TRAPPING AND RESTOCKING WHITE-TAILED DEER IN ARKANSAS

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Arkansas has restocked a total of 2,507 white-tailed deer. Of this number 2,203 were trapped from concentration areas in the State. The remaining 304 were purchased from the Sandhill Game Farm, Babcock, Wisconsin, in 1942, 1943, and 1944.

Trapping of native deer was begun in 1942 and has continued until the present date. Prior to the initiation of Project 17-D the work was done under Projects 1-D, 8-D, 12-D, and 14-D. An active trapping program should be maintained if the excellent deer range that exists throughout the State is to be stocked in a reasonable period of time.

The present report deals with the methods and techniques used in Arkansas during the past 10 years. The information is presented in the hope that it will be of some value to fellow Pittman-Robertson project leaders and other conservation workers. In turn, this presentation of our procedures and ideas may bring suggestions that can be used to improve our program.

AREAS TRAPPED

All except 133 of the 2,203 deer trapped and transplanted were taken from five areas within the State. Two of these were bottom land areas within the White River National Wildlife Refuge. The three upland areas are: Howard County Deer Farm and Refuge, the Sylamore District of the Ozark National Forest, and the Black Mountain Refuge in the Ozark National Forest. Various factors were encountered in trapping each type of terrain.

Bottomland

The two areas trapped in the White River National Wildlife Refuge presented somewhat different problems: The first of these was located on the east side of the White River near Moon Lake and Scrubgrass Bayou. This part of the refuge was reached by traveling over several miles of dirt levee west of the town of Snow Lake. Snow Lake is 44 miles south of Helena, over what was a very poor highway during the time of the trapping operations there (1946 - 1950). This meant that the trap line was nearly inaccessible during period of even moderately wet weather. After getting the deer to Snow Lake, it was 130 miles to the nearest release point. Most of the other areas to be stocked were much further. Distance to release points and condition of access roads to the trap line are important considerations in choosing a trapping area. The continuous travel that must be done over these routes, often during late hours, can result in additional expense, and hardship to the trappers. Most of the 63 traps on this line were located inside of the levee in the overflow bottoms. Weather conditions and winter and spring overflows prevented the use of the traps except during the early fall (October - November), which was normally the dry season. A few moderate rains were sufficient to eliminate this season. The heavy bottom land soils became soft, soon causing trucks and even four-wheel-drive equipment to bog down. Heavy vegetative cover retarded drying of the roads and trails.

Traps on this line became filled with water during rains, and when a deer was captured its movements worked with the gumbo soil into a paste-like mass in which the deer was forced to lie until loaded. Some of the small deer had their eyes, ears, and nostrils plugged with mud and were weakened to such an extent that they were not suitable for restocking.

Life of traps in this area was short. Considerable adjustment and repair were required each year due to the fact that many of the traps went completely under water during overflows. This warped doors and facings and hastened decay. Fallen leaves matted on the tops of the traps, retaining moisture, which caused rapid rotting. Almost 50 percent of the deer caught were bucks.

For the above reasons this trap line was abandoned for more favorable locations. Where trapping of overflow bottoms must be done, suitable equipment including a large tractor or Caterpillar with a sled or trailer would be needed in wet weather.

Deer density in this section was about one to 33 acres. This was based on an estimate made by the Commission and the refuge personnel in 1946, of 3,500 deer on the 117,000-acre refuge.

The second of the areas was on the west side of White River near St. Charles. It included the farm land of the White River National Wildlife Refuge.

This land is located on what is termed locally as a "bluff bank." It does not overflow and the roads are passable throughout the year with four-wheel-drive vehicles. Unusually large numbers of deer frequented this high ground during periods of overflow in the winter and spring.

There were sufficient roads for only 16 traps. Crops, including oats grown for waterfowl, were utilized by deer to such an extent that little success was had using corn, apples, and other similar baits except during periods of snow and ice or extremely cold weather. Deer would not take salt in the traps because of natural salt deposits in the clay soil of the "bluff banks." Very few deer were captured in these traps.

Deer density here was about the same as given for the eastern part of the refuge during most of the year. During the trapping season it was much higher for the reasons given above.

Upland

Conditions were similar in the three upland areas trapped. Success was in proportion to the concentration of deer. Roads were satisfactory and could be traveled at all seasons with ½-ton trucks. Improvement of the roads was inexpensive. At the Black Mountain Refuge, seven miles of old logging roads were improved for trap line in five days of bulldozer operation. At Black Mountain and Sylamore the Forest Service maintains the main roads and some of the firebreaks and trails. In Howard County a large lumber company that owns the land maintained the roads. Deer concentration in the Howard County Deer Farm and Refuge was one deer to 20 acres. A special investigation of deer on national forests disclosed that in the Sylamore District the average density ranged from 15 - 25 acres per deer. Figures for the Black Mountain Refuge were about the same. Location of traps to take advantage of seasonal concentrations due to food and weather conditions enabled us to trap from somewhat higher concentrations than the average density figures shown. One of the objectives of the trapping in Sylamore and Black Mountains was relieving overbrowsing in the refuges.

LOCATION OF TRAPS

Certain locations in each type of terrain proved more satisfactory both with respect to capturing deer and other factors.

Bottomland

Topographical features and type of vegetative cover influenced location of traps in overflow bottom lands. This land is essentially level, the only exceptions being banks of lakes and bayous. These slightly higher elevations were used whenever they occurred near the existing roads; and, in this region, roads are usually located on the highest possible ground to take advantage of the better drainage. Traps were located here for the same reason. Deer trails usually followed these strips of higher ground.

Predominating species of trees were: sycamore, hackberry, overcup oak, ash and pecan. Understory species included reproduction of the above trees, switch cane, poison ivy, and numerous other varieties of shrubs and vines. Vegetation was so dense that deer preferred to travel bayou and lake banks and other elevated ground where vegetation was more open as mentioned above. Many of the areas were almost impassable. It was noted that deer signs were less common in such places. These conditions caused deer to travel the roads to a great extent, and, as locating the traps on the roads was also more convenient for the trappers, most were placed within a few steps of it.

On the farm land of the White River National Wildlife Refuge, vegetation cover did not affect the movements of deer to the extent that it did in the overflow bottoms. Deer were so numerous that little attention was paid to the many trails and crossings. As the length of the trap line was somewhat limited the 16 traps were spaced more closely than the average interval of one-fourth of a mile, which was used on most of the trap lines.

Upland

After driving the available roads in upland areas and locating crossings and other areas of concentration, trap sites are picked at intervals of about one quarter of a mile, depending on where the crossing, trail, or other desired location occurs. Traps over old established salt licks have proved so successful that one or two additional traps are usually placed within a short distance of them. Traps near natural licks are usually very successful. Wherever unusually high concentrations occur during the trapping season, traps are spaced somewhat more closely. Predominating species of trees were: white oak, black oak, post oak, chinquapin, black gum, hickory, dogwood, sassafras and red cedar. Understory species included reproduction of the above trees, fragrant sumac, greenbrier, huckleberry, Virginia creeper, wild grape and other species.

Sites on ridges and "saddles" have proved to be more satisfactory than those on slopes or in valleys. Old fields are normally productive in the spring, when using salt as bait. Most of the above data are based on trapping records made, using salt as bait in the spring and early fall months. Upland trapping has been done in the winter months with corn, apples, cottonseed cake, mistletoe and other baits, but our experience in this respect is not as extensive. In states where winter is the main trapping season, valley locations in uplands might prove to be the most effective.

In upland as well as bottom land, traps are usually located within a few feet of the road as a convenience to the trappers.

It is important to choose a spot as level as possible on which to erect the trap. This facilitates effective operation of the trap itself and loading of the deer. When using salt it prevents rain water from running through the trap and depositing salt on the outside where the deer may lick.

TRAPS

Since the beginning of the trapping program approximately 500 traps have been constructed by project personnel for use on the various trap lines.

Types

The first trapping was done in the Howard County Deer Farm in 1942. The Farm was the first Federal Aid project carried out in the State (1-D). The trapping was done under the provisions of Project 9-D. Pisgah traps were used, and they captured deer, but their use was discontinued because of the number of deer injured in them.

The next traps constructed were Michigan-type pole traps. These traps were soon modified and constructed of lumber instead of poles. This trap has been used exclusively since the Pisgah traps were discarded.

Construction

Construction of the Michigan-type trap is very simple and inexpensive (Table 1). A list of materials and the cost of assembling and erecting a trap are given. The form used in building the traps is illustrated (Fig. 1, 2). The form eliminates the need for measuring or sawing, if the lumber is received from the mill already cut to the desired size. Sides or tops can be turned out at the rate of 40 per day, using one form and a crew of four men. Blueprints of the type of trap used in Arkansas can be furnished on request.

The pine doors are treated with an oil-base shingle stain which penetrates into the wood and makes it very resistant to decay. The rough oak lumber has not been treated on any of the traps so far, but some of the new perservatives such as pentachlorophenal would probably give very satisfactory results. Traps constructed of rough oak lumber usually last from six to eight years in uplands and about three

Matariale	Cost		
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COMBER: Oak – for two sides, one top, and four door slides Side: $3-2^{"} \times 4^{"}$ 42 " long			
$7-1" \times 6"$, 8' long (2) sides, 69.8 board ft. Top: $3-2" \times 4"$, 42" long			
$5-1" \times 6"$, 8' long 27.0 board ft. Slide: $1-2" \times 4"$ 8' long			
$2-1" \times 6"$, 8'long (4) 53.2 board ft. 150 board ft. @ 5¢	\$7.50		
Pine (dressed) – for two doors: $2-1" \times 4"$, 32" long			
$3-1" \times 12"$, 48" long (2) 28 board ft. @ 20¢	5.60		
WIRE: Soft stovepipe wire for trigger wire, 5 ft. Baling wire from trigger to doors, 25 ft. (salvaged)	.01		
TRIGGER: 1-3" strap hinge, 1- piece of scrap strap iron 10" long 4" × 4" (approx)	.25		
$1-2" \times 4" \times 10"$ pine block, ½ ft.			
NAILS: 8D, 16D, and 60, approx. 5.5 lbs. @ 13¢	.72		
Labor			
4 men @ \$6 per day for ½ day (4 men can build 3 complete traps in one day)			
4 men @ \$6 per day for ¼ day			
(4 men can put up 4 complete traps in one day)	\$28.18		

Table 1. Cost of Michigan-type deer trap.

years in overflow bottom land. Cypress was found to be very much superior to oak, especially in the bottoms, and its use would probably be justified there in spite of the higher cost. It was found that slightly wider spaces between the boards, especially in the tops, gave longer life in the bottom land sections.

Original inside measurements of the trap were 4 feet in height by 3 feet in width and 8 feet in length. These were modified to $42" \times 32" \times 8'$. This resulted in a slight saving in cost, easier handling of the trap, less injury to the deer, and allowed use of a smaller, lighter transfer crate.

The trigger is illustrated in Fig. 3. The vertical metal bar swings on a pin through the 2×4 pine block.



Fig. 1. 2×4 's, all 42 inches long are placed as shown for building tops. To build sides the 2×4 's are set on edge.



Fig. 2. 1×6 's, all 8 feet long, are placed as shown for building tops. Note that nail heads indicate the 32-inch space for the five 1×6 's. To build sides, seven 1×6 's are placed on the 42-inch 2×4 's.



Fig. 3. Hinge-type Trigger.

Erection

To erect a trap the sides are held or propped in place and the top is rested on them. The sides and top are then slid and pushed into position so that they are flush all around and the sides are vertical. The top is then secured to the side by driving a 60-d. nail through the 2×4 's of the top and into the ends of the vertical 2×4 's of the sides. Hinges were formerly used, but as there was never an occasion to move any of the traps this practice was discontinued.

The next step is to brace this portion of the trap in position before attaching the slides and doors. When there are trees near, poles or boards from the top and sides are nailed to them until the trap is rigidly in place. In fields, stakes are driven a few feet on each side and the trap is braced to these. Further bracing is done by driving stakes vertically into the ground on the outside of the trap just behind each 2×4 to which a slide is to be attached. The above described bracing permits better operation for a longer period than when traps can be shaken or lifted. Slides are attached with three 60-d. nails each: two into the 2×4 of the side and one into the 2×4 of the top. One slide is put in place, the edge of the door is set in it and the other slide is attached so that there is a one-half-inch space between the edge of the door and the inside of the 2×4 of the slide. This allows doors to fall freely and tends to prevent them from sticking in wet weather. A pole or board is nailed across the tops of the two slides to prevent them from settling in or out, which would restrict the action of the door.

To secure the wire to the doors they are placed in "down" position and the wire is attached to one, run over the poles and attached to the other so that there is only a slight amount of slack. This will allow the trigger to be installed so that the trigger wire is at a height of from 14 to 16 inches, which we consider the most effective.

Soft stovepipe wire is used for trigger wire. It is pulled tight and wound around a nail on the opposite side of the trap from the trigger with only two or three turns. This enables the deer to pull the wire loose after the trap is thrown, without receiving cuts.

After the trap is set the doors are adjusted on the wire so that the bottom edge hangs about four inches below the inside of the top of the trap.

Traps can be floored in bottom lands to keep the deer out of the mud if baits other than salt are used.

Use and Maintenance

When trapping with salt the trap is not approached unless it fails to catch for a considerable period and is suspected of being fouled. When a trap fails to throw or misses a deer it is usually due to one or more of the following causes: The door or facings or both are warped, the pole across the top of the slides has become loose allowing the slides to pinch the door, the trigger hinge is rusty, the wire from trigger to door has caught on some obstruction, the trigger wire is broken, or the trap is leaning to one side. In wet weather the doors sometimes stick. Examination of the traps revealed that occasionally a deer will become frightened on entering and will leap through the trap, beating the door on the opposite side. This often is supported by finding deer hair adhering to the bottom edge of the door. Traps are sometimes thrown from the outside.

Large animals such as cattle and elk may throw the trap but, due to their length, usually catch the door on their backs and back out.

To maintain a trap in proper working order it should be kept firmly braced, and the damaged parts should be replaced. Trigger hinges should be kept oiled or greased. When a trap has not been used for some time, it should be sprung a time or two before trapping begins.

BAITS AND TRAPPING SEASONS

Many baits have been tried during the 10 years that deer trapping has been carried on in Arkansas.

Salt

In 1944 - 45 salt was used for the first time on a large scale, resulting in a catch of 294. The most successful season was 1945 - 46 when 508 deer were caught in the Sylamore District; 488 of these were successfully released. On April 16, 1948, 43 deer were removed from the Sylamore traps. During a period of five days, April 16 - 20, 1948, 113 deer were trapped. This was the last year that this area was trapped; thus, it seems that the longer a trap line is used the more successful it becomes if there is no major decline in the deer concentration.

To have the best results with the use of salt, the "licks" should be put out as far ahead of actual trapping as possible, even if it is several years. As mentioned under Location of Traps, the most productive traps are often over old salt licks. Traps should be erected well in advance of actual trapping.

The initial salting of 25 pounds of granulated stock salt is placed in a round hole about a foot in diameter at the ground level and about a foot deep. The salt should not fill the hole but should come to within two or three inches of the level of the ground so that rain water will be caught. This dissolves the salt and prevents it from being washed away. Sufficient dirt is placed over the salt to fill the hole level with the ground, and a small handful of salt is dropped on top of it.

These places are resalted three times each year, the amount used depending upon how many deer have used the lick. Half of the above amount is usually sufficient. Salt is a very inexpensive bait. At \$1.25 per 100 pounds and 50 pounds used per trap per year the cost for bait for one trap is \$0.62.

There are two trapping seasons each year. The usual dates are from April 1 through May 8 and from October 1 through November 8; thus, the actual trapping covers a period of 77 days. The salt is placed in the traps before the spring season, immediately after the spring season and before the fall season.

Where there are salt deposits that cannot be trapped, including natural licks, these are destroyed or fenced when possible.

There is little interference by other animals when trapping with salt. The traps need not be approached for long periods. The importance of this as regards deer's entering the trap is probably not great, because deer have often been captured the next night after removing a deer and resetting the trap the preceding day.

Two deer are often caught in one trap, and on one occasion four were taken from one trap.

Corn

Corn has been used with varying degrees of success. During the first two to three years of trapping it was the most important bait. Whole yellow corn was preferred to white or cracked corn. Weather conditions were the controlling factor. Best success was had following severe cold weather. For two to three weeks prior to the spring salt season, deer would not take corn.

Traps were usually baited for a period of several days before setting. Two or three large handfuls of the bait were scattered under the trigger wire, and a trail of bait extended out each end of the trap for several feet. Traps that were visited regularly by squirrels, raccoons, or other animals that are fond of corn, had to be rebaited and reset often.

The variety of animals and birds that have been caught by deer traps is amazing, to say the least. Elk, bears, cattle, hogs, dogs, squirrels, raccoons, skunks, doves, a bobcat, a great horned owl, and an eagle have all been caught. The bears and elk always escaped by wrecking the trap, and the squirrels and raccoons dug out.

Miscellaneous

Apples were only fair bait. They were used in the same manner as corn.

Mistletoe was tied to the trigger wires in the early trapping attempts but failed to produce results. Cottonseed cake lay on the ground day after day to no avail. Other states have had good success with these baits.

VANS, CRATES AND OTHER EQUIPMENT

The equipment used in loading and transferring the deer is illustrated. Until this year all of this woodwork was done by project personnel, but it is believed that the vans and crates built this spring by a professional carpenter will prove more satisfactory.

The van used on the pick-up trucks stands 36 inches high from the bottom of the truck bed (Fig. 4).

The transfer crate is 18 inches wide by 36 inches tall by 148 inches long (Fig. 5).

The "butting board" is 16 inches wide by 40 inches tall. There is a cleat on the inside, four inches below the top edge, on which the bottom edge of the door rests. Nails driven part of the way into this cleat and cut off $\frac{3}{4}$ of an inch from the wood help to hold the bottom edge of the door securely to it.

Quarter-inch marine or exterior plywood is used in building the vans and crates. The doors are ¾-inch plywood or pine. The other lumber is usually pine, but oak standards are more durable in the truck vans. The floor of the crate is ¾inch pine. One cypress van has proved very durable. Staining each of the parts with oil-base shingle stain before assembling is a good practice. Coated box nails hold very well. Bolts are used freely as shown. Metal strips over joints and corners give additional reinforcement.

The total cost of constructing a transfer crate including labor is \$32. The cost of a hauling van is \$54.50.



Fig. 4. Van is 36 inches high from the bottom of the truck bed.



Fig. 5. Two types of transfer crates. Note plexiglass door in crate on left.

It is planned to construct a three-section van to be used on a two-ton truck. This would haul 24 deer and would be used during rush periods in the spring season.

Coarse prairie hay or straw is usually used for bedding material. Oak leaves are fair bedding material but soon become packed.

HANDLING THE DEER

Traps are run every other day until the spring rush period when they are run every day. In the Sylamore District it was sometimes necessary to run the traps continuously to move the deer. This will probably be the case at Black Mountain in the next two or three years.

Two pick-up trucks were used on the longer trap lines so that the deer could be tagged and put on the road as soon as possible. Two men are required to each truck. There were 85 miles of trap line at the Sylamore forest. Some of the deer were released 300 miles away.

Removing from the Trap

Two trappers who are experienced in handling deer and who have worked together for a while can load a deer into the truck and reset the trap in from two to three minutes. The manner in which the deer are handled is as follows:

- 1. Removing the deer from the trap: When the trap doors are down, indicating a catch, the truck is stopped and the carrying crate is untied. Trappers approach the trap quickly and quietly and place the end of the carrying crate against half of one end of the trap. The other half of the trap exit is blocked with the "butting board," then the door of the trap is raised and rested on the cleat of the "butting board." Next, the door of the crate is raised. As the back door of the crate is constructed of plexiglass, the deer can see light. Usually the deer will enter the crate to get to the light. Often one man slowly walks around to the opposite side of the trap. When the deer enters, the door is quickly lowered. Next the trap is reset and the crate containing the deer is carried from the trap site to the truck (Fig. 6).
- 2. Pushing deer into the crate: Before the plexiglass door was used, many of the deer had to be forced into the crate from the trap. Now about nine out of 10 will enter of their own accord. When a deer is stubborn, time is saved by entering the trap with the deer and pushing it into the crate. This also reduces injuries. One of the men goes around to the backdoor of the trap and, sitting on the ground, raises the door slightly so that he can get it on his shoulder. He keeps the exit blocked, and when the deer starts to the other end of the trap he slips under the door, letting it fall. He leans over the deer with one arm under its neck and the other over its back. With his body and arms the trapper shoves the deer into the crate.
- 3. Transferring the deer to the truck: The crate is carried to the truck and one end is rested upon the end gate. One man stands on the ground, holding up the crate to keep it against the door of the truck. The other man stands on the end gate and raises the doors of the crate and van, allowing the deer to enter. If the deer is slow to enter, the other door of the crate is raised and the deer is pushed from the rear. The crate is retied on the end gate, and the men proceed to the next trap (Fig. 7).



Fig. 6. Trapper braces against the "butting board," lowers crate door when deer enters.



- Fig. 7. Hitch is used in tying crate on truck. Each rope can be loosened with a quick pull. To re-tie, rope is passed through handles of crate and loop of upper rope and then is tied to eye as shown. Upper rope pulls this one tight and is tied onto it.
 - 4. Removing antlers from bucks: Bucks which are hauled with other deer in the fall must have their antlers removed to prevent injuries. This is done by drawing the deer up against the top of the trap with a rope or by handling them inside of the crate. The antlers are sawed off close to the head with a hack saw.
 - 5. Tagging: When a truck load of deer arrives in camp, one man enters the truck with the deer. The tags, held in the tagging pliers, are slipped onto the ear of a deer and attached by a quick squeeze. The grip should be relaxed immediately to prevent the deer from tearing the tag from its ear. As each deer is tagged, the man in the truck calls out the sex and age, and hands out the pliers. The man outside of the truck records the information opposite the tag number, reloads the pliers, and hands them back to the man inside. Eight deer are considered a load for a pick-up truck. A load can be tagged in from three to five minutes.

Tagging in the truck van after final loading at headquarters allows the deer to be moved from truck to truck, and the laods to be composed as desired, without attempting to read the tag numbers in the ears of the deer that are shifted from one truck to another. Deer are taken from the traps and gotten into the truck sooner, which seems to quiet them. Deer can be examined carefully while being tagged if desired. Examination of does to determine the approach of fawning time determines the closing date of spring trapping unless the weather becomes too warm for successful handling.

Transporting and Releasing

Deer have never been "held over" in Arkansas. The traps are run early in the morning and the deer sent toward their destination as quickly as possible. When only one or two deer are caught they are taken to a nearby release point. Care is taken to keep curious people away from the trucks, and no more steps are made than are necessary. The driver rests after the deer are released.

The door is opened at the release point, and the deer are permitted to jump out. Some have to be pushed or pulled from the truck.

Mortality records since 1943 show that of 2,061 deer trapped, 82, or 3.97 percent, were lost. The highest loss was in 1949 - 50 when 9.8 percent of the 34 deer trapped were lost. The best record was in 1950 - 51 when 58 deer were handled with no mortalities (Table 2).

Period	Number Trapped	Number Lost	Percentage
1944 - 45	318	21	6.6
1945 - 46	508	14	2.7
1946 - 47	482	23	4.7
1947 - 48	250	7	2.8
1948 - 49	140	4	2.8
1949 - 50	41	4	9.8
1950 - 51	58	0	0.0
1951 - 52	169	4	2.4
Total	2,061	82	3.97

Table 2. Mortality of trapped deer, 1943 - 1952.

The majority of the deer that were lost died from shock or fright while in the trap or soon after being loaded into the truck. It is usually apparent when a deer is likely to die from this cause, and it can sometimes be saved by releasing it immediately. Injuries received in the trap caused the second largest number of losses. Deer caught in Pisgah traps often injured themselves. Losses in transit, probably from a combination of the above two factors, accounted for most of the other mortalities.

Giving a sedative to overly excited deer has been considered, but the disturbance to the other animals and the loss of time would probably offset the advantages of trying to treat the relatively small number of deer lost.

RECORDS

A record of trapping results is kept on forms which provide spaces for the following information: tag number, date, trap number, sex, age, destination and remarks.

Recording numbers of the traps that capture deer gives information on distribution, effective location for traps, trapping success and other data. Under remarks, condition of the deer, mortalities, weights, and other miscellaneous information is recorded.

County maps showing release points and routes to these points are helpful. Release schedules are sent to law enforcement officers, the educational department, and to cooperators such as the U. S. Forest Service.

The cost per deer trapped varies greatly. It is dependent upon success. In the 1945 - 46 season when 516 deer were successfully released, the cost was estimated at between \$15 and \$20. This record cannot be duplicated even if success again reaches this point, because of higher costs.