

PLOWSHARES #28

Special *Breaking New Ground* Technical Report Accessible Recreation¹

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Introduction

Recreation is carried out in a multitude of ways. Some people stroll around grassy fields using skinny sticks to knock little white balls into buried cups. Some people slide down mountains at high speeds on narrow boards while holding long poles in each hand. Others throw orange balls through steel hoops or feed fish one worm at a time. However we do it, through recreation our lives are transformed from a mundane existence to an exciting or relaxing experience.

When a disability occurs, the need to be refreshed does not disappear. Involvement in recreation after a disabling injury or illness remains desirable for most, but physical barriers may hinder the hopes of enjoying some activities. The purpose of this Plowshare is to inform the reader of different types of recreation and related assistive technology that are available for farmers, ranchers and people living in rural communities who have physical disabilities.



Figure 1: Serene scenes of nature invite all people to relax and be refreshed from the strains of everyday life.

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There are more than 49 million Americans who have some type of disability. Many of these individuals have historically been denied access to many types of outdoor recreation. Facilities built with only able-bodied people in mind, lack of special equipment and a lack of special considerations limit access to most outdoor recreation sites. Access, however, is improving for all people. The ADA states that all public facilities must be accessible to everyone, thus resulting in the creation of barrier-free fishing piers, trails, wildlife viewing blinds, and accessible campgrounds at state and federal parks.

There is much to be done to improve access to recreational activities in rural communities. With a little creativity, however, rural and farm families have been able to find ways to have fun even with severe physical limitations. A survey of farmers and ranchers with spinal cord injuries showed that nearly 50% were active hunters or fishermen. Other activities in which farmers and ranchers are often involved are hiking, horseback riding and sports including basketball and skiing.

Hunting

Hunting is one of the most common forms of recreation for farmers and ranchers in rural America. As one hunter from New Hampshire stated, "Just because people have a serious disability, it doesn't take their desire away." Regardless of a person's physical ability, those activities which re-create or refresh are still longed for. The two steps which every hunter must perform are 1) accessing the hunting site and 2) holding, aiming and shooting the firearm or bow.

Hunting with a Mobility Impairment. Physical accessibility is often a barrier since hunting occurs in wooded areas, rugged terrain and often in adverse weather conditions. To navigate such territory with a disability can be extremely challenging. Many states

are now opening special hunting days for people with disabilities.¹ State parks, public lands and privately sponsored lands² with accessible, ground level blinds are provided for the hunter. Some parks even provide transportation to and from the accessible blinds.

Illinois is one of many states which has a special hunting opportunity for hunters with disabilities. Hunters must have proof of a permanent disability, pass the Illinois Hunter Safety Education Course, and complete the proper forms to be eligible for the hunt. Each hunter with a disability may be accompanied by a hunting companion or a partner will be provided upon request. A preconstructed, ground level blind made of plywood and straw bales is provided and staff and volunteers are on hand to provide transportation or assistance.



Figure 2: Accessible hunting blinds such as this one near Lake Shelbyville in Illinois may be provided for hunters with disabilities to provide access to prime hunting sites.

There are hunting regulations and opportunities similar to Illinois' in most states for individuals with disabilities. These special hunts are open mainly to hunters with visual, respiratory or mobility impairments. Each state Department of Natural Resources (DNR) will have information on accessible hunting sites and requirements.

There are also other ways of making hunting accessible. David Roos is a grain farmer from Havana, Illinois, who has a T-6 spinal cord injury. David and his father farm 1700 acres along the bluffs of the Illinois river. David has harvested a deer every year for the last 11 years. He drives his Jeep into a large hole and then throws camouflaged burlap over it to blend in with the surroundings. The camouflaged Jeep becomes his portable, accessible, ground level hunting blind. In 1997 Roos also constructed a 5' x 5' hunting shack on skids from which he now hunts.



Figure 3: David Roos is shown hunting from his camouflaged Jeep on the bluffs above Illinois River flood plains.

Lamar Rodabaugh is another hunter who uses a vehicle as an accessible hunting blind. Rodabaugh is a Mississippi tree farmer and hunter who became a quadriplegic in a swimming accident more than 40 years ago. At the time of his injury, Lamar was just beginning to hunt deer, and he decided that he would continue hunting "no matter what!" Within a year of the injury, Lamar was hunting again. His dad cleared out the trunk of a 1952 Lincoln and Lamar, wrapped in a sleeping bag for warmth, lay in it to hunt. The car was parked out in the woods and Lamar hunted all day long. The trunk of a car, in this case, was Lamar's mobile hunting blind. An 8' x 8' hut mounted on an old truck axle and towed into the woods is one of the current blinds from which Lamar hunts.

If trails or paths run through the timber or hunting area, an ATV or other off-road vehicle can be used. If the farmer or rancher can not use his leg to shift gears, hand control modifications can be installed so only the hands are needed to operate the ATV. The racks on the ATV can be used to store hunting equipment and supplies conveniently and the seat can become the hunting position. For more information on ATV's and hand controls, Plowshares #2 and #5 are available upon request from the Breaking New Ground Resource Center.

Hunting with a Visual Impairment . The obstacles faced when hunting with a visual impairment create special needs for accessing the hunting site. An attendant or guide is needed to assist the hunter in navigating about the woods and in aiming the firearm or bow. Various systems of communication and aiming have been devised so that no sound will be made to frighten the game. A scope extension can be used to allow the scope to protrude above the hunter's shoulder, allowing the attendant to sight through it and aim accurately. A laser scope which places a red dot on the target could also be utilized by the aiming partner.

Bob Miller is a retired grain farmer from Decatur, Illinois. A field cultivator wing collapsed and left him with a severe head injury, resulting in lost sight in both eyes. He has mounted a laser scope on his gun barrel so that a

¹See Resources and References.

partner can aim for him. Bob holds the gun and his partner uses a series of taps on Bob's back to indicate where to aim the gun. A tap on the right shoulder tells Bob to aim more to the right, the left shoulder means aim left, a tap on the neck means aim up, a tap on the belt means aim down, and a tap on the top of Bob's head means FIRE!

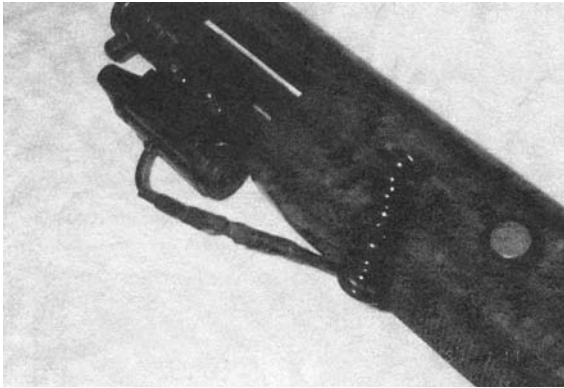


Figure 4: Laser scopes can be used by attendants of hunters with visual impairments to facilitate the aiming process. The laser is housed in a small tubular case which mounts in front of the stock on the underside of the gun barrel. A small button is mounted on the gun stock for the hunter to squeeze to activate the laser when needed.

Bob was able to participate in a special hunt in 1997 at Shelbyville, Illinois.¹ The park provided lodging and meals for the night before the hunt and volunteer attendants were available during the hunt. Although Bob did not harvest any game, he "couldn't say enough good" about being able to hunt again. He was very pleased with the organization and operation of the special hunt and is planning on participating again in 1998.

Bill Campbell of the Army Corps of Engineers is one of the organizers of the special hunts in Shelbyville. He said that 25 hunters participate each year and nearly every hunter gets at least one shot. "We can help them get the shots, but we don't shoot the deer for them!" was Bill's response to the success rate of the hunters with disabilities. The Army Corps of Engineers at Shelbyville can also provide information on accessible hunts in states other than Illinois.

Holding, Aiming and Shooting. After accessing the hunting site, the next task for a farmer or rancher interested in hunting is to hold, aim and shoot the firearm or bow.^{5,13} People with limited grip or upper extremity amputations experience an entirely different challenge than those with visual impairments. The difficulty of supporting and aiming accurately is enough to discourage many hunters from enjoying this form of recreation. Fortunately, many devices and modifications have been developed to aid in holding, aiming and shooting a firearm.

A farmer or rancher with quadriplegia can mount support systems directly onto his/her wheelchair or other mobility device which may be used during hunting.^{9,11}

Several turret style gun mounting devices are commercially available and many others have been custom fabricated. The catalog of *Access to Recreation*²⁹ is listed in the reference section of this article and advertises several commercially available gun support systems. Holders for bows also have been devised for hunters with limited grip strength.



Figure 5: Wheelchair gun mounting devices can be custom fabricated or purchased commercially. This mounting device is available through the *Access to Recreation*²⁹ catalog.

Lamar Rodabaugh has constructed five accessible hunting stands or blinds. Three of the stands are elevated wood constructed platforms with cable type hoists. He has an assistant operate the hoist to help get him in the stand seat and then he is left alone for the day. He has one shot loaded in his gun and that is all he uses in a day of hunting. Each blind or stand is equipped with its own gun support system.



Figure 6: Marvin Vought hunts from this all-terrain vehicle and uses camouflaged netting to blend into his forested environment.

The gun support system has a padded chair with a table platform attached at the mid-chest level. The gun is mounted to the platform on the chair. The gun is hinged to the mount to allow Lamar to aim up or down. The gun also rotates on the mount structure so Lamar can adjust his aim

OWEN ORTHMAN'S CROSSBOW MODIFICATION.⁸

Owen's device starts with a crossbow made by Hunter's Manufacturing in Suffield, Ohio. This manufacturer's crossbow is easier to adapt because the trigger and barrel can be removed together, without the stock. Owen modifies the trigger to be activated by a DC solenoid which is operated by using a pressure sensor switch. These parts fit inside a steel box which mounts beneath the trigger.

All of this is then mounted on top of a video camera tripod which bolts to a frame that mounts onto his wheelchair. Current is provided by the 24-volt batteries from the power wheelchair. By using his chin, Owen can aim the bow left and right, up and down. He uses a red dot laser scope for a sight. While he aims, he gives a slight inhale on a tube to fire the crossbow. Cocking the bow is accomplished by using the electric cocking device made by Horton. Even multiple shots necessary for target archery require little effort with this power assist.

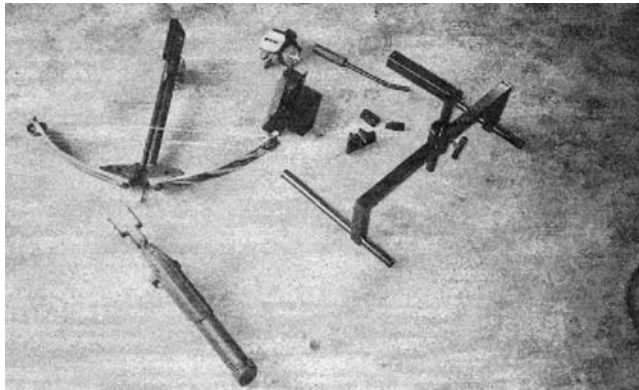


Figure 7: This photograph displays the individual components of Owen's adapted crossbow.

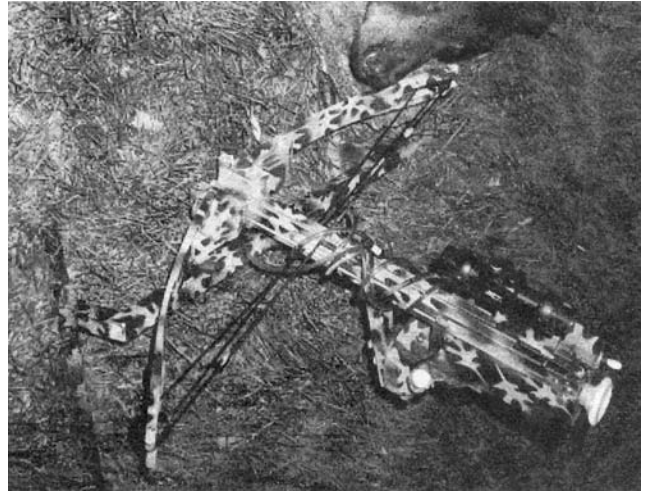


Figure 8: Owen's crossbow is assembled and mounted on his chair to prepare for his next hunting expedition.



Figure 9: Owen's success with his modified crossbow is evident!

from side to side. The entire chair/platform structure can rotate 360 degrees to allow for large direction changes without Lamar twisting his back.

A railing surrounds the chair at elbow level and is fastened directly to the floor of the hunting blind. Since the chair can swivel and the railing is rigid, Lamar can push off the railing to spin his chair around to aim in a new direction. The butt of the gun is weighted with lead so the center of gravity is near the pivot point and trigger. This reduces the kickback and keeps the gun position level while the hunter waits for game. Lamar uses his thumb to pull the trigger when, and ONLY when, he has a perfect shot. This apparatus is the result of years of adaptation and change to improve its operation. Lamar can use his muzzleloader, rifle, shotgun or crossbow with his shooting setup.

Owen Orthman, a hunter in Minnesota who has quadriplegia, has also devised a setup for hunting with a crossbow. His apparatus is detailed in the inset article, and

he states "I would be glad to help anyone else interested in making such modifications."

Some hunters with quadriplegia have made gloves with hooks protruding so they can pull the trigger. The butt can be held to the shoulder by a sling. Modifications as simple as adhesive Velcro strips can be a wonderful aid to hold the gun or bow while hunting if hand grip is weak.

Hunters using only one arm¹² face challenges different from those faced by people with weakened grip strength. Rick Klein is a bow hunter from Greenville, Michigan, who lost his arm in an accident, and for ten years he thought he would never shoot again.⁶ Finally, he tried tying a knotted shoe string to his bowstring and pulling it with his teeth. Holding the bow in one hand and the string with his teeth, Rick let the arrow fly. He shot true, but the knotted shoe string chipped his teeth. After experimenting with several materials, he found that a nylon strap sewn onto the bowstring and drawn with his back molars is an

effective way of shooting. He uses a piece of a nylon cat leash several inches long, doubles it over the bowstring and stitches it together. He now shoots 60-100 arrows per day and his dentist says his teeth show no signs of wear.



Figure 10: Jason Maxedon, an agricultural county Extension Educator, has learned to aim and shoot accurately with one arm and his mouth.

Methods such as these are common, but some hunters have created special attachments so the bow or gun can be gripped with a prosthetic device. Buddy Nanney, of Paducah, Kentucky, uses a device which fits into the end of his prosthesis and then attaches to the bow, leaving the other hand free to draw back the bowstring.⁴ The designer and builder of Buddy's bow grip, Chuck Mayo, said Buddy had given up bow hunting out of frustration. With the new grip Buddy is shooting arrows accurately enough to consistently hit a pie plate from 25-30 yards away! The gun shown in Figure 11 has been modified to be easily gripped with the terminal device of the prosthesis. Special vests and slings are also available which help support the butt of a gun on the hunter's shoulder. One last reminder: always check with local and state authorities before hunting using modified approaches. In some cases special provisions will have to be made to avoid violating existing laws.



Figure 11: Buddy Nanney holds his compound bow with the gripping device built by Chuck Mayo in Paducah, KY.



Figure 12: This farmer has modified his rifle so it can be easily gripped with a prosthetic terminal device.

Camping & Hiking

Farmers, ranchers and most people living in rural communities enjoy the peacefulness and tranquility of nature. The beauty of the hills, trees, rivers and other land formations draws people to the great outdoors for refreshment and relaxation.¹⁵ Charles and Annette Best of Ossian, Indiana, are a retired farm couple who experienced the effects of a disabling injury when Charles lost an arm in a corn-picker more than 30 years ago. As members of the Good Sam Camping Club, they now enjoy time on the campground with their friends.

Over one-third of the campers in their chapter of Good Sam are either farming or retired farmers. Having spent most of their lives dealing with nature while working the ground and watching the crops grow, these older farmers find that they continue to enjoy nature's beauty at parks and campgrounds. Many of these older farmers experience some sort of mobility impairment such as arthritis, lower extremity amputation or spinal cord injury. Realizing that many campers have such disabilities, efforts are being made at parks and campgrounds to create accessible pathways into nature and accessible camping sites.

Many state and national parks have recently developed accessible campsites¹⁵ according to the ADA or Uniform Federal Accessibility Standard (UFAS) guidelines. Accessible campsites should include a picnic table which can be easily approached for people using wheelchairs. Picnic tables can be easily adapted for wheelchair use by removing one end of the bench, thus leaving the space under the table end clear. Another option is to extend one end of the table top so it is longer than the benches.



Figure 13: This accessible campsite displays the swing-away fire ring grill, the cut-off picnic table bench and the smooth, flat ground cover.

Accessible campsites should have clear paths to nearby water and bathroom facilities. Water spigots should be equipped with lever type handles so water is easily available for campers with arthritis or other gripping impairments. Lever handles, grab bars, widened doors and roll in showers should be present to make camping at parks accessible for all people.

The actual campsites should also be level and free of loose gravel and large obstacles such as ruts and stones. Widened parking spaces should also be available to allow loading and unloading with automotive lifts. Grills elevated to waist level aid campers with arthritis or back impairments to build fires and prepare food. Ground level fire rings can also be adapted by a hinged grill plate that will easily swing to the side, leaving the ring unobstructed for building fires. Such camping sites are convenient for campers of all ages¹⁷ and abilities who wish to enjoy nature. See the reference section for information on guided wilderness trips for people with disabilities.



Figure 14: Tom Scott of Bozeman, Montana, wheels along an accessible trail beside a scenic lake.

When asked if the campers in the Good Sam club enjoy hiking trails, Annette Best said, “Not really, most of us have arthritis or something.” She didn’t say “We don’t want to,” but rather, “we have arthritis.” Almost everyone can be refreshed by a relaxing stroll through a beautiful

stand of timber or along a gurgling stream. Many trails are rugged and difficult to navigate, however there are trails with fewer hills, ruts and obstacles. Accessible trails can be as beautiful and awe-inspiring as the more difficult trails. Efforts are currently underway to help provide more trails which are accessible to all.

New trail surface stabilizers are being developed to create smooth, durable and accessible trails for hikers using walking aids or wheelchairs. See the reference section for information on trail surfaces.¹⁶ Boardwalks leading to scenic viewpoints and concrete paths around monuments and points of interest also improve accessibility for all people.

Instead of making all trails accessible, standard methods of rating trails for accessibility are being developed so people will know what to expect when they begin a trail. The solution to creating equal hiking opportunities is through documentation and signage. Factors of trail grade, cross slope, width, surface material and length are considered when gauging accessibility. Everyone can then choose trails that are accessible at their level of ability.



Figure 15: A sampling of trail accessibility signage is shown to display the efforts to provide trail information to people with disabilities.

A standardized system for evaluating the accessibility of trails is being used.¹⁶ Tool kits and training are available for those interested in assessing trails. After a trail is assessed, signs can be posted to inform hikers of all abilities on the level of accessibility. Trail maps can also be used to pass along information for potential hikers as they plan their day in the park. A web site is currently being fabricated (<http://www.beneficialdesigns.com/utap.html>) to provide remote information on park trails to aid people as they plan vacations and family outings.



Figure 16: Simple tools are used to measure grade, cross slope, width and other characteristics of trails. The tool kit is available through Beneficial Designs¹⁶ for those interested in evaluating trail accessibility.

Horseback Riding

Horseback riding is both recreational and therapeutic for many people with disabilities. Horseback riding is an excellent, refreshing form of recreation for people with ambulation disabilities. Older, good natured horses with much experience should be used to ensure the safety of the rider. Therapeutic horseback riding programs around the country have been designed to improve the physical, mental and spiritual well-being of participants.

Jacob Lee is an eight-year-old rider from Lafayette, Indiana, who has Cerebral palsy and scoliosis. Jacob began riding horses for recreation four years ago and enjoys being outside with the horses. Lonnie and Roseanne Lee, Jacob's parents, said that he began riding horses for recreational purposes, but after months of riding, they found that Jacob no longer needed to wear his back brace for scoliosis. The rhythm and balance of the horseback riding helped improve Jacob's physical condition!



Figure 17: Jacob Lee flashes one of his frequent smiles to express his thrill with his horseback riding program!

There is also a large assortment of assistive technology available for those interested in riding horses. There is contact information listed in the references for the

*Freedom Rider*¹⁴ catalog for horseback riders with disabilities. Plowshare #25, which is available upon request from the Breaking New Ground Resource Center, contains detailed information on horseback riding with a disability.

Recreational Vehicles

As mentioned previously, ATV's are used as assistive technology to provide access to hunting and fishing. However, operating an ATV is often refreshing in itself. The freedom and versatility which can be felt while navigating rough or isolated terrain is invigorating. People who feel hindered by wheelchairs can feel revitalized by overcoming mobility restrictions with ATV's, Jeeps or other recreational vehicles.

As shown in Figure 18, lifts can be used to allow access to snowmobiles and other vehicles. Lifts can also be placed on docks to facilitate access to jet-skis and boats. New ATV's are available which require only hand operation, but older models can be easily modified for hand controls. Plowshare #5 from Breaking New Ground provides further information on ATV's and their modifications.



Figure 18: This lift, available from Round Grove Machine²⁸ can be used to lift farmers or ranchers with disabilities onto recreational vehicles such as this snowmobile.

Fishing

The thought of a tug on the end of a fishing line followed by the exciting moment of landing a fish is the dream of every angler. When injury, age or illness prevents someone from fishing, the longing for the thrill and relaxation of an evening on the lake remains.²⁴ The areas of challenge to the farmer or rancher with a disability who enjoys fishing are having access to a pier or dock, having access to a boat and being able to cast and reel a fishing line.

Fishing Site Access. Public sites at state and county parks, fish and wildlife reserves and public access points are often accessible to all people. The fishing piers must be

wide enough to allow convenient travel with a wheelchair and ramps leading to them should have a maximum slope of 1:12. Railings around the pier perimeter must be low enough to cast a line from a wheelchair. State Departments of Natural Resources often have maps or information on which sites are accessible to all people.



Figure 19: Lifts may also be used by fishermen with disabilities to access their fishing boats without using ramps.

Private fishing sites may be accessed by other methods. Concrete or hard-packed walkways close to the water's edge can make private ponds easily accessible to the fisherman using a wheelchair. Clearing paths which lead to the water through timber and tall grass can also improve fishing accessibility for people in rural communities who have mobility impairments. As with hunters, ATV's might also be used by fisherman to pass through rough territory and to transport fishing tackle and other supplies.

If the angler wishes to fish from a boat, adaptations can be made to create an accessible craft. Pontoon boats already have flat floors, but additional space may be needed to maneuver. Door openings can be widened and ramps enlarged to accommodate boarding with a wheelchair. (See the resource list at the end of this article for information on accessible pontoon boats which are commercially available.)^{26,27}

Special boats are available that allow people with disabilities to use them safely. One guide service²³ for fishermen with disabilities uses a regular 21-foot boat with a break-front bow and flat flooring. The bow of the boat has a hinged section which folds outwards and forms a ramp. People using wheelchairs can easily board through the boat's bow from a regular boat ramp leading into the water. Whenever boating for any reason, safety should be a priority. Adaptive life jackets and floating swim wear are available for people with physical disabilities who choose to fish from a boat.²⁵



Figure 20: This boat, used by the handi-CAPABLE Guide Service,²³ is accessible to people using wheelchairs, and can be used on most shoreline boat ramps.

Mike Haggerty is a farmer with a spinal cord injury from Spalding, Nebraska, who has constructed his own accessible, two-person pontoon boat. On June 8, 1983 his life was completely changed by his injury, but that hasn't stopped Mike from fishing. He now farms 680 acres, owns 150 beef cows, operates a farm supply store and has a real estate license. Mike states that "Handicapped doesn't mean impossible, it just means do it in a different way!" Mike's daughter and son-in-law operate the farm, but Mike put a lift on his combine so he is able to harvest the crops in the fall.



Figure 21: Mike Haggerty of Spalding, Nebraska, has fabricated and patented his own accessible fishing pontoon.

When fishing in a small pond, Mike fishes from the window of his pick-up truck. For fishing in larger bodies of water, Mike uses the accessible fishing boat which he designed, built and patented. The boat has functioned so well that he is looking for an interested fabricator to manufacture it. Mike used 12-inch irrigation pipe for the pontoons (each foot of pipe will float 27 pounds) to float the 9 1/2 x 6 foot aluminum platform. A ramp allows him to wheel onto the boat, and once the chair is strapped in place, the pontoon is extremely stable on the water.

A chair is mounted at the rear of the boat to accommodate one fishing buddy who helps Mike board

safely and guide the craft. An electric trolling motor or a three horsepower gasoline motor is used to move around the lake to prime fishing locations. The small craft can be easily maneuvered to provide Mike and his partner prime fishing access. The accessible pontoon boat is just another one of Mike's tools which he uses to accomplish an old pastime in a new way.

Adaptive Fishing Equipment. There are many forms of assistive technology available for the individual with a disability who enjoys fishing. Equipment has been adapted for fishing with one hand, quadriplegia, arthritis and other disabilities. Wheelchair mounted casting units, battery powered fishing reels, worm clamps, adaptive vests, fish grabbers and knot tiers are a few examples of assistive technology for fishermen.²² The catalog *Access to Recreation*²⁹ (see the reference section) lists adaptive equipment for anyone in a rural community with a disability who longs to go fishing.

Wheelchair mounted casting units are available for persons with decreased grip strength. The fishing rod is hinged vertically to the top of the chair's armrest allowing the pole to pivot forward and back as when held in a hand. The weight of the rod and reel is supported totally by the wheelchair armrest. The angler starts with the rod angled back and then rotates it quickly forward. As the rod moves forward and gains speed, the reel brake is automatically triggered to release the line at the exact instant necessary for a beautiful cast. The small forces required to cast are provided by the arm, not the hand, thus allowing persons with limited hand strength to cast.

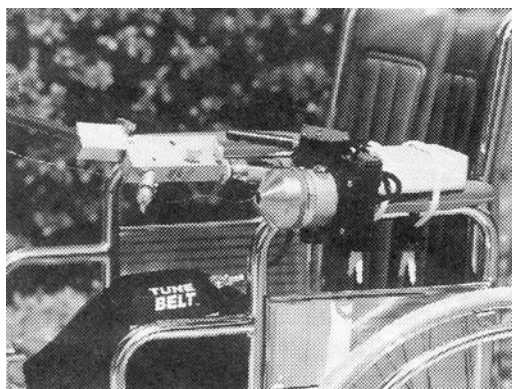


Figure 22: This wheelchair is equipped with an assistive casting device for fishermen with impaired hand gripping abilities.

Other modifications are also available that allow people with disabilities in rural communities to support and reel a fishing rod. Crank extensions can be used to multiply the force when reeling in a fish. In addition, strips of adhesive Velcro placed on the reel knob and the angler's glove might allow reeling without tightly gripping the crank. An electrical powered reel with a toggle switch may also be used instead of cranking a manual lever. When the

hook is set, the fish can be retrieved by simply operating the electrical switch. A battery pack to power the reel can be strapped onto the fisherman's belt to reduce the weight of the rod and reel.

Holding a rod and reeling simultaneously is quite challenging if the fisherman has use of only one hand or arm. A tool has been designed to strap the rod onto one of the angler's legs while reeling with the free hand. Figure 23 shows the rod support strapped onto a leg in such a way that the rod can be pumped and maneuvered as the bait is retrieved to simulate live food for the gamefish. The fisherman would cast, clamp the rod into place and then reel with the casting hand. With this tool, fishing is possible for someone with one arm.

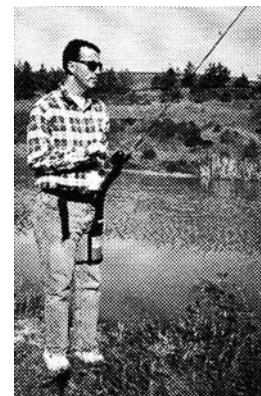


Figure 23: This device allows a fisherman using one arm to support the fishing pole with his leg. This assistive equipment is available through Shelton Products.²²

Joe Stachura of Yorktown, Saskatchewan, is a grain and livestock farmer who has an arm amputation. Joe modified a fishing rod to fit the end of his prosthetic device. He riveted a steel section of pipe to the handle of a fishing rod. At the free end of the pipe, he welded the bolt with the threads protruding outward. His prosthetic insert then screwed onto the bolt and could snap into the end of Joe's prosthesis. This method allows Joe to cast and reel his fishing pole using both arms.

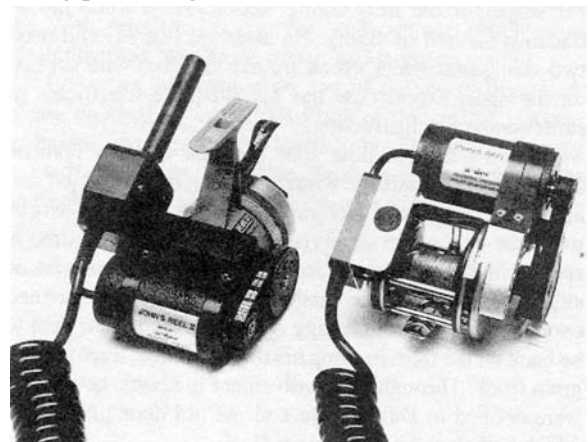


Figure 24: Electric reeling technology is available to allow fishermen to retrieve the fishing line without manually operating a crank.

When a fish is caught and landed, several tasks must be completed. The fish must be gripped, the hook must be removed and tackle changes are periodically made. Fish gripping devices are available to help hold the fish with less strength and with less injury to the fish. Shelton Products²² also offers devices to remove hooks from inside the fish and special hooks which can be easily removed by a fisherman. Mechanisms are also available so that anyone can tie knots,²⁹ regardless of their physical ability. These products can be obtained through the information provided in the reference section.

Other Sports

Many other sporting activities can also be adapted for people with disabilities. A disabling injury or illness does not imply that a person can no longer be an athlete. Competitive sports associations have been organized for wheelchair basketball, amputee golf, water skiing and many other sports.^{18,19} Several contacts are listed in the Resources section of this article for people interested in sporting activities and adaptive equipment.

David Farris is a farmer from Missouri with about 200 acres of land. After farming for his entire life, on September 5, 1979, at the age of 29, David lost his right leg in a farming accident. David was in love with farming, the outdoors and being in touch with nature. He attempted to continue farming, but soon realized that it was too physically demanding. He then took an office job as a claim supervisor for the Department of Agriculture.

Although he enjoyed the work, David was looking for something more. David was quite athletic in high school, playing football, basketball and running track. He went to the library and researched sports and activities which were viable for people with his type of disability. Skiing stood out to him, and although he had never skied in his life, he went to Colorado and took lessons.

David was motivated in Colorado by seeing others with more extreme disabilities who were learning to ski. David worked hard to lose weight and get into better physical shape for the next skiing season. He learned the 3-tracking method of skiing. He skied on one ski and used two skiing outriggers which are like crutches with ski tips on the ends. David now has his Adaptive Certificate in Professional Ski Instructing.



Figure 25: Various types of adaptive equipment are available for snow skiing. This sit-down ski is used with outriggers similar to those used by David Farris.

David's time is now split between his two favorite activities. He spends the winter teaching both disabled and able-bodied skiers in Colorado. In the summer he works part-time as a claim supervisor, but the rest of his time is spent with his first love, farming. Through the exercise of skiing and wheelchair racing, David was strengthened enough to handle the farming operation. He is now able to be back on the farm running his own combine, tractors, and grain truck. Through his involvement in sports, new doors were opened to David's life and the old door of farming which had closed was re-opened!

Organized games and tournaments are also common in conjunction with the many sports associations. The National Veterans Wheelchair Games is a multi-event rehabilitation/sports program for veterans who use wheelchairs. Athletes compete in many sports including table tennis, swimming, bowling, track & field events, basketball and rugby. Not only do events such as these provide enjoyable recreation, but they are excellent networking sessions to learn of the newest assistive technology

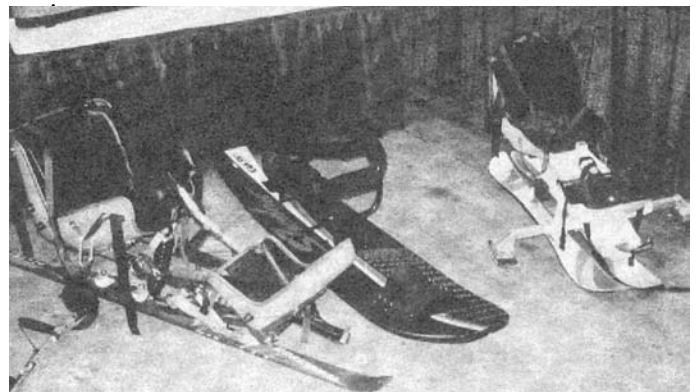


Figure 26: Adaptive water ski devices are available for people who enjoy summer water sports.

Brenda Besse understands this aspect of the sports tour. Brenda has ample opportunity to network and share information on the golf course as she is a member of the

National Amputee Golf Association.²⁰ Brenda has a NovaCare sports leg that is available on the market and many above-the-knee amputees ask her about the components. She is able to give advice on how it works and what the good points of the device are.

Brenda Besse was an athletic Illinois farm girl just out of college when she had an accident. Her right leg was lost in a mishap on the combine. The sports which had been a common part of her life were now removed from her spectrum of activity as she searched for a properly fitting prosthesis. After eight years Brenda finally obtained a sport leg prosthesis and began golfing again. Even though she was not as good as before her injury, the competitive activity was therapeutic. She was able to participate in a form of recreation which she had enjoyed since childhood.

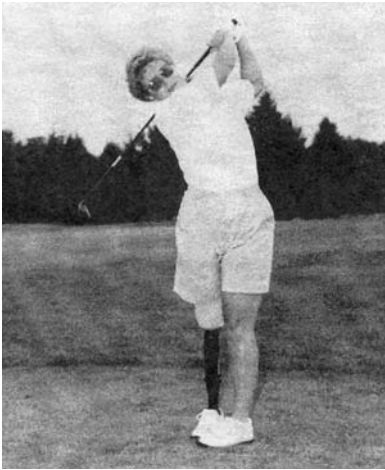


Figure 27: Brenda Besse demonstrates her form as she golfs with the National Amputee Golf Association.²⁰

After her injury Brenda had left farming behind and worked in an office for 15 years. She needed a job with insurance and a steady pay check to help purchase the legs she needed. However, Brenda did not always enjoy the office atmosphere and she wanted more activity. When the opportunity arose, Brenda left the office to get back out onto the farm which she loved.

Many things changed when Brenda lost her leg. She was no longer in sports, she did not farm as much, and she did not work with the purebred Angus cattle. Now, however, Brenda has once again learned to enjoy all of these things. In the spring and fall, she drives tractors and runs the combine for the same local grain farmer for whom she worked before her injury. She has also purchased several Brown Swiss dairy cattle for showing at fairs and dairy expositions. Brenda works with cattle again as she takes care of daily heifer chores for Brierwood Farms which keeps her cattle. Finally, in the summer and winter when farming is not as active, Brenda can be found on the golf course refreshing herself with her long loved sport.

OTHER SPORTING OPPORTUNITIES	
• Basketball	• Motorcycling
• Billiards	• Rugby
• Bowling	• Soccer
• Canoeing	• Softball
• Flying	• Target Shooting
• Football	• Tennis
• Golf ²⁰	• Track & Field
• Handcycling	• Water ²¹ & Snow Skiing
• Hockey	• Weight Lifting

Conclusion

In conclusion, often the best help for someone with a disability is another person in a similar situation. Farmers, ranchers, and other people living in rural areas are often isolated from the common sources of social interaction. When a disabling injury or illness occurs, it may seem that no one else can understand the feelings of frustration and discouragement. The truth is that many people, 49 million in the United States alone, are living with physical disabilities.

For David Farris, skiing was the step which helped him realize that he was not alone. At ski lessons he saw others striving to improve their quality of life, and he was encouraged to expand his horizons. Brenda Besse's parents bought her some golf clubs and told her to get out of the house. Not only did she learn to golf again, but now she is able, through her success, to encourage many others. The nature of recreation itself seems to open new doors on the path of healing and encouragement.

By relaxing, playing, or just enjoying a favorite pastime with a friend, new perspectives on life can evolve. Hope is refreshed by stopping to smell the roses and focus on the bigger picture of life and to see beyond the "dis" in disability. With resources, equipment, and courage people with disabilities can once again pursue and enjoy recreation.

For more information on any of the topics discussed, please check the Resources section of this article. Many addresses and contacts are listed to help begin the journey towards accessible recreation. World wide web addresses and links are also listed to help provide additional resources.

Resources and References

HUNTING

- [1] Accessible Hunts at Parks
Lake Shelbyville Management
Office
Route 4 Box 128B
Shelbyville, IL 62565
(217) 774-3951
- [2] Sponsor Hunts for People with
Disabilities
Safari Club International
4800 W. Gates Pass Rd.
Tucson, AZ 85745
(602) 620-1220
- [3] Holly's Hot Sock Body Warming Unit
Armstrong Products, Inc.
Clarkston, Michigan
(800) 625-6676
- [4] Prosthetic Bow Gripping Device
Chuck Mayo
4051 LaCenter Rd.
LaCenter, KY 42056
(502) 665-5696
- [5] Adaptive Archery Equipment
Bow-Pro Archery
1605 Treanor
Saginaw, MI 48601
(517) 752-8859
- [6] Disabled Bow Hunters of America
Rick Klein
11763 Wabasis Lake Dr.
Greenville, MI 48838
(616) 691-7024
- [7] Archery Equipment Manufacturer
Oneida Labs
PO Box 68
8 Jason Dr.
Phoenix, NY 13135
(315) 695-2727
- [8] Adapted Crossbow for Quadriplegics
Owen Orthman
1707 Shryer Ave.
Roseville, MN 55113
(612) 633-2031
<http://www.wavefront.com/~bluff/crossbow/>
- [9] Automated Crossbow Cocker
Hunters Manufacturing Co., Inc.
1325 Waterloo Rd.
Suffield, OH 44260-9608
(330) 628-9245
- [10] One Handed Bow Shooting
The Bow Brace
20-9th Ave, NE
Glenwood, MN 56334
(320) 634-3660

- [11] Wheelchair Gunmount
"Sharpshooter's Wheelchair Kit"
Narvaez Enterprises
301 West Saunders
Laredo, TX 78040
(210) 722-4819
- [12] One Arm Rifle & Fishing Supports
The Free Handerson Co.
PO Box 185
Valler, MT 59486
(406) 279-3353
- [13] Disabled Sportsmen's Resources
David Sullivan, Director
11802 Creighton Ave.
Northport, AL 35475
(334) 215-3337
http://www.buckmasters.com/american_deer_foundation/dis_hunt/sport.html

CAMPING, HIKING & HORSEBACK RIDING

- [14] Adaptive Riding Equipment Catalog
Freedom Rider
PO Box 4188
Dedham, MA 02027
<http://homepage.usr.com/f/frerder>
- [15] Park & Trail Access Information
National Center on Accessibility
5020 State Road 67 North
Martinsville, IN 46151
(800) 424-1877 (voice/TTY)
<http://www.indiana.edu/~nca/>
- [16] Trail Accessibility
Beneficial Designs, Inc.
5858 Empire Grade
Santa Cruz, CA 95060-9603
(408) 429-8447
<http://www.beneficialdesigns.com/>
- [17] Outdoor Adventures
Wilderness Inquiry
1313 Fifth Street SE, Box 84
Minneapolis, MN 55414-1546
(800) 728-0719 (voice/TTY)
<http://www.wildernessinquiry.org>

SPORTS

- [18] Contact Various Sports Associations
Disabled Sports USA
451 Hungerford Dr., Ste. 100
Rockville, MD 20850
(301) 217-0960
- [19] Contact for Wheelchair Sports
Wheelchair Sports, U.S.A.
3595 E. Fountain Blvd., Ste. L-1
Colorado Springs, CO 80910
(719) 574-1150

- [20] Amputee Golf
National Amputee Golf Association
PO Box 5810
Coralville, IA 52241-5801
(800) 633-6242
- [21] Water Skiing
Adaptive Aquatics, Inc.
420 Hilyer Rd.
Dadeville, AL 36835
(205) 825-8433

FISHING

- [22] Helpful Fishing Accessories
Shelton Products
5279 Salisbury Dr.
Newark, CA 94560
(510) 797-6596
- [23] Fishing Trips
handi-CAPABLE Guide
Service, Inc.
PO Box 222
Gilbertsville, KY 42044
(502) 362-4928
- [24] Fishing with a Disability
Fishing Has No Boundaries Inc.
PO Box 175
Hayward, WI 54843
(800) 243-3462
- [25] Floating Swimwear
Floating Swimwear, Inc.
PO Box 30
Derby, KS 67037-0030
(800) 374-8111
- [26] Pontoon Boat Modifications
Harris-Kayot Inc.
Dept. H, West State Blvd.
Fort Wayne, IN 46808
(219) 432-4555
- [27] Accessible Pontoon Boat
Bob Piper
Route 3, Box 90
Davenport, WA 99122
(509) 725-0932

GENERAL

- [28] Versatile Lifts for Recreation
Round Grove Machine
345 Burnett Road
West Lafayette, IN 47906
(800) 543-3740
- [29] Recreational Assistive Technology
Catalog
Access to Recreation
PO Box 5072-430
Thousand Oaks, CA 91359-5072
(800) 634-4351