

Berkshire Valley Wildlife Management Area



Forest Management Activities | 1991–present

By Miriam Dunne, Northern Region Habitat Biologist (photos by author)

Wildlife Management Areas (WMAs) in the northern part of the state provide nearly 50,000 acres of woodland wildlife habitat, much of it in mid to later stages of the natural regrowth and replacement of plant communities over time known as ecological succession.



Older, uneven-age stand in foreground with younger, dense stand in background.



Forest stands cut in 1996 are regenerating from stump sprouts (American chestnut shown above), from seedlings present in the stand before harvest and from seeds that have germinated after harvest (below).



Younger forests have a more open canopy, allowing more sunlight to enter the forest floor resulting in a dense growth of tree and shrub seedlings, grasses, forbs and vines. As the forest ages, trees grow and outcompete other plant species that are intolerant to shade. For about the first 25 years following a harvest (cut), the structure of a regenerating forest contains a dense growth of trees and shrubs plus provides food and cover for numerous wildlife species. As trees grow and compete with each other for sunlight, many will be eliminated naturally and the stand will become less dense. Older growth forests (120+ years) typically contain larger diameter trees, standing dead trees and decaying logs, a closed canopy with gaps allowing sunlight to enter the forest floor and patches of mixed age trees. Early, mid and later successional stages of forest growth are each important to wildlife; it is the goal of forest management activities on state WMAs to have all successional stages represented.

To that end, forest management activities were implemented at Berkshire Valley WMA (Roxbury Twp, Morris County) since the early 1990s to increase the amount of early successional forest areas available for species like ruffed grouse, chestnut-sided warbler and prairie warbler. A cooperative effort was undertaken between New Jersey Division of Fish and Wildlife, the Ruffed Grouse Society and New Jersey Division of Parks and Forestry to create diversified age classes of forest stands. Forest management activities were initiated to “set back” the plant successional stage in patches of the 80-110 year old oak-hickory forest, allowing young shrubs and trees to flourish where the old growth had been established. Over the course of these 20 years, approximately 70 acres of forest patches have been harvested in an even-aged system. These areas have regrown producing a high stem density cover type that is valued by many species of wildlife.

Berkshire Background

Berkshire Valley WMA covers approximately 2,000 acres, mostly forest. Like all of New Jersey, Berkshire Valley was cut over extensively during the mid to late 1800s for sawlogs, fuel and charcoal production. More than half of this WMA was purchased in the 1940s specifically for wildlife habitat. During the ensuing years there has been minimal forest management activity.

In the early 1990s, the Division of Parks and

Forestry worked with Fish and Wildlife to undertake select even-aged management activities. About 22 acres of firewood and timber were harvested in five blocks during 1991. The Ruffed Grouse Society then funded the development of a management plan by a consulting forester, which Parks and Forestry approved and implemented. The plan was designed to produce a mosaic of forest stands in four harvest blocks over a 20-year period resulting in a checkerboard pattern of various-aged stands. Over the course of 20 years, the plan called for four harvests of about 23 acres, creating a total of 92 acres of early successional habitat.

The harvest blocks ranged in size from 1 to 12 acres. The first harvest occurred in September 1991 and resulted in good regeneration of black birch, ash, tulip poplar, shrubs, forbs and grasses. These blocks, now 20 years old, have reached the stem exclusion phase of development and are almost at the end of their prime as early successional habitat.

A second round of harvesting took place from 1996 through 1997. As with the initial cuts, these forest blocks ranged from 1.5 to 7 acres. Good regeneration of hardwoods resulted, with both nominal deer browse and invasive plants (non-native, rapidly spreading intruders) in the understory.

Habitat Management Becomes More Sophisticated

The next round of harvesting was done years later in the winter of 2008. Care was taken to leave adequate mast trees (nut bearing) on the periphery of the cuts to enable oaks to seed in. Cut tree tops left within the harvest blocks provide coarse woody debris which is beneficial to a number of insects (and animals that eat these insects), and also forms a temporary barrier to deer which discourages browsing on tree seedlings. Cavity trees (used for shelter and nesting) and select mast trees were left standing in the middle of the even-aged blocks.

At the end of three growing seasons, the harvest blocks appear scrubby or brushy. This might be considered unsightly to some, but these areas contain a great diversity of young trees, shrubs, brambles, vines, forbs, grasses and sedges. Plant diversity equates to wildlife diversity.

Harvesting was conducted during the winter to reduce run-off and minimize the spread of invasive exotic plants through mud on equipment. Despite this precaution, some invasive vegetation is present

in the newly cut blocks—as it is everywhere in New Jersey. Some invasive plant experts believe that Japanese stiltgrass can become shaded-out of the developing understory. Other invasives like garlic mustard and Japanese barberry tolerate shade well and are much more persistent. In the future, spot herbiciding prior to harvest will be done when needed to kill plants like Japanese barberry as a preventative measure. Winter or late summer harvesting and better equipment washing prior to entering the wildlife management area may reduce the occurrence of invasives.

Deer Affect Forest Diversity

Deer management is an important component of maintaining or restoring forest health and regeneration. Berkshire Valley WMA is located within Deer Management Zone (DMZ) 6, Regulation Set 3, which allows 120 consecutive days of deer hunting throughout six deer seasons. Habitat and land use varies greatly within this zone, from highly populated suburban areas along the Route 80 corridor on its southern boundary to the forested uplands along its northwestern boundary. In 2007, the estimated deer population density in the huntable portion of the herd in Zone 6 was 31 deer per square mile. This is considerably lower than the estimated densities in the highly productive agricultural DMZs where 40-plus deer per square mile are thought to be present. The Zone 6 density is also considerably more than the single digit density estimates for the nutrient-poor habitat of a Pinelands zone.

Deer can have a huge impact on forest health and regeneration. In areas with a lot of agricultural and other vegetation able to sustain a large population of deer, high densities will not have a major impact on the surrounding forest. However, on less-productive sites, and especially when adjacent suburban development provides a refuge from hunters, deer can have a significant impact on forest vegetation.

In 2010, two of the harvest blocks at Berkshire Valley WMA saw the installation of deer exclosures measuring 75 x 75 feet, designed to allow the cut areas to regenerate without influence from deer. Plant diversity, along with the calculated total height of tree species within and outside of the deer exclosure will be compared again in 2015 and 2020 and used to gauge the long-term impacts from deer.

Regardless of the estimated density, the ultimate test of deer density-habitat compatibility in any one location is the amount of plant regeneration present. At Berkshire Valley, evidence such as the amount of understory browse observed and the vegetation represented in these cuts—despite the fact that some plant species are preferred by deer (e.g. maple leaf viburnum)—demonstrates an acceptable deer density and that hunting pressure is adequate.

Plant Diversity Supports Forest Birds

A breeding bird survey was conducted during June of 2008 and found species including those that prefer



Two deer exclosures were installed to look at deer impacts on regenerating stands.



Regrowth in areas cut in 2008 has resulted in a dense, diverse assemblage of plants.



Opening the canopy to sunlight stimulates the growth of seedlings present before the harvest (like oak and beech) and releases shade-intolerant species like birch and ash.

“interior forest” for nesting (like wood thrush and scarlet tanager), as well as those that require scrub/shrub (prairie warbler) and species who need a well developed understory (worm eating warbler, black-billed cuckoo). Though many birds that nest in “interior forest” will not nest in the regenerating cuts, this habitat is important to them for foraging after the young fledge and also during migration. The great abundance of berries and insects on the plants in the cuts makes them a desirable habitat type.

Focus on Grouse

Since one of the main goals of the forest management work at Berkshire Valley was to create grouse habitat, it is important to monitor the effects on this species. At one time grouse were fairly common on Berkshire. Grouse surveys conducted during April and May of the last two years have not been fruitful. It is possible that sufficient source populations do not exist in close proximity to the harvest blocks to allow grouse numbers to expand and utilize the regenerating habitat. Perhaps there is not yet enough early successional vegetation in this area.

The home range for a pair of grouse is from 50-100 acres, providing there is suitable habitat. The farther a grouse must travel to meet its living and breeding requirements, the more likely it is

subject to predation. Localized predation from raptors, cats, raccoons and other predators may be having an impact on these birds. Disturbance from illegal ATV and dirt bike activity could also thwart nesting. It is probably a combination of factors.

Successional Success

Activities at Berkshire Valley Wildlife Management Area provide an example of how professional forest management is used successfully as a tool to create wildlife habitat. Two more rounds of timber harvests are planned under the current management plan. These cuts are scheduled to take place in 2013 and 2018. By choosing a “no-action” alternative (no management activity) it will not change the fact that invasives are likely to be present in the future stand. The result of no action will be little regeneration of trees like oak that need an open canopy and sunlight reaching the forest floor in order to thrive. No action will also be detrimental to a suite of species that need the structure and food supply of an early successional forest. Without oaks in future stands the outlook for wildlife that depends on oak is bleak. Tolerating some invasives may be necessary in order to achieve a diversity of forest successional stages that is so crucial to forest health and wildlife diversity. 🌿

SELECTING WATERFOWL SEASON DATES

An example from the 2010–2011 season

By Ted Nichols, Principal Wildlife Biologist

Background

Migratory bird hunting season packages, including season dates, length and bag limits, are based on scientific assessments conducted by the U.S. Fish and Wildlife Service and state wildlife agencies through their respective migratory game bird flyway councils. Hunting season packages are developed to reflect a species' ability to withstand harvest and yet remain at or above a predetermined population objective. Migratory bird hunting season framework dates are annually promulgated by the U.S. Fish and Wildlife Service. States then select their specific hunting seasons from within this federal framework. States may be more restrictive but cannot be more liberal than what is allowed in the federal framework.

Selecting exact hunting season dates for migratory game birds is a balance between scientific and social factors. Generally, season date selections are targeted to occur when the birds are most abundant within a state or zone within a state. In order to select the best dates, empirical data on abundance as well as general observations of migra-

tion chronology are needed. In addition, managers must account for social factors including hunter preferences, traditions and holidays.

In New Jersey, the process of selecting annual migratory bird hunting season dates begins in spring when New Jersey Division of Fish and Wildlife (Fish and Wildlife) presents recommended dates to our Fish and Game Council (Council). Fish and Wildlife considers traditional patterns of hunter participation and harvest, migration chronology and input received from hunters to arrive at a season selection recommendation. Council considers Fish and Wildlife's recommended season dates as well as input from our constituents before making the final decision for migratory bird season dates. Proposed season dates are released by June.

Atlantic Flyway states have had 60-day duck seasons since 1997. New Jersey has three zones (north, south and coastal) where two season segments are permitted within each zone. Since the 2000–01 season, the Coastal Zone duck season has generally had a seven to 10 day first segment in early November with the second segment opening on Thanksgiving Day and closing in late January, usually four days prior to the end of the federal duck season framework, which is the last Sunday in January.

Several years ago, Fish and Wildlife and the Council received requests from waterfowl hunters to extend the Coastal Zone duck season later into January at the expense of season dates in early November. New Jersey adopted the suggested format during 2004–05 (Table 1). Unfortunately, this season structure resulted in a significant number

of complaints from different hunters who voiced opposition to losing the November days that year. As a result, the following year Fish and Wildlife and our Council reinstated a full week of duck hunting in November in the Coastal Zone. Clearly, not all waterfowl hunters are in agreement as to their preferred season date for the Coastal Zone.

Again in 2010 Fish and Wildlife received comments from sportsmen to extend the Coastal Zone season later into January at the expense of the early November dates. Since there is contention in selecting the Coastal Zone season dates, data was analyzed to compare hunter activity and harvest success between the first season segment in early November with the mid-January portions of the Coastal Zone season to make an informed decision on this issue.

Methods

Hunter harvest and activity data were obtained from the U.S. Fish and Wildlife Service Harvest Information Program (HIP). HIP data are tabulated by five-day periods for each year. To determine the most suitable years for comparison, hunting seasons since 2000–01 were examined as this is when New Jersey began extending the Coastal Zone duck season into late January. Years were chosen where there was minimal overlap in duck season dates in early November between the South Zone and Coastal Zone since comparisons are confounded when seasons are open concurrently in more than one zone. Because of considerable annual variation in harvest and hunter activity data, it is most useful when the mean harvest and mean hunter activity data from multiple years are examined.

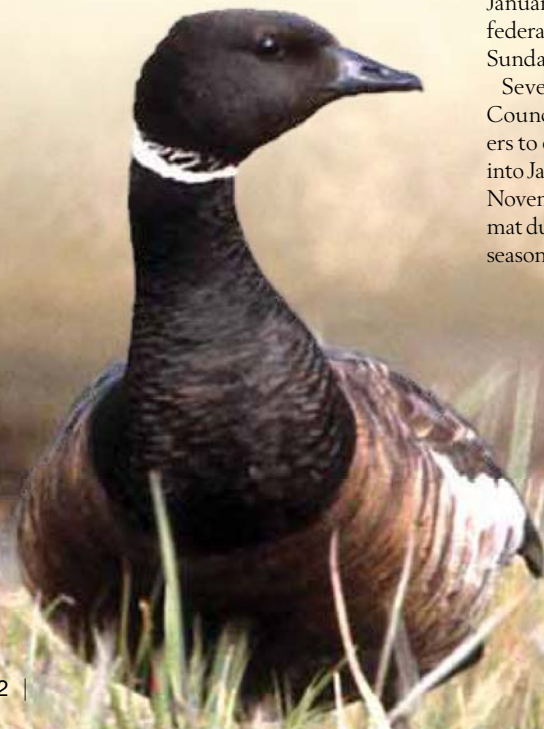


Table 1. Duck and brant hunting season selections in New Jersey by zone, 2000-08.

Year	Duck Season Length	Brant Season Length	Ducks SZ Open 1	Ducks SZ Close 1	Ducks SZ Open 2	Ducks SZ Close 2	Ducks CZ Open 1	Ducks CZ Close 1	Ducks CZ Open 2	Ducks CZ Close 2	Brant CZ Open 1	Brant CZ Close 1	Brant CZ Open 2	Brant CZ Close 2
2000	60	50	21-Oct	4-Nov	10-Nov	1-Jan	4-Nov	14-Nov	23-Nov	20-Jan	4-Nov	14-Nov	23-Nov	9-Jan
2001	60	50	20-Oct	1-Dec	14-Dec	9-Jan	3-Nov	13-Nov	22-Nov	19-Jan	3-Nov	13-Nov	22-Nov	8-Jan
2002	60	60	19-Oct	30-Nov	13-Dec	8-Jan	2-Nov	12-Nov	28-Nov	25-Jan	2-Nov	12-Nov	28-Nov	25-Jan
2003	60	60	18-Oct	29-Nov	16-Dec	10-Jan	1-Nov	11-Nov	27-Nov	24-Jan	1-Nov	11-Nov	27-Nov	24-Jan
2004	60	50	16-Oct	27-Nov	14-Dec	8-Jan	11-Nov	13-Nov	25-Nov	29-Jan	11-Nov	13-Nov	25-Nov	18-Jan
2005	60	30	15-Oct	29-Oct	15-Nov	7-Jan	5-Nov	12-Nov	24-Nov	24-Jan	5-Nov	12-Nov	21-Dec	16-Jan
2006	60	30	21-Oct	4-Nov	14-Nov	6-Jan	4-Nov	11-Nov	23-Nov	23-Jan	4-Nov	11-Nov	20-Dec	15-Jan
2007	60	50	20-Oct	3-Nov	13-Nov	5-Jan	3-Nov	10-Nov	22-Nov	22-Jan	3-Nov	10-Nov	22-Nov	10-Jan
2008	60	60	18-Oct	1-Nov	15-Nov	8-Jan	1-Nov	11-Nov	27-Nov	24-Jan	1-Nov	11-Nov	27-Nov	24-Jan

Results

There were five years (2000 and 2005–08) suitable for analysis with minimal overlap of early November season dates between the South and Coastal zones (Table 1, yellow cells). During four of the five years examined (all but 2005), the closing day of the first segment of the South Zone coincided with the opening day of the first segment of the Coastal Zone (Table 1). Although not displayed in Table 1, the North Zone duck season was closed during all periods within the years examined so North Zone dates did not confound this analysis.

The first segment of the Coastal Zone opened Nov. 1–5 in all years examined. Wildlife managers have long recognized that hunting activity and harvest are very high on opening days. As such, when characterizing early November harvest and hunting data for the Coastal Zone it is most reasonable to review data from the Nov. 6–10 period as this period is comprised exclusively of Coastal Zone harvest, dampening the “opening day effect” of the first several days of the Coastal Zone season. Note that the “opening day effect” would still occur with a change in season structure where there are

fewer hunting days in early November; hence, the second five-day hunting period date is utilized.

Data from the periods of Jan. 11–15 and Jan. 16–20 were used in the comparison instead of the very last week in January because in some years the season was not open for the full five days during that last January week plus the harvest data proved to be substantially identical for each of those weeks. (Table 2.)

Therefore, to analyze hunter activity and harvest success in the Coastal Zone, the Nov. 6–10 period is compared with Jan. 11–15 and Jan. 16–20.



The New Jersey Quail Project was formed in 2007 in response to the alarming decline of bobwhite quail populations across the nation and New Jersey.

The NJQP is a venture of the New Jersey Outdoor Alliance Environmental Projects.

Your support is essential

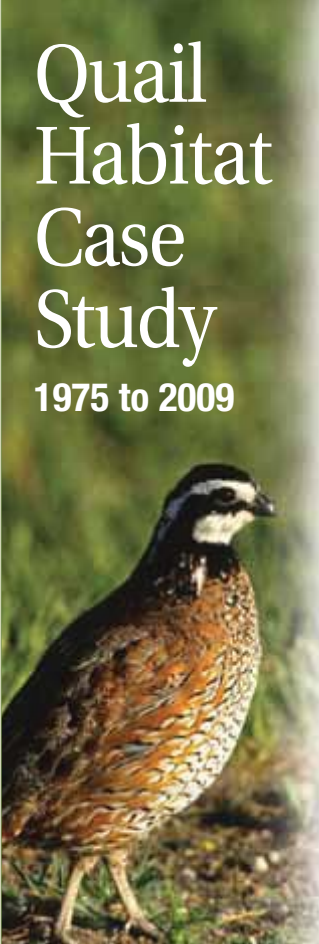
Name _____
 Address _____
 Phone _____
 E-mail _____

Your annual donation of \$30 helps fund work to recondition degraded habitat, buy seed, restore quail populations and supports the Quail in the School Program in New Jersey.

The New Jersey Quail Project collaborates with other groups locally and nationally. Supporters receive updates, notice of volunteer opportunities and special events. Get the satisfaction of knowing you make a difference.

Please send this completed form and your check to
 New Jersey Quail Project
 PO Box 56, Waretown, NJ 08758

www.NJQuailProject.org
Conservation from the ground up!

Quail Habitat Case Study

1975 to 2009

Order this study of converting 94 acres of Ag land on Maryland's Eastern Shore into a successful multi-species wildlife habitat area that produced multiple coveys of wild Bobwhite quail, woodcock, Delmarva fox squirrels, wood ducks, deer, turkey, dove, blue birds, and wide variety of unique song birds.

Learn how YOU can too!

FREE via email or \$10.00 per hard copy. All profits go to the Ruffed Grouse Society.

Email request or send check made out to:
Robert Macdonald
 309 S. Harrison Street
 Easton, MD 21601
www.macfly@goeaston.net

Table 2. Mean annual harvest and hunter activity data by 5-day period in New Jersey based on HIP data, 2000, 2005-08. (See article for explanation of highlighted data.)

Period	Harvest			Hunter-days		Harvest per hunter-day	
	Total ducks	Black ducks	Brant	Ducks	Brant	Ducks	Brant
Oct. 06-10	1,134	16	0	550	9	2.06	0.00
Oct. 11-15	2,494	193	20	1,712	39	1.46	0.51
Oct. 16-20	3,494	301	8	1,941	38	1.80	0.21
Oct. 21-25	4,625	343	8	2,621	6	1.76	1.33
Oct. 26-31	3,141	308	20	2,141	47	1.47	0.43
Nov. 01-05	3,372	688	700	2,060	395	1.64	1.77
Nov. 06-10	1,435	479	1,221	1,189	464	1.21	2.63
Nov. 11-15	2,023	284	337	1,478	313	1.37	1.08
Nov. 16-20	2,744	469	0	1,741	49	1.58	0.00
Nov. 21-25	6,489	1,153	303	3,353	374	1.94	0.81
Nov. 26-30	3,117	581	155	1,635	161	1.91	0.96
Dec. 01-05	3,491	709	149	1,815	207	1.92	0.72
Dec. 06-10	3,568	780	155	1,670	225	2.14	0.69
Dec. 11-15	3,256	573	166	1,683	199	1.93	0.83
Dec. 16-20	3,719	628	233	2,283	329	1.63	0.71
Dec. 21-25	3,334	641	495	2,549	505	1.31	0.98
Dec. 26-31	4,796	974	1,065	3,775	911	1.27	1.17
Jan. 01-05	3,285	839	569	1,995	409	1.65	1.39
Jan. 06-10	1,510	332	570	1,445	393	1.04	1.45
Jan. 11-15	1,665	237	384	1,087	323	1.53	1.19
Jan. 16-20	1,277	389	153	1,044	178	1.22	0.86
Jan. 21-25	1,195	199	202	668	133	1.79	1.52

© Debbiedspoe | Dreamstime.com

THE WORLD'S #1 MULTI-TOOL FOR RIFLES AND SHOTGUNS

18-IN-ONE MULTI-TOOL FOR RIFLES & SHOTGUNS

- UNIVERSAL CHOKE TUBE WRENCH FITS .410 - 10 GA.
- SCOPE WINDAGE/ELEVATION ADJUSTER
- 5 TORX® & ALLEN® WRENCHES
- 4 MAGNETIC HEX BITS
- MAGNETIC 3/16" HEX DRIVER
- INTEGRATED BIT STORAGE
- 420 STAINLESS CLAWPOINT KNIFE
- GUN PIN PUNCH

PATENT PENDING

THE GUN TOOL™

\$24⁹⁹ ONLY PLUS S&H

ORDER TODAY!

www.ShooterTool.com

phone 888-834-5606

FREE ONLINE BONUS!



ORDER YOUR GUN TOOL ONLINE AND RECEIVE THE MAGNETIC BORE LIGHT™ FOR FREE! (while supplies last)

\$9⁹⁹ value FREE!

Online bonus available only at:

www.ShooterTool.com

FREE offer not available with phone orders.



(See yellow cells in Table 2.) In the Coastal Zone, total duck harvest and hunting activity were similar for early November and mid-January while black duck harvest was considerably higher during the November period.

Brant seasons are frequently shorter than duck seasons. When this occurs, brant seasons close earlier in January than duck season (Table 1, blue column). As such, the most reasonable comparisons for brant harvest and hunter activity is between the Nov. 6–10 and Jan. 6–10 hunting periods (blue cells, Table 2) because Coastal Zone brant seasons are usually closed after January 10 (Table 1). Based on the data in Table 2, brant *hunting activity* (blue cells) was only about 15 percent higher in November than January but brant *harvest and hunter success* (measured as harvest/hunter day) in November are about *double* that which occurs in January. In addition, brant harvest and hunter success were higher during Nov. 6–10 than during *any other* five-day period examined in New Jersey.

Conclusion

Unless a particular species is well below population objectives or there are other biological considerations, selection of migratory bird season dates is largely a social decision. In the New Jersey Coastal Zone, contemporary duck harvest and hunting activity is similar when comparing early November to mid-(and presumably late) January. However, brant harvest and hunter success during early November are about double that observed in January. Clearly, brant hunting is popular during November and brant hunters are markedly more successful in early November than they are in January.

Many hunters also contend that brant—which are renowned for their poor table quality—are more palatable early in the fall when they first arrive after migration. One potential solution would be to hold brant seasons during November independent of duck seasons (i.e., the brant season would be open but the duck season closed) but this would complicate regulations. However, hunters have consistently voiced an opinion to hold brant and duck seasons concurrently whenever possible in order to simplify regulations.

Based on the analysis of hunter behavior and success, Fish and Wildlife recommended—and the Council adopted—a “no change” plan for the Coastal Zone season structure for the 2010–11 hunting season. Prior to Council arriving at their proposal, these analyses were shared with sportsmen’s groups statewide through the New Jersey Federation of Sportsmen’s Clubs. This entire process enabled resource managers to make data-informed decisions concerning social issues where two opposing viewpoints were under consideration. Reporting on these analyses keeps hunters informed of the background data and upfront decisions that comprise the migratory bird hunting regulation setting process. 🦋



MORE GUTS THAN ANY ORDINARY KNIFE



VISCERA™
ONLY
\$49⁹⁹
PLUS S&H

THE VISCERA GOES BEYOND A SINGLE BLADE KNIFE. IT'S A COMPLETE 3-IN-ONE FIELD-DRESSING TOOL.

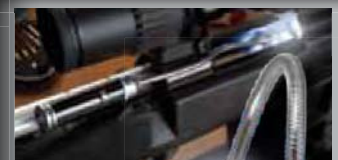
- Pivots and locks into blade or gut hook/saw position.
- Modified drop point, 440 stainless blade has the heft and edge to handle everything from white tails to moose hide.
- Saw cuts through ribs and pelvis bones like butter.
- Oversized gut hook is made to cut through thick, fatty winter hides without snagging or puncturing the entrails.

ORDER TODAY!

www.DressBigGame.com
phone 888-834-5606



FREE ONLINE BONUS!



ORDER YOUR VISCERA ONLINE AND RECEIVE THE MAGNETIC BORE LIGHT™ FOR FREE!
(while supplies last)

\$9⁹⁹ value FREE!

Online bonus available only at:

www.DressBigGame.com
FREE offer not available with phone orders.



Fall & Winter Trout Stocking

TROUT STOCKING PROGRAM



Fall and Winter Trout Stocking Program

FANTASTIC TROUT FISHING opportunities await anglers at dozens of fall and winter trout-stocked streams and lakes in New Jersey. These waters will be stocked with brook, brown and rainbow trout averaging 14 to 16 inches, and weighing 3 to 5 pounds.

Fish and Wildlife stocks approximately 20,000 large trout during the two-week fall stocking period, and about 1,000 of these are exceptionally large rainbow trout broodstock measuring 18-20 inches. About 5,000 trout are stocked for winter trout fishing just days before the Thanksgiving holiday.

Anglers are reminded that **all streams and lakes are open to fishing on the day of stocking in the fall and winter.**

All stocking dates are announced on the:

- Trout Hotline (609) 633-6765
- Fish and Wildlife's Web site at: NJFishandWildlife.com/trtinfo.htm.

Directions to public access locations for trout-stocked waters are also available on our Web site.

Fall Trout-Stocked Rivers and Lakes

Fall stocking will occur in the weeks beginning Oct. 10 and Oct. 17, 2011. When available, the stocking schedule and locations will be posted on Fish and Wildlife's Web site and the Trout Stocking Hotline.

Winter Trout-Stocked Lakes

Stocking dates are Nov. 21-23, 2011. When available, the stocking schedule and locations will be posted on Fish and Wildlife's Web site and the Trout Stocking Hotline.

"75 years of success, a partnership for America's fish and wildlife"

On September 2, 1937, President Franklin D. Roosevelt signed the Federal Aid in Wildlife Restoration Act (now the Pittman-Robertson Wildlife Restoration Act.) This Act fostered unprecedented partnerships between federal and state fish and wildlife agencies, the sporting arms industry, conservation groups, and sportsmen to benefit wildlife—and has been key to implementing the North American Model of Wildlife Conservation. In 1950, the Federal Aid in Sport Fish Restoration Act (now the Dingell-Johnson Sport Fish Restoration Act) was passed. Together, these programs have contributed more than \$10 billion to fish and wildlife conservation—more than any other single conservation effort in the United States.

In 2012, we will proudly observe 75 years of the WSFR program and the success of the partnerships that have made this program what it is today. We are planning a yearlong national anniversary program that will be outcome-oriented, inclusive, and memorable. We hope the anniversary program will act as a catalyst to make the WSFR program even stronger in the future.

For more information, or to get involved, please contact Christina Zarrella, USFWS, 703-862-5761 or Christina_zarrella@fws.gov



Continue the Tradition

Become an instructor with Fish and Wildlife's Hunter Education Program.

Our Hunter Education Unit is looking for New Jersey's best sportsmen and sportswomen to become instructors at locations where students take the test and field course after first having completed the home study portion. A minimum of six weekend days each year are required.

Call (856) 629-0552

Leave your name and address to receive an application. Or visit our Web site:

NJFishandWildlife.com



Perpetual Sunrise & Sunset

TRENTON, NEW JERSEY

Day	Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
01	7:22	4:43	7:09	5:17	6:32	5:51	5:42	6:24	4:58	6:55	4:31	7:23	4:33	7:32	4:57	7:13	5:27	6:30	5:56	5:41	6:29	4:56	7:03	4:34
02	7:22	4:44	7:08	5:18	6:31	5:52	5:41	6:25	4:57	6:56	4:31	7:23	4:34	7:32	4:58	7:12	5:28	6:29	5:57	5:39	6:30	4:55	7:04	4:33
03	7:22	4:45	7:07	5:19	6:29	5:53	5:39	6:26	4:56	6:57	4:31	7:24	4:34	7:32	4:59	7:11	5:29	6:27	5:58	5:37	6:31	4:54	7:05	4:33
04	7:22	4:46	7:06	5:21	6:27	5:54	5:38	6:27	4:55	6:58	4:30	7:25	4:35	7:32	5:00	7:09	5:30	6:25	5:59	5:36	6:32	4:52	7:06	4:33
05	7:22	4:47	7:05	5:22	6:26	5:56	5:36	6:28	4:53	6:59	4:30	7:25	4:36	7:32	5:01	7:08	5:31	6:24	6:00	5:34	6:34	4:51	7:07	4:33
06	7:22	4:48	7:04	5:23	6:24	5:57	5:34	6:29	4:52	7:00	4:30	7:26	4:36	7:31	5:02	7:07	5:32	6:22	6:01	5:33	6:35	4:50	7:07	4:33
07	7:22	4:49	7:02	5:24	6:23	5:58	5:33	6:30	4:51	7:01	4:30	7:27	4:37	7:31	5:03	7:06	5:33	6:20	6:02	5:31	6:36	4:49	7:08	4:33
08	7:22	4:50	7:01	5:26	6:21	5:59	5:31	6:31	4:50	7:02	4:29	7:27	4:37	7:31	5:04	7:05	5:34	6:19	6:03	5:29	6:37	4:48	7:09	4:33
09	7:21	4:51	7:00	5:27	6:20	6:00	5:30	6:32	4:49	7:03	4:29	7:28	4:38	7:30	5:05	7:03	5:35	6:17	6:04	5:28	6:38	4:47	7:10	4:33
10	7:21	4:52	6:59	5:28	6:18	6:01	5:28	6:33	4:48	7:04	4:29	7:28	4:39	7:30	5:06	7:02	5:35	6:15	6:05	5:26	6:39	4:46	7:11	4:33
11	7:21	4:53	6:58	5:29	6:16	6:02	5:27	6:34	4:47	7:05	4:29	7:29	4:40	7:29	5:07	7:01	5:36	6:14	6:06	5:25	6:41	4:45	7:12	4:33
12	7:21	4:54	6:57	5:30	6:15	6:03	5:25	6:35	4:46	7:06	4:29	7:29	4:40	7:29	5:08	7:00	5:37	6:12	6:07	5:23	6:42	4:44	7:12	4:33
13	7:21	4:55	6:56	5:32	6:13	6:04	5:23	6:36	4:45	7:06	4:29	7:30	4:41	7:28	5:09	6:58	5:38	6:10	6:08	5:22	6:43	4:44	7:13	4:34
14	7:20	4:56	6:54	5:33	6:12	6:05	5:22	6:37	4:44	7:07	4:29	7:30	4:42	7:28	5:10	6:57	5:39	6:09	6:09	5:20	6:44	4:43	7:14	4:34
15	7:20	4:57	6:53	5:34	6:10	6:06	5:20	6:38	4:43	7:08	4:29	7:30	4:42	7:27	5:11	6:56	5:40	6:07	6:10	5:19	6:45	4:42	7:15	4:34
16	7:19	4:58	6:52	5:35	6:08	6:07	5:19	6:39	4:42	7:09	4:29	7:31	4:43	7:27	5:12	6:54	5:41	6:06	6:11	5:17	6:46	4:41	7:15	4:34
17	7:19	4:59	6:50	5:36	6:07	6:08	5:17	6:40	4:41	7:10	4:29	7:31	4:44	7:26	5:12	6:53	5:42	6:04	6:12	5:16	6:47	4:40	7:16	4:35
18	7:19	5:00	6:49	5:37	6:05	6:09	5:16	6:41	4:40	7:11	4:29	7:31	4:45	7:25	5:13	6:51	5:43	6:02	6:13	5:14	6:49	4:40	7:17	4:35
19	7:18	5:02	6:48	5:39	6:04	6:10	5:14	6:42	4:39	7:12	4:29	7:32	4:46	7:25	5:14	6:50	5:44	6:01	6:14	5:13	6:50	4:39	7:17	4:36
20	7:18	5:03	6:46	5:40	6:02	6:11	5:13	6:43	4:39	7:13	4:30	7:32	4:47	7:24	5:15	6:48	5:45	5:59	6:15	5:11	6:51	4:38	7:18	4:36
21	7:17	5:04	6:45	5:41	6:00	6:13	5:12	6:44	4:38	7:14	4:30	7:32	4:47	7:23	5:16	6:47	5:46	5:57	6:17	5:10	6:52	4:38	7:18	4:37
22	7:16	5:05	6:44	5:42	5:59	6:14	5:10	6:45	4:37	7:15	4:30	7:32	4:48	7:22	5:17	6:46	5:47	5:56	6:18	5:09	6:53	4:37	7:19	4:37
23	7:16	5:06	6:42	5:43	5:57	6:15	5:09	6:46	4:36	7:16	4:30	7:32	4:49	7:21	5:18	6:44	5:48	5:54	6:19	5:07	6:54	4:37	7:19	4:38
24	7:15	5:07	6:41	5:44	5:55	6:16	5:07	6:47	4:36	7:16	4:31	7:33	4:50	7:21	5:19	6:43	5:49	5:52	6:20	5:06	6:55	4:36	7:20	4:38
25	7:14	5:09	6:39	5:46	5:54	6:17	5:06	6:48	4:35	7:17	4:31	7:33	4:51	7:20	5:20	6:41	5:50	5:51	6:21	5:05	6:56	4:36	7:20	4:39
26	7:14	5:10	6:38	5:47	5:52	6:18	5:05	6:49	4:35	7:18	4:31	7:33	4:52	7:19	5:21	6:39	5:51	5:49	6:22	5:03	6:57	4:35	7:20	4:40
27	7:13	5:11	6:36	5:48	5:50	6:19	5:03	6:50	4:34	7:19	4:32	7:33	4:53	7:18	5:22	6:38	5:52	5:47	6:23	5:02	6:59	4:35	7:21	4:40
28	7:12	5:12	6:35	5:49	5:49	6:20	5:02	6:52	4:33	7:20	4:32	7:33	4:54	7:17	5:23	6:36	5:53	5:46	6:24	5:01	7:00	4:35	7:21	4:41
29	7:11	5:13	6:34	5:50	5:47	6:21	5:01	6:53	4:33	7:21	4:32	7:33	4:54	7:16	5:24	6:35	5:54	5:44	6:26	4:59	7:01	4:34	7:21	4:42
30	7:10	5:15			5:46	6:22	4:59	6:54	4:32	7:21	4:33	7:32	4:55	7:15	5:25	6:33	5:55	5:42	6:27	4:58	7:02	4:34	7:21	4:42
31	7:09	5:16			5:44	6:23			4:32	7:22			4:56	7:14	5:26	6:32			6:28	4:57			7:22	4:43

Eastern Standard Time • U. S. Naval Observatory, Washington, DC 20392-5420
Add one hour for daylight savings time when in effect (second Sunday in March and reverts back the first Sunday in November).

NORTH JERSEY'S PREMIER ARCHERY PRO-SHOP



Custom Equipment
Indoor Range • Sales & Service
Adult Leagues • Kids Leagues
Lessons • Parties • Licenses
Deer Checking Station

(201) 843-7788
www.TargeteersArchery.com
101 Route 46 West • Saddle Brook, NJ

Tioga Ranch
Experience is the Difference
www.tiogaboarhunting.com







tiogaboarhunting@yahoo.com
1552 Mann Hill Road, Tioga, PA 16946
(570)835-5341 • (570)418-0840