working on the paintings that would end up being used for the Central Flyways Waterfowl Identification book.



Sounds like a bad mystery novel, right? Or maybe a Nicholas Cage box office thriller? It is a bit of a stretch to say how this scenario played out exactly, but it does tell a little bit of the feelings I had when a co-worker showed me a box he found in a GFP warehouse recently.

“The Artist” in this story is SD GFP graphic designer, Adam Oswald. Adam is also an award winning painter, who specializes in wildlife art. Adam was recently in the warehouse at our Ft. Pierre office when he came across an old, crushed cardboard box that was stashed away among some random pamphlets and gear. He brought the box back to our offices and called me into his cube.

“Take a look at these,” he said as I walked into his office. The box, now open, was stacked with dusty manila envelopes. “I haven’t opened them all, because they are old and I don’t want to damage them, but I

think they are old and definitely cool.”

My interest peaked. I picked the top folder up. “Mallard, Drake and hen” was scratched in faded pencil on its top. The strange piece of parchment-like paper that came out of the folder was like finding the Rosetta Stone for duck hunters growing up in the 1980s.

In 1972, the U.S. Fish and Wildlife Service were in the initial phases of putting a plan in motion to install the “point system” for daily duck limits in the United States. Each duck species, and in some cases the male and female of the same species, would have a number of points attached to it. A waterfowl hunter could have up to 100 points in their daily bag. For example, if teal were 10 points, a hunter could have 10 teal. If drake mallards were 20 points and hen mallards were 50, a hunter could have two hens, or five drakes, or three drakes and one hen... yeah that adds up to 110, but that was the law.

J. H. Schenk, Jr.

A major obstacle back then (and even still today) was a hunter's duck identification. Even a novice duck hunter can identify a drake mallard in late November. The problem was with early season...and ducks like gadwall can look a lot like a hen mallard or even an early season drake mallard.

Tom Kuck was SD GFP's waterfowl biologist in the 1970s, and he was very conscious of the problem.

"I worked for the Department from 1969-1983, and I was appointed by the Central Flyway Tech Committee to develop a waterfowl identification booklet," Kuck said. "There were plenty of big books full of pretty duck paintings, but we needed something that hunters could take into the field. No other flyway organization was doing this, so we took the lead."

The other hurdle facing Kuck was artists liked to paint "pretty" ducks.

"We needed paintings of ducks that weren't fully colored out. Ducks that were more brown than anything. Hunters needed to have a duck in one hand, and this book in the other."

"The best way to help ID ducks like this is with examples of the wings. We wanted good examples of wings as well."

After seeing a mere few of these 40-year-old watercolor paintings, my first thought was "Man some of these would look great in my house!" After a few short conversations with Adam, and several other co-workers we let in on our secret, we decided these works of art needed to be preserved and displayed.

When I mentioned our find to former SD GFP Secretary John Cooper, he was immediately excited.

"I gotta see those paintings," Cooper said. It was Cooper that directed me to Kuck.

"I was in a meeting in Denver and was discussing the possibility of doing a booklet like this with George Brackage, of the U.S. Fish and Wildlife Service. George was from Minnesota and said he had an artist that was looking



This painting was used on the original cover of the waterfowl identification book.

to really break into the wildlife art world, and the guy was a big time duck hunter, like passionate beyond belief. That is how we got Don Soderland involved in the paintings for the project," Kuck told me.

If this was a movie, here is where the plot twist comes in. I know Don Soderland, but it is the SON of the artist we were looking for. I shot Don an email, telling him what we had found, and asking him for his dad's phone number. Information in hand, I called Don (the dad), who lives on Minnesota's Pelican Lake.

"They (SD GFP) paid me \$35 each for those paintings," Soderland told me. "I painted in watercolors, so they were on rag paper. Watercolors are a different process. You can't layer, you work from light colors to dark. It is different than most paintings of wildlife you see today, but I sent some samples in to Tom and he liked them. I was trying to get my foot in the door of the wildlife art world."

"I think being an avid duck hunter really helped me land the project," Soderland told me. "Tom visited me

once during the process and we looked at what I had done so far. He made me redo a few of them as they weren't 'scraggly' enough. I understood the purpose and the importance of getting these birds right."

The more I looked at these paintings, the more significant I realized they were. Tens, if not hundreds of thousands of hunters have used them to identify ducks. Memories of a duck hunt with my dad came flooding back. I had a duck sitting at my feet, and I was upset because I thought it was a hen mallard. Dad told me to get my book out. Together we looked through the pages and decided it was a gadwall. If these paintings meant this much to me, more duck hunters needed to know we found them.

"Each painting took me three or four hours," Soderland told me. "With watercolors, I work fast. It probably took me six months to complete them. I boxed them up and shipped them to South Dakota. I never saw them again."

"Once we got them completed, we had a hard time finding a printer,"

Kuck told me. "We wanted hunters to be able to take these books out into the field, and we needed them to stand up to water, mud and everything else a duck hunter encounters. We were looking for a true waterproof paper. We finally found a printer in Denver that had a new paper that would fit the bill."

The books aren't printed on waterproof paper anymore, but I remember my original book and the slick glossy stock that was used.

"I don't remember how many we printed in 1974.

SD GFP did most of the work. We paid Don, we paid for all the printing, and each state in the flyway had a share of them with their names on the cover. The other states then paid their share to South Dakota," Kuck explained. "It was easier that way, but we (SD GFP) had hundreds of employee hours invested. Myself, Bruce Koonrod, Chuck Post and many others did a lot of heavy lifting to get this project done."

The paintings are now safe, but in a sort of limbo. SD GFP staff is trying to figure out the best way to preserve and decide where they should be displayed.

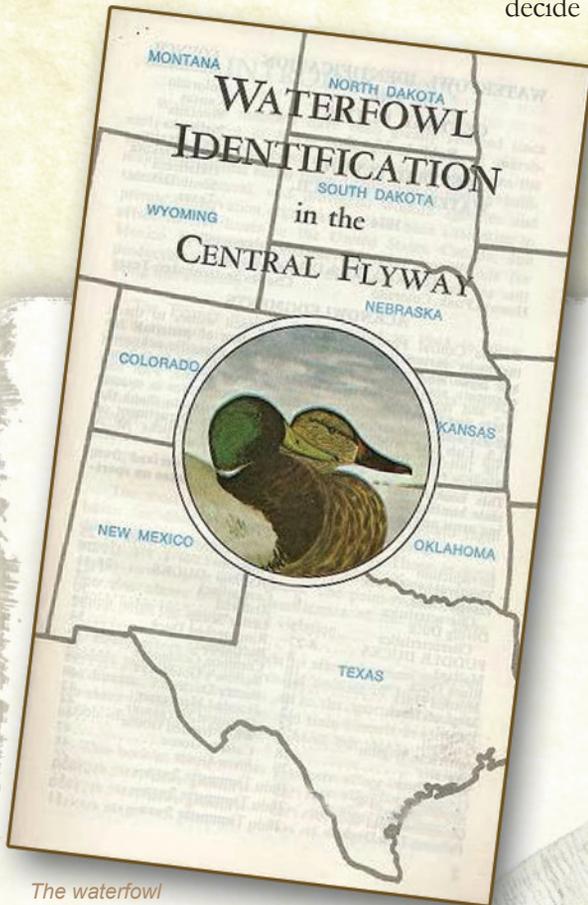
The Artist was right on one thing, duck hunters are excited when they see them.

"I received a really odd call from John Cooper saying that you guys had found the

artwork," Kuck said. "Years ago, several people had an interest in buying the paintings, but we were told they had been destroyed. I was sad they were gone. I sure am glad that they are still around and all still together."

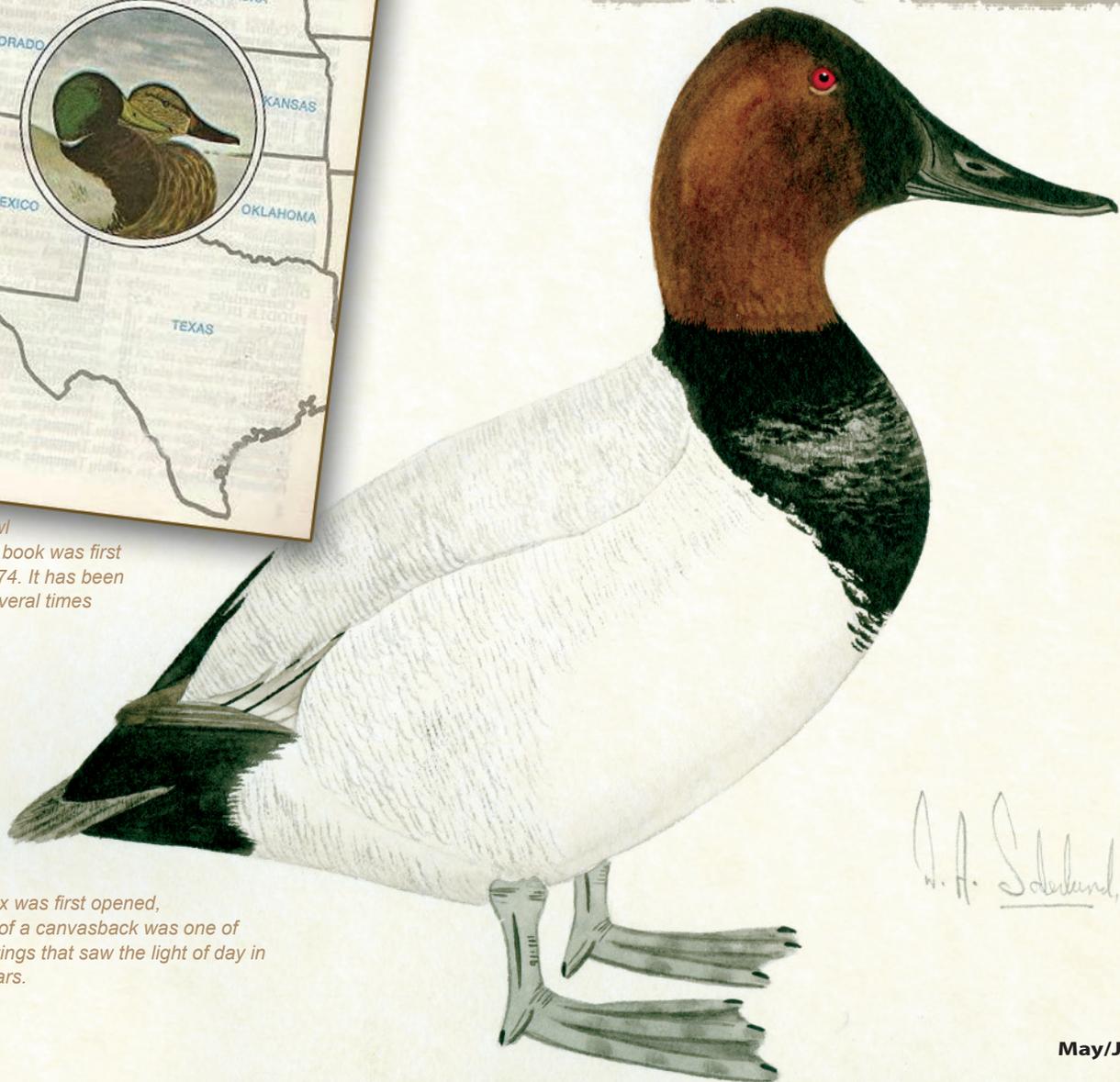
"It's something I am very proud of," Soderland said. "It's something I point to and say 'I did that.' Sort of a legacy."

I told my dad about the paintings and he just smiled. He asked if I remembered that time on Drywood Lake, when I shot the gadwall that I thought was a mallard. These paintings are that powerful, that important to duck hunters. They drive memories. They make us smile and drift away for a few moments, remembering mornings in a slough with friends and family. Great art has that effect on people. These paintings certainly qualify.



The waterfowl identification book was first printed in 1974. It has been re-printed several times since.

When the box was first opened, this painting of a canvasback was one of the first paintings that saw the light of day in nearly 40 years.



W. A. Soderland, Jr.

THE UNTOUCH

It was a chilly November afternoon on the prairie of south central South Dakota. Migrating ferruginous hawks circled high in the sky looking for their next mouse or rabbit. The tranquility of the beautiful fall day was interrupted by the rattling of a large diesel pickup as it bounced its way across the pasture. The pickup appears to be something from a NASCAR pit crew with loud decals, photographs and stencils of various wildlife scenes plastered on every inch of visible body space. Just prior to topping out, near one of the many large ravines on the private property, the pickup stops and its two occupants hurriedly get out. Only one, the passenger, is wearing blaze orange, indicative of a big game hunter. He is carrying a high-powered rifle and his pace suggests that he's seen something worth pursuing. A shot rings out and the whitetail buck trotting out the other side of the ravine crumples in a heap next to a thick patch of western snowberry.

by Jeff McEntee, SD GFP Wildlife Investigator

HABLES

After field dressing the deer, the resident hunting guide hands his tag to the client to put on the deer. Since the tag allows anyone to legally possess the animal, no one knows who actually killed the deer. As long as both participants abide by the code of silence, the crime is pulled off without a hitch. The two look around and no one can be seen in any direction. This sense of being alone makes each of them feel untouchable. Photos are taken, cash is paid and the client heads down the road, back to his home state, and begins the bragging process about his hunting exploits. It is only then, when one of the participants willingly violates the previously mentioned code; that word begins to travel. And travel it does, often times at the speed of light. It's almost like the photo taken of the hunter with the illegal deer is on a crash course with my office computer. Traveling through cyberspace, bouncing off email accounts, Facebook profiles, and Twitter feeds until finally coming to rest on someone's smart phone or computer who knows the truth and

cares enough to do something about it.

When I took one of the two the wildlife investigator positions almost a dozen years ago, these are the types of criminals I wanted to catch. Some people may say, "Criminals?" Why are you calling them that? It's not like they robbed a bank or hurt someone. True. But the fact remains they are criminals in that they are circumventing a well-established system for the fair and equitable distribution of licenses by using someone else's tag. You see, nonresident buck licenses are very limited and even most resident hunters have to wait every few years in order to hunt a buck with a rifle. So when someone comes here and flashes some cash to push them to the front of the line, that's when I get offended...and motivated. As do most self-respecting sportsmen and women who make the conscience decision to follow the rules.

The above mentioned scenario is all too common to the investigative unit within the South Dakota Game, Fish & Parks Law Enforcement Administration Section. The two investiga-



tors are charged with the task of working on criminal wildlife cases which have some type of commercial nexus. These often include illegal outfitters, taxidermists, bait dealers, shooting preserves and other long term investigations. The investigators most often act on information referred to them from local Conservation Officers (CO). The COs have their fingers on the pulse of their local communities. Those officers who have been in their duty stations for any length of time have a network of individuals who keep them up to speed on the happenings throughout their patrol area. The information provided by these folks sometimes involves suspected illegal activity and these tips have resulted in some of the largest cases ever worked by the department. In some instances the local officer may initiate the case and determine later there is much more involvement than they have time needed to dedicate to the project. This is where the investigators come into play. The investigators dedicate 100% of their time to wildlife investigations. This allows them the time and resources required to work these often lengthy cases.

In 2013 and 2014 several criminal wildlife cases were concluded in South Dakota after years of investigation.

In 2009, information was received about a commercial operator in the Winner area who was allowing nonresidents to shoot deer without the proper licenses. Other information also included the killing of hawks and owls. In 2011 and 2012, observations

were made by officers that initially confirmed some of the information which lead to the execution of a search warrant at the outfitter's place of business. Through computer records, photographs and paperwork associated with the business, many clients were identified from around the country. Armed with information, investigators traveled to Michigan and Minnesota to conduct interviews of the clients to determine their involvement in the case. When faced with the overwhelming evidence, all of the suspects cooperated and no case ever went to trial. Two of the defendants in the case host a syndicated cable TV hunting program and several of their exploits were aired on an actual program. Raw footage seized from the production company validated the violations. In the end, 54 illegally taken deer were seized and five firearms were forfeited in addition to substantial monetary fines and restitution imposed by the courts.

In 2011, information was presented to investigators that several violations of South Dakota law were violated by two Michigan hunters while in South Dakota deer and pheasant hunting. Michigan DNR officers provided SD investigators with information that several buck deer were taken without licenses at a commercial hunting operation near Kimball. Subsequent interviews of the two hunters and the outfitter revealed that steps were taken by the outfitter and one of the hunters to attempt to cover up the evidence by submitting falsely produced receipts to law enforcement. The actual cov-

These nine untagged deer were found in a garage in Todd County in 2011. three poachers received \$5,000 in civil damages and \$1,518 in criminal fines/costs with 120 days suspended jail time.



er-up attempt resulted in felony obstruction of justice charges that were eventually plead down to misdemeanor offenses.

In 2011 and 2012, a group of hunters from the Yale and Timber Lake areas of South Dakota were observed on several occasions by investigators violating numerous wildlife laws including chasing deer, hunting without licenses, tag transfers, using radios, taking over limits of game and failing to tag game, just to name a few. The group was observed on two separate occasions during different west river hunting seasons. People have asked, "Why didn't you stop them when you first detected the initial violations?" While the question seems simple, the answer is not. Typically when observations like these are made, it is a snapshot of what is actually happening. Officers are trained to determine if, in fact, the violations that they are watching are truly a one-time event or are they part of a much larger behavior issue? It takes a great amount of time and resource to investigate these types of cases so one needs to be sure about the potential outcome. Many factors come into play when deciding to conclude an investigation. Issues such as resource damage, manpower, investigative expenses and safety of the investigators come to mind. The agency needs to balance the desired outcome with the expected fall out. No matter how a case is handled, there are some who view it as excessive and still others who maintain it wasn't enough. In short, the best outcome for the future benefit of the resource ultimately dictates how the case is managed. In this case the decision was made to conclude the case after two years of observations. The defendants received 11 years of license revocation, over \$25,000 in fines and restitution and required jail time.

All of these cases were initiated because someone in their group violated the code of silence.

All told, in 2013, the four major cases completed by our investigative unit garnered \$129,449.00 in fines, \$134,595.00 in civil penalties and restitution and 32 years of combined hunting revocation.



One of TIPs most wanted cases. This bighorn sheep was living in Custer State Park near the Game Lodge campground when it was poached in 2009. Only the head and cape were taken. If you have information on this case, call 1-888- OVERBAG.



In 2006, a total of 745 untagged pheasants were discovered at a private shooting preserve. The lodge owner paid \$10,403 in fines and court costs and \$30,000 in civil damages.



Visit the new TIPs website!

tips.sd.gov

Share Your Adventure!

You've spent a peaceful day on the water, catching a monster walleye just before you head in. At your campsite, you clean the day's catch, coat them in your secret breading recipe and fry them over the fire to a golden, crunchy brown. The family loves it. Your belly's full and your feet are up. Now what do you do?
Share your experience!

Photography by
SD Tourism
TravelSD.com

In our technology-driven society, you can upload your photos and share your story with the world in a matter of seconds—all without leaving the fireside.

While it's obviously great for your bragging rights, sharing your experience also benefits other users as well. The ability to leave instant feedback provides accurate, clear assessments while the experience is still fresh in your mind.



South Dakota State Parks are using this ability to gain timely insight from park users in ways they never have before. The results are win-win: visitors get a clear picture of what to expect and parks can hone in on trouble areas.

“The most helpful comments are those visitors provide during or shortly after their stay,” said Lynn Spomer, visitor services coordinator for the South Dakota State Parks. “Even after a week or so, those experiences – both the highs and the lows – start to fade from memory.”

Last year, the State Parks introduced a new comment process in an effort to capture more of those recently-acquired experiences.

As soon as campers check out from the campground, they're sent an email asking them to review their stay. Visitors can rate the park on service, facilities, campsites and restrooms, as well as leave reviews in their own words.

The site is set up like other travel review websites in that visitors can leave feedback for the staff, but their feedback can also be viewed by others. Users see an overall letter grade for each park, as well as comments and ratings given by other visitors. The reviews can be accessed at www.campsd.com.

When filling out the survey, visitors can make comments open for the public or direct them to park management in a private message.



SHARE WITH US!

Write a review - www.campsd.com

Post on Facebook - South Dakota State Parks

Tag on Twitter - @SDGameFishParks

Email - Parkinfo@state.sd.us

Call - 605.773.3391

Mail a comment card - found at State Parks

Submit a comment online - www.gfp.sd.gov

Managers can also respond on the public page, so everyone can see the entire conversation.

“That’s the beauty of the system from a customer standpoint,” said Spomer. “Someone who has never been to a park can hear the pros and cons straight from another visitor’s mouth.

“Obviously, no one wants their business to have less than perfect reviews, but this openness alerts us to issues so we can correct them in a timely manner. If you’ve got a question or concern, chances are someone else does too, and you might find it in the reviews.”

You don’t have to be an overnight visitor to write a review either. Guests who are visiting the park for the day can access the online survey from each park’s webpage on www.gfp.sd.gov or through the reservation website, www.campsd.com.

Spomer is pleased with the results of the new system. She said that the parks are receiving nearly three times as many surveys as the previous process, which relied mainly on printed comment cards that visitors mailed to the park following their stay.

“Even though it’s relatively new, the online reviews have already helped us identify trends in visitor use and requests,” she said. “The more reviews we get, the more accurate the rating system will be.”

The online survey isn’t the only method to share your outdoor experience with others.

Post your pictures and stories to the State Parks’ Facebook page, or follow them on Twitter, @SDGameFishParks. Also stay tuned to these outlets to keep up on current happenings as well as contests and give-aways.

And don’t forget to use those tags where appropriate – after all, the world needs to see that walleye.



More Wildflowers

Late in the growing season, sunflower-like native forbs and grasses adorn the trail walk to the top of Spirit Mound. The Lewis and Clark historic site and native grass and wildflower restoration area at Spirit Mound is located ten miles north of Vermillion, South Dakota, along SD Highway 19. This summer, some of the newly sown plants will begin to show.



for Spirit Mound

Story and Pictures By Brenda K Johnson

Look for people dedicated to a place like Spirit Mound and its prairie restoration and you'll find a few of them gathered to seed six acres at the base of the mound.

It's a brisk calm afternoon in late fall at the Spirit Mound National Historic Site off Highway 19 north of Vermillion, South Dakota, just before expected snowfall. Earlier in the season the Lewis and Clark Spirit Mound Trust opted for aggressive management to deter smooth brome encroachment of this plot between the trail to the mound and the highway. Native flower and grass prairie restoration has been underway for more than a decade, and a few areas remain resistant to management.

"This six acre plot was rescued from smooth brome," Eric VanderStouwe said.

VanderStouwe is the SD Game, Fish and Parks district supervisor for the mound, as well as Adams Homestead near Sioux City, Lake Alvin near Harrisburg, and state parks at Newton Hills, Union, and Good Earth at Blood Run near Sioux Falls. VanderStouwe helped with Spirit Mound prairie restoration years before his current position. SD Game, Fish and Parks and National Park Service are partners with Spirit Mound Trust to administer and manage the site.

"[The plot] had been seeded with native grass like most of Spirit Mound in fall of 2001, but it never flourished," he said. "This plot was old pasture. There

was a little switchgrass and big bluestem that popped through, and that may have always been in the seed bank. Brome can be an invasive species if not managed."

"This past season [2013] was the 'year of the brome' here," Jim Heisinger said. He is emeritus professor of biology at the University of South Dakota and president of the Spirit Mound Trust. "We had such a cool, wet spring, favorable to brome. The six-acre plot had been planted with native grasses but brome took over.

"We took an aggressive route to get rid of the brome with glyphosate herbicide several times in the season to get rid of the brome in the seed bed," VanderStouwe said. "Brome has such a thick thatch layer, at least two inches. Brome was here many years. We asked the Vermillion Fire Department to come out and do a controlled burn to kill any remaining brome and to burn the thatch layer."

The year before, in regular management practice to get rid of brome in native grass, they had burned the six acre plot in late May when the brome was more vulnerable and before the warm season grasses broke dormancy. But brome came back. In contrast, the area along the trail to the mound has responded well with regular management.

"This coming year I plan a more aggressive plan for this plot with timely mowing to mow the brome off at the four to five leaf stage to knock it back," VanderStouwe said.

WHAT TO SOW

“A lot of discussion went into what forbs [wildflowers] and native grass seed to plant and getting the seed,” said Mark Wetmore, vice president and treasurer of the Spirit Mound Trust.

One of the trust board members, Dianne Blankenship, has provided hand-collected seed from near Sioux City. Some seed for this planting was purchased by the trust, with one source as Millborn Seeds of North Sioux City, South Dakota.

“Dianne gets forb and grass seed that are for different levels,” Heisinger said. “In 320 acres, you have the dry mound [hill] area and the wetter [and flatter] Spirit Mound Creek area. We want diversity of plants.” Many kinds

of upland and lowland plants are found in nature and draw many kinds of birds and other wildlife.

“That’s why we opted for some stiff sunflower seeds for birds to perch on,” he said. “The only jackrabbit I’ve seen for years was here.”

Wetmore named some of the forb seeds included in this day’s sowing: silky aster, rough blazing star, purple coneflower, leadplant, and stiff stem sunflower, along with several species of native grasses.

“We try to select seed from as close by the site as we can so they will have the same genetic traits,” VanderStouwe said. “Dianne and Mark followed a pattern set earlier for the seed mixes and quantities of each species in the

mix.”

“Today’s mix is about 70% forbs and 30% native grasses, with little blue-stem as the dominant species of grass,” VanderStouwe said. “In some plantings [elsewhere], I’ve used 60% forbs and 40% grasses. On Conservation Reserve Program land, it might be 90% grass and 10% forbs, if any.” Use of the land and awareness of competition between plant species are two of the factors for determining species percentages in the mixture. “Calibration of this mixture of seed may not be so definite, but Mother Nature does her calibration once the seed is dispersed.”

Late fall is a good time to plant forbs. He said that forbs take cold stratification, a period of cold in nature, along with natural freeze/thaw to help break seed shells for germination. Seeds are ready to grow when conditions are right. “This enables forbs to have an even start with native grasses.”

“There’s a discussion among prairie restoration people about whether it is better to drill or broadcast seed,” Heisinger said. “Broadcasting favors forbs because when you drill seed, they may be planted too deep.”

“You want forb seeds to be about 1/3 inch deep in soil. Some drills come with a 1/2 inch setting. If you broadcast seed, some may be eaten or drift away or may not get soil contact they need. Hope is that Mother Nature will help with that,” VanderStouwe said.

TIME TO SOW

VanderStouwe puts all the forb and grass seeds together in a bag and mixes the diverse size and shape seeds well, except the hand-collected stiff stem sunflower, which will be dispersed separately due to its extra stems and chaff. He sets the calibration on the SD Game, Fish and Parks Vicon broadcast spreader that he brought to the site on a trailer. He will drive a small tractor to pull the spreader.

“We try to disperse seed about nine to ten pounds per acre on prairie plantings.”



A six-acre plot of the 320-acre Spirit Mound National Historic Site is being re-planted. Along the mound trail are established native wildflowers and grasses that thrive and naturally distribute their seed, such as this milkweed.



Diverse wildflower seeds dominate the forb and native grass seed mixture in the latest prairie restoration effort at Spirit Mound. Choosing a method to disperse these diverse shapes and texture of seed that yields an acceptable rate of germination is one of the many decisions for prairie restoration.

He pours the seed into the funnel-shaped container on the spreader. “This sling seeder consistently sifts and disperses the variety of seed.” Seed is then slung back and forth in a broadcast area. He sets the arm that slings the seed two feet off the ground. It is a calm day for seed dispersal.

VanderStouwe tests the spreader for flow and rate of dispersal. He places a seed catch bag on the sling arm of the spreader and then moves the engaged spreader a short distance with the tractor. He weighs the seed that is dispersed into the bag, and with a formula, determines that the calibration is correct for this six-acre plot.

He shows a Truax hand spreader that he brought in case it is needed. It helps fluffy seed be dispersed.

Ready to sow, VanderStouwe pulls the Vicon broadcast spreader to the bare soil where brome was killed and thatch burned, and drives the tractor back and forth in a pattern across the six acres. Heisinger will hand broadcast the stiff

stem sunflower over the plot after the rest of the seed is dispersed.

Heisinger watches the spreader in action and points out more opportunities for Spirit Mound visitors in addition to its historic notation when the Lewis and Clark Expedition stopped here. An ecology student from South Dakota State University studies the

diversity of ants here. Kinds of ants are related to diversity of plants. A University of South Dakota student is documenting the diversity of plants at Spirit Mound. Birders of the region have learned to include the mound on their fieldtrips because uncommon birds are drawn to the cover and kinds of plants found here. As he talks, some visitors have arrived to walk the trail for fresh air and exercise.

After seed dispersal is done, VanderStouwe gives context to this plot restoration. He said that a primary seed mixture was spread over the whole Spirit Mound site in the fall of 2001. Then specific trail corridor and mound mixtures were sown. The trail from the parking lot to the mound and about fifty feet to either side of the trail is now established with forbs and native grasses.

The work done last fall, as well as over the years, will start to show this summer.

“Around mid- to late-June, the wildflowers will really start to bloom,” said VanderStouwe. “Certain plants will peak at different times, offering rich colors throughout the summer.”



Eric VanderStouwe of South Dakota Game, Fish and Parks disperses wildflower seed at Spirit Mound with a Vicon broadcast spreader just before the first snow in late fall. Before re-seeding, invasive smooth brome was killed and the brome thatch burned at this six-acre plot of the national historic site.

BOATING RESOLUTIONS

for a New Year of Open Water Fishing

by Mike Smith,
Aquatic Invasive Species Coordinator
South Dakota Game, Fish and Parks

Sportsmen and women across the Northern Plains may never have anticipated spring and summer with more excitement than this year. This winter a new phrase, "Polar Vortex," briskly entered the vocabulary of those who call this area of the country home. While many anglers enjoy spending time peering through an eight-inch hole in the ice, only a die-hard few are excited to do it with a -50°F wind-chill threatening to throw their ice shack into the next county.



For many anglers, spring relegated the auger and flasher to storage and brought thoughts of bottom bouncers, crank baits and sunburns to the forefront of their minds. As anglers prepare to remove their boats from hibernation and start a new year of open-water fishing, it's a good time to think about making a few "Boating Resolutions" to improve your time on the water in 2014. Maybe it's vowing to keep the sunflower seeds off of the carpet for longer than a week or promising that this is the year you don't launch your boat at least one time with the safety straps or transom saver still firmly in place. Whatever your goal, one resolution that everyone should make is to do their part to stop the spread of invasive species.

Invasive species pose a serious threat to the waters of South Dakota. While Asian carp receive attention due to their tremendous leaping ability, some species are much smaller yet can cause just as much ecological damage to fisheries in the state. Species like zebra mussels have severely impacted fish populations in other areas of the country and dense mats of plants like Eur-

asian water-milfoil and curly pondweed have made fishing and boating in some lakes in South Dakota much more difficult.

These species are often spread to new lakes by boats or trailers moving water or mud from lake to lake. Plant fragments or mussel larva can survive in trace

amounts of water in a bilge or live-well for weeks at a time. Anglers can take a few simple steps each time they leave a lake that will drastically reduce the possibility that they are spreading invasive species.

While adopting these “boating resolutions” may add a few minutes to your boating day, with repetition they will quickly become a habit that

is no more inconvenient than making sure your trailer lights are working before leaving the lake. If all boaters do their part to stop the spread of invasive species, we can ensure that generations to come don't look at spring as just the end of winter, but as the start of a new year of great open water fishing in South Dakota.

Before leaving...INSPECT EVERYTHING!



STEP 1 - CLEAN. Walk around your boat and remove any mud or debris you find attached and discard it in a trash bin. Some problem areas to be especially aware of include components on the boat transom (propeller, transducer, etc.), trailer bunks, and any interior compartment that holds water (bilge or live-well). Some other problem areas are shown on the picture above. Whenever possible, power wash your boat with hot (140°F) water. A list of boat wash locations can be found near the back of the South Dakota Fishing Handbook.

STEP 2 - DRAIN. Before you leave the water access don't forget to remove or open any drain plugs or valves that may keep water in the boat and allow all water to drain.

STEP 3 - DRY. If possible, leave the plugs out of the boat and allow the boat to fully dry for a few days in the sun before going to a different lake.

TOP RIGHT: The most effective way to wash a boat is to work from top to bottom and bow to stern on one side, and repeat the procedure on the other side of the boat.

RIGHT: Be sure to wash the rollers or bunks on the trailer.

BOTTOM RIGHT: If possible wash the interior of the boat and rinse all compartments that may hold water.

BELOW: Finally, rinse the transom with Low Pressure water to prevent damage to the motor and/or electronics.





Dakota Flora

Lady's-slipper Orchids

by Dave Ode, GFP Botanist

**...Yet shy and proud among the forest flowers,
In maiden solitude,
Is one whose charm is never wholly ours,
Nor yielded to our mood:
One true-born blossom, native to our skies,
We dare not claim as kin,
Nor frankly seek, for all that in it lies,
The Indian moccasin....**

from Elaine Goodale Eastman's poem "Moccasin Flower"

Moccasin flower has been a common name for American *Cypripediums* since the 1600's when English settlers adopted the name from the Algonquian people of New England and the Mid-Atlantic Coast; whereas the common name lady's-slipper, comes directly from England where it applies to the only native *Cypripedium* of Great Britain and northern Europe, *Cypripedium calceolus*, the yellow lady's-slipper orchid. Our North American yellow lady's-slippers have been treated as one or more varieties of this broadly defined transatlantic species, but current taxonomic evidence favors treatment as a distinct species *Cypripedium parviflorum*. The American yellow lady's-slipper typically inhabits forests and is scattered throughout the Canadian boreal forest from British Columbia to the maritime provinces and southward in the United States through the eastern deciduous forest as far as Georgia and Arkansas, and south in the Rocky Mountains to Arizona. In South Dakota it grows in a few of the forested coulees of the northeast (e.g. Sica

slipper orchid (*Cypripedium candidum*), which inhabits moist grasslands and wet meadows across a swath of the Midwest from southern Manitoba to Nebraska and east along the southern side of the Great Lakes to New York.

With the cultivation of the prairie, this small white lady's-slipper or white moccasin flower has declined the most. Within South Dakota, it was first collected near the mouth of the Vermillion River in 1839 by German botanist Charles Geyer who accompanied the Nicollet Expedition up the Missouri River to Fort Pierre where they traveled overland to Devils Lake, North Dakota, mapping the land between the upper Mississippi and Missouri Rivers. That was the last time that this little orchid was recorded from Clay County. Likewise, Moccasin Creek in southern Brown County is reported to be named for the moccasin flowers that grew along its banks long before settlement. None of them remain. At this writing, we know of only eight colonies of small white lady's-slippers that survive in four South



The pouch-like petal causes small bees and other potential pollinators to become trapped, and forces them to crawl out the rear of the pouch picking up or depositing pollen on the stigma. Photo © John Leisner

Hollow) and in coniferous and mixed forests in the northern Black Hills. Its tall-grass prairie cousin is the small white lady's-

Dakota counties. It has also become rare or extirpated in most other states and provinces. Minnesota retains perhaps the lion's share of this little white moccasin flower's population.

Back in the late 1980s each spring my wife and I would make a trip to Roy Lake for Memorial Day weekend. With help from local garden club members we would inventory the small white lady's slipper orchid population on one of our state game production areas. It was almost like an Easter egg hunt, the little white flower pouches standing in sharp contrast to a background of verdant green leaves. Lady slipper orchids can live for a long time, but getting from seed to flowering plant is a complex and lengthy process most of which takes place underground. My ecology professor decades ago, Dr. Dilwyn Rogers, described a seed as a baby plant (the embryo) packing its lunch (the endosperm). Lady-slipper seeds are tiny, barely a millimeter in length and one-third that wide, and they have no endosperm. Instead, they lie in the soil, their survival entirely dependent on a compatible mycorrhizal fungi for the food they will need to live and grow. If they are lucky enough to encounter such a fungal symbiont, they grow into a protocorm, basically a mass of

undifferentiated cells that over time develop root-like structures which host the fungal feeding threads, and a shoot-like growth that will elongate to the surface as a first leaf. This underground protocorm development takes several years, followed by several more years of vegetative growth as one or more aboveground leaves, before the first flowering shoot is produced. A study in Wisconsin revealed that the entire process from seed to flowering plant averages 12 years. Adult plants, while photosynthetically able to produce their own nourishment, often retain their mycorrhizal relationship, which enables them in times of drought or stress to remain dormant underground for years at a time.

Small bees and similarly sized insects appear to be the main pollinators of these two lady's-slipper orchids. It's not clear whether color or aroma attracts these little bees, but once they enter the opening of the pouch-like petal, they are trapped. To escape, they must climb out the rear of the pouch and in the process of climbing up either to the left or the right of the staminode, they rub the top of their bodies first against the stigma, depositing any pollen that they may have brought with them; and then against an anther where the sticky pollen adheres to their backs. If a pollen grain is successfully implanted on the stigma, it must still germinate and grow a pollen tube through the style and into the ovary located behind the flower. This process takes four to five weeks before the pollen tube finally reaches an ovule and fertilization finally occurs. Not every flower is successful in producing seeds, but a single successful capsule may contain 5 to 15 thousand tiny seeds. The small, lightweight seeds can be transported long distances by wind and water, but finding a suitable soil, fungal partner and environment that is reasonably stable

for 12 or more years makes the probability of survival for any one seed an incredibly rare event.

One Lakota name for lady's-slippers is "maká can ákpa" roughly translated as "earth groin swelled up," perhaps referring to this orchid's bulbous roots or perhaps the seed capsule that swells up as it ripens with seeds. Historically, a decoction of lady's-slipper rhizomes was given to women during childbirth. Some herbal remedies for nervous disorders also have contained *Cypripedium* root material, although it is rarely used today.

Professor Kyhl Lyndgaard is the author of an article titled, "Taking off the Moccasin Flower and Putting on the Lady's Slipper," where he maintains that during the 19th century and particularly after the Indian Removal Act of 1830, people stopped using the name "moccasin flower" which had been the most commonly used name for these little orchids; and instead began using the name "lady's-slipper," just as native Americans were being driven from their homes and traditional livelihoods and forced onto domesticated reservations. Elaine Goodale Eastman, whose poem begins this article, was the wife of Charles A. Eastman (Ohiyesa), a Santee Dakota



Yellow lady's-slipper grows in forests of northeastern South Dakota and in the Black Hills.



Small white lady's-slipper orchids grow in moist tall grass prairies in eastern South Dakota.

Photos © Dave Ode

born in 1858 who became a physician, author and reformer. Charles Eastman was the only medical doctor present at the Pine Ridge Agency in 1890, when he and his future wife cared for the many injured victims from the massacre at Wounded Knee.

Elaine Goodale wrote "Moccasin Flower" along with a host of other plant poems published in 1879 when she was only sixteen years old. Little did she know then how ultimately familiar with those moccasins she would become later in life as superintendent of Indian schools for all of North and South Dakota and as the wife of Ohiyesa. Her youthful poem concludes:

**For lightly ever falls the tireless foot
That's only shod with flowers!
No lagging step outruns the happy days, --
Our tread is soft as rain;
With careless joy we thread the woodland ways
And reach her broad domain.
Thro' sense of strength and beauty, free as air,
We feel our savage kin, --
And thus alone with conscious meaning wear
The Indian's moccasin!** 🌿



Dakota Naturalist

LAUNCH YOUR CAREER at The Outdoor Campus - West

By Nicomas "Nico" Red Horse, School Programs Coordinator

A career choice is one of the most important decisions you can make in your life and therefore you will want to know as much about the career as possible. At The Outdoor Campus-West in Rapid City the Career Launch Program allows high school students to experience what it is like to work in South Dakota Game, Fish and Parks' multi-faceted operations and offers five different sessions: habitat management, wildlife management, wildlife conservation law, outdoor education, and fisheries management.

Career Launch is offered to all 11th-12th grade high school students and college students. Students will receive a certificate for each session they at-

tend upon completing their exit survey. All applicants are required to go through the full volunteer application process prior to their first session. This may help them move to a paid technician or intern position as they become available. As of this writing we have completed three of our sessions for the spring: We will offer all sessions again in the fall.

On February 12 students from Central Rapid City, Stevens, and Spearfish high schools and I met with Region 1 habitat manager, Tyrel Schmelz and resource biologist, Samantha Nichols. In the beginning, most students do not have idea what the habitat management staff does. Habitat is the physi-

cal environment where an animal lives and provides the necessities of life: food, water, cover and home range. However, only the first three of those can be affectively managed.

One of the ways habitat management does this is through invasive species control, tree planting, water improvement projects and prescribed fire in both rangeland/grassland and farmed acres to improve habitat, which leads to food availability promoting more use by big game species. It also helps control the spread of mountain pine beetles. This is a pretty big task as we learned that our western habitat management team consists of only seven full-time staff members, they employ two summer interns and one seasonal worker as well. This team is responsible for approximately 48,000 acres in the western 1/3 of South Dakota and manages 35 game production areas, and three federal Bureau of Reclamation properties. If this isn't enough...they have over 800,000 acres of Walk-in Area that need to be maintained (boundary fencing and maintenance, parking areas, gates, and walk-throughs), which includes signage that must be installed and removed as yearly changes take place.

We were treated to a field trip to Custer to see two Game Production Areas: Spring Creek and Sunday



Students visited the Cooper Ranch, where a new water tank was being constructed to draw elk to the property.

Gulch. We were also shown before and after photos of areas where our habitat management team had used chemical, mechanical and biological methods to control weed species such as Canada thistle, leafy spurge and hounds tongue; prescribed fire to replace the natural process that occurred with regularity in nature before urban impacts took over. We were also shown an example of a water improvement project on Cooper Ranch that involved building a new water tank to help draw in elk to property with secondary use in watering cows of the land lessee, rebuilding a well house, and updating a structure's wiring and pump.

On March 5 the students and I met with wildlife resource biologist, Kris Cudmore who explained to us how his department manages wildlife populations for public use. His duties include: conducting surveys of populations, testing for disease, assessing nuisance or damage from wildlife, assisting with research projects, trapping and transplanting animals, collecting, managing and analyzing data, assessing hunter harvest rates and satisfaction, and collecting public input. Some of the tools used to manage populations are: aerial and road surveys (sight), recruitment surveys (brood or fawn counts), index of trends in population (wing bee, lek and urban deer surveys), and harvest index (sex ratio). Kris shared some aerial slides to show us the difference between spotting a large group of elk in open cover,

spotty snow and heavy cover versus a small group of Elk in dense cover.

One of the research projects Kris is involved with now is on bobcats to assess survival, causes of mortality, and impacts of harvest pressure. The students got a little hands-on experience in the lab harvesting organs and fangs, and recording data from several tagged bobcats to send into the lab for analysis. They also got a chance to try out some equipment used to find and track radio-collared game.

On March 19, students and I met with two of our wildlife conservation officers, Adam Geigle and Joe Keeton. The officers presented a PowerPoint, discussed what it takes to become an officer, and shared good conversation about why they enjoy their jobs (boring and routine is not in the description).

Wildlife conservation officers are state law enforcement personnel that are well trained to assess and control situations where laws that conserve and protect fish, wildlife, water, and land resources have been violated. Their duties include: investigating illegal activities such as poaching, interviewing witnesses, interrogating criminal suspects, and apprehending perpetrators; communicating sufficiently to decelerate and resolve conflicts in tense situations; and being able to use and qualify with a variety of defensive weapons and tactics.

Many people don't realize how much ground they have to manage and look after in their assigned district, and therefore they must meet and maintain physical fitness standards; be able to work under demanding conditions; and operate a variety



Students practice using radio telemetry to find a hidden radio collar.

of vehicles, boats, and specialty equipment. In addition to their law enforcement duties they are also asked to help evaluate habitat, wildlife and fisheries needs and project long-and-short-term management goals and objectives; establish and maintain effective working relationships with landowners; and represent the department to the general public by preparing and making presentations and answering questions about wildlife, hunting, fishing, recreational opportunities and public safety.

After we left the conference room we all walked to the maintenance area of The Outdoor Campus-West. Joe and Adam gave us a look at some of the vehicles, boats, and specialized equipment that they use, while telling us of some of the crazy arrests they've made, and fatal boating accidents they have witnessed. Next we went into the cold storage area to see some investigative work on the death of a whitetail deer out of season. The deer had to be skinned and a metal detector used to see if they could locate a bullet. The officers shared information and techniques they use to help determine the death of animals and the students also got to view and touch a real mountain lion that had been hit by a car.

For more information on future Career Launch programs, contact The Outdoor Campus - West at 605-394-2310. 🐾



Investigating animal deaths.



Natural Heritage

South Dakota's FRESHWATER MUSSELS

by Chelsey Pasbrig,
SD GFP Aquatic Biologist

Many anglers and recreational water users are unaware of the large group of organisms living just under the surface of South Dakota's waters. Freshwater mussels are one group of organisms that are typically overlooked. Just like the canary was once an indicator of clean air for coal miners, mussels are indicators of clean water in our streams.

What are mussels?

Freshwater mussels belong to the second largest group of animals in the world, mollusks.

Freshwater mussels like other mollusks are invertebrates with soft unsegmented bodies that are enclosed by a shell. These shell halves are held together by an elastic-like hinge which the mussel can close when they feel threatened.

Where can you find them?

Mussels inhabit South Dakota's lakes, streams, and rivers but can be found throughout the world. In fact, the United States supports more species than any other country in the world. The highest mussel diversity

can be found in the eastern

United States in areas like the Clinch, Green, Illinois, and Ohio Rivers. While South Dakota does not have near the diversity, as the eastern U.S., our waters were once home to at least 35 native mussels and one exotic, the Asian clam, which has been documented within the Missouri River below Gavin's Point Dam and within Lewis and Clark Reservoir.

Why are they important?

Freshwater mussels are important components of aquatic ecosystems and are biological indicators of our waters overall health. They serve as an important food source for several species of fish, birds and mammals, including river otters. Mussels are filter feeders, it is estimated that a single mussel can filter five gallons of water per day, removing undesirable particles and chemicals as they feed.

Mussels have had a long history with human economies. Native Americans used mussels as a food source, carved shells into utensils, and made jewelry. Early settlers harvested mussels for their pearls, and by the late 1800s their shells were being harvested for the manufacturing of pearl buttons. The James River of South Dakota was no

exception, as it was historically part of a large commercial shelling operation. During the summer of 1913, Robert Coker and John Southall, who worked for the U.S. Bureau of Fisheries, reported that a pair of fishermen had taken 20 tons of shells from the James and only three miles downstream, another man had harvested 15 tons. Imagine how much money we could save in water treatment costs if our native mussel communities were restored?

How do they live?

Mussels spend most of their lives in a relatively small area. They move using a muscular "foot" which extends and contracts to push themselves into the sand or gravel and inch themselves along the substrate. This movement is extremely slow and few mussels move more than 100 yards during their entire life.

Due to this sedentary lifestyle, mussels rely on a unique reproductive strategy that closely links them to fish to colonize new areas. During their larval or glochidial stage, mussels attach themselves to fish hosts as parasites.

Mussels have three main strategies

for attaching themselves to a host.

One group of generalist mussels disperses their larvae into the water column, chancing that they come into contact with the correct host species. Some mussels can attach to several different species, while others rely on a specific host.

A second group of mussels package their developing larvae (glochidia) into cases called conglutinates. These cases resemble insects that fish normally would feed on such as maggots. Ideally, the correct host fish will come along and bite into the casing breaking it open and releasing the glochidia.

The final group of mussels has modified mantle flaps which mimic minnows to attract fish hosts. For example, the pocketbook mussel has modified a minnow-like lure to attract fish hosts. When fish attempt to eat the lure, glochidia are released in a cloud which attach to fish and eventu-

ally develop into larval mussels. They then detach from their host, fall to the lake or stream bottom, and begin their lives as an adult mussel. With luck, when the mussel detaches it will land in favorable habitat and join other mussels in a “bed” at the river or lake bottom.

Why are mussels in trouble?

Despite the diversity of mussels found in the United States, no other group of animals is as imperiled or has faced as many extirpations. Almost 75% of the nearly 300 native freshwater mussels found in the U.S. are considered endangered, threatened, or species of special concern. South Dakota’s mussel populations are no exception, of the once 35 species, two are presumed extirpated, two are listed federally endangered, and 26 are listed as imperiled.

The decline of freshwater mussels during the past century has been linked to a variety of threats. Overharvest of shells during the button industry boom of the late 1800s severely depleted populations. Loss of habitat through damming, dredging, and channelization have all led to the destruction of mussel habitats. In addition, loss of riparian habitat has increased soil erosion, siltation, and nutrient loading which have long been recognized as threats to mussels. More recently, freshwater mussels have become threatened by the introduction and spread of invasive species such as Asian clams and zebra mussels.

What does the future hold for South Dakota’s native mussels?

A comprehensive survey of the freshwater mussels in South Dakota has never been completed. In 1995, South Dakota Game, Fish and Parks (SD GFP) initiated a series of small scale surveys to document the freshwater mussel fauna of eastern South Dakota which sampled the Minnesota, James, Big Sioux, and portions of the Missouri Rivers. Starting this spring, SD GFP in collaboration with South Dakota State University will initiate a statewide mussel survey project. Information gained about the distribution and abundance of mussels will be used to provide monitoring recommendations to maintain mussel communities and the water resources that sustain them, as well as target areas where improvements may be needed.

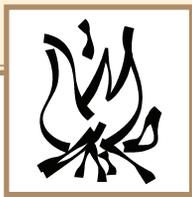
HOW CAN YOU HELP OUT?

Because invasive species such as zebra mussels and Asian clams can rapidly colonize new habitats, it’s important that we recognize the threats these invaders can bring so we don’t inadvertently spread them to South Dakota’s waters. To prevent the spread of invasive species SD GFP will continue its SD Least Wanted campaign urging boaters and other recreational users to STOP Nonnative Species Introductions! In addition, you can help by:

- NOT dumping unused bait back into South Dakota waters as it is illegal! Dispose of unused bait in the trash.
- Drain all water from livewells, bilges and other compartments before leaving an access site.
- Never transport fish from one water body to another.
- Clean and remove all visible plants and mud before leaving an access site.
- Pressure wash your boat and trailer with hot (140°F) water.
- Let your boat and equipment dry thoroughly if you cannot properly clean it.
- Visit: SDLeastWanted.com for more.



As seen in this picture, the pocketbook mussel has a modified mantle flap which is used to mimic minnows to attract and lure fish hosts for reproduction. Photo © Corey Raimond



ParkNotes

STATE RECREATION AREAS OFFER SUMMER NATURE CAMPS FOR KIDS

Several state parks and recreation areas will be offering free nature day camps throughout the summer for kids ages 7-12 to explore the area and focus on the outdoors.

Angostura Recreation Area near Hot Springs. Info: 605.745.6996

- Kids' Fishing Day, June 11, 9:30 a.m.–Noon MT.
- Track Detectives, July 9, 9:30 a.m.–Noon MT.
- Nature Explorers, August 6, 9:30 a.m.–Noon MT.

Big Sioux Recreation Area near Brandon. Info: 605-582-7243

- Nature's Yuck!, June 12, 9-11 a.m. CT.
- Fish, July 17, 9-11 a.m. CT.
- Fabulous Flowers, August 14, 9-11 a.m. CT.

Custer State Park near Custer. Info: 605.255-4515

- Kids' Fishing Day, June 25, 9:30 a.m.–Noon MT.
- Track Detectives, July 23, 9:30 a.m.–Noon MT.
- Nature Explorers, August 13, 9:30 a.m.–Noon MT.

Lake Wagner City Park in Wagner. Info: North Point Recreation Area, 605-487-7046

- Nature Day Camp, June 17, 6:30 p.m. CT.
- Nature Day Camp, July 15, 6:30 p.m. CT.

Palisades State Park near Garretson. Info: 605-594-3824

- Nature's Yuck!, June 5, 9-11 a.m. CT.
- Fish, July 10, 9-11 a.m. CT.
- Fabulous Flowers, August 7, 9-11 a.m. CT.

Rocky Point Recreation Area near Belle Fourche. Info: 605.641.0023

- Kids' Fishing Day, June 18, 9:30 a.m.–Noon MT.
- Nature Explorers, July 16, 9:30 a.m.–Noon MT.

Reservations are required and can be made by calling the park office. The camps are geared for kids ages 7-12, but younger children may attend if accompanied by an adult. Kids are reminded to wear clothing appropriate for the weather and shoes comfortable for walking. No snacks or refreshments will be provided, but kids are welcome to bring their own. The camp is free; however a park entrance license is required except at Wagner City Park.

RIDERS CAN STILL REGISTER FOR 17TH ANNUAL MICKELSON TRAIL TREK

Openings still exist for riders to take part in the 17th Annual Mickelson Trail Trek, say park officials. The deadline for early registration for the Sept. 19-21 ride is July 1. After that, merchandise is not included with registration.

Registration can be completed online by visiting www.mickelsontrail.com and by following the "Trail Trek" link. Registration is available on a first-come, first-served basis.

Riders on the Trail Trek will cover 109 miles of the trail over three days, from Friday, Sept. 19 through Sunday, Sept. 21. The registration fee includes the trail pass, shuttle service, commemorative souvenirs, refreshments and some meals during each day's ride. Riders are responsible for accommodations and mechanical support. The ride is open to all bicyclists 14 years of age or older.

The Trail Trek highlights the George S. Mickelson Trail as it winds through the heart of the Black Hills from Edgemont to Lead/Deadwood. The ride began as a celebration of the completion of the rails-to-trails project. It continues today to introduce new bicyclists to the trail and thank supporters for their long-standing enthusiasm for the Black Hills trail.

For more information on the Mickelson Trail or the Trail Trek, visit www.mickelsontrail.com or contact the Black Hills Trail office at 605-584-3896.

STATE PARK VISITORS SHOULD LEAVE FIREWORKS AT HOME

The upcoming Fourth of July holiday is always a busy time in South Dakota's state parks and recreation areas. As you celebrate, Game, Fish and Parks officials ask you to please leave your fireworks at home.

Discharging fireworks is prohibited on all lands owned or leased by Game, Fish and Parks. The ban includes state parks, recreation areas, lakeside use areas, game production areas and nature areas. Discharging fireworks is also illegal within the exterior boundaries of the Black Hills forest fire protection district, national forests and national parks within South Dakota.

For more information on the South Dakota State Parks, visit gfp.sd.gov or call 605-773-3391.



STOKELY NAMED BROOK BROWN BOATING OFFICER OF THE YEAR

The National Association of State Boating Law Administrators has named Tony Stokely the 2014 Brook Brown Boating Officer of the Year. Stokely is a conservation officer for the South Dakota Game, Fish and Parks (GFP); stationed in Elk Point.

“Tony is highly experienced and knowledgeable in the field of boating enforcement and patrols one of the most unique and complex bodies of water in the state,” said Brandon Gust, GFP boating law administrator. “He patrols over 50 miles of river in the southeastern corner of the state and works in one of the only remaining stretches of water similar to what Lewis and Clark encountered on their historic expedition.”

Gust acknowledged that Stokely is routinely faced with hazardous and unknown river conditions; yet has always excelled in his boating enforcement efforts.

“Maintaining the safe use of our water resources is an important part of every conservation officer’s work; especially during the summer months,” Gust concluded. “Stokely continues to ensure boaters meet proper safety requirements and enforces state boating laws to preserve public safety.”

About the Award: The National Association of State Boating Law Administrators’ (NASBLA) award is presented annually to the boating law enforcement officer who has made outstanding contributions to the field of boating law enforcement.

The awards program consists of three levels: state, regional and national. State nominees are selected by the state boating law administrator. State nominees continue to regional competition, where they are reviewed, and one win-

ner per region is selected by the three regional awards committees. Regional award winners are submitted to NASBLA’s Awards Committee for review and selection of the national award.

The South Dakota award was renamed to honor a previous recipient and GFP conservation officer, Brook Brown. Brown lost his battle with cancer during the summer of 2012 and was well known for his contributions to the state’s boating enforcement and education efforts.

STATE RECORD PADDLEFISH LANDED

A Chamberlain man has landed the largest fish ever recorded by an angler in South Dakota. Earlier this month, Bill Harmon shattered a 35-year-old record when he snagged a 127 lb., 9 oz. paddlefish on May 7.

Harmon drew a permit for the Lake Francis Case paddlefish snagging season. His fish surpassed the old record of 120 lb. 12 oz. set by Don Gregg in April 1979 in the Ft. Randall tailwaters.

Annual stocking efforts of paddlefish began in the early 1990s and have resulted in quality numbers of the species in Lake Francis Case. Jason Sorensen, SD Game, Fish and Parks’ fisheries biologist, noted, “One of the original goals of the paddlefish stocking program was to initiate a sport fishery for this species. Paddlefish are a long-lived species and the Lake Francis Case population has some very old fish. There is potential for anglers to harvest large paddlefish and Bills’ recent catch is proof of that.”

Paddlefish are among the largest and longest lived species of freshwater fishes.

Native to the Mississippi River drainage, these prehistoric fish once roamed freely throughout the network of rivers in the central United States. From the Yellowstone and Missouri Rivers in the west to the Ohio and Allegheny Rivers in the east, paddlefish are believed to have made long seasonal migrations throughout the Mississippi River basin.

The unusual appearance of paddlefish amazed early European explorers. Different from most fish species, paddlefish can best be distinguished by their very large mouths and a paddle-shaped snout that is about one third their body length. Paddlefish are bluish-gray in color and appear dark when viewed from above. Similar to many freshwater fishes, they are white on the bottom. Paddlefish lack scales and have smooth skin similar to catfish.

Paddlefish feed primarily on zooplankton (microscopic “bugs”) by swimming with their mouths open and filtering zooplankton out of the water with their gill rakers. Since paddlefish do not feed on bait fish and invertebrates, conventional fishing methods prove useless to anglers pursuing paddlefish. Anglers typically snag for paddlefish using heavy-duty equipment and heavy fishing lines.



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