Velvet harvesting

The key to a successful velvet antler operation is record keeping. Bulls of three or four years of age or older will have produced the best quality velvet at about 70 days after the button or antler drop in the spring. This usually occurs about the middle of March in mature bulls. If you are keeping good records you will be able to group bulls according to predicted velveting dates. From year to year there may be minor variations which will depend upon feed, temperature and humidity, so you will have to keep a close eye on things. It is best to check the bulls about once a week and divide them into mobs that will be harvested at about the same time. Individual bulls may vary by a few days but it will not take long to develop records that will tell when to expect a given bull to be ready for harvesting.

The Korean grading system divides the antler into four categories. These are super A, A, B, and C. The right time to cut, in order to obtain so-called super A grade is when the first three tines have developed and the top of the antler has flattened out. It will bulge for a few days and then start to show an indentation. What is in fact happening is that the branches of the "Royals" are developing. Anything more than a slight indentation is too much. Cutting before the top flattens and bulges will markedly reduce the weight of the antler and so the price paid. Currently, for the Korean market antlers that lack tines are downgraded.

Velvet harvesting from young bulls is more difficult to judge than from the mature animals. It may be that the antlers will be ready to cut before they begin to branch their third (or trez) time. The only way to test this is to closely observe the development of the tips of the brow and bez tines. If these are beginning to dry up, and the velvet itself appearing to shrivel then the antler is ready to cut. Some of these younger animals may not be ready to harvest until late June or even early July.

Rick Alsager has recently visited Korea and reports that to qualify as super A the antler must not only be cut at the right time but must have a minimum length of 70cm. A grade is difficult to distinguish from super A. The minimum length for B grade is 60cm. For C, 20cm. Most C grade antler comes from spikers and 2-year olds.

Figures showing development of elk antler. Fig. 1 shows growth at about 30-35 days after casting. Fig. 2 shows development at about 45-50 days. The central figure represents the ideal stage of growth at 65-70 days after casting for velvet harvesting. Fig. 4 shows early growth of "Royals". Antlers of this type would be downgraded.
Preparation

Once you have decided that a particular animal or group is ready they should be brought into the yards and placed in individual holding pens. It is best to carry out velvetting at an early hour of the day. This will not only ensure that the weather is at its coolest, but also that there are the maximum hours of daylight available to observe the animals afterwards.

The actual harvesting of velvet is a job for your veterinarian. An anesthetic or similar agent will be needed to sedate the bulls. For most situations the drugs of choice will either be Rompun™ or a combination of Rompun and Ketamine. Their use has been described in a previous pamphlet (GF-D-1). Once the animal has become sedated, the next step is to administer local anesthetic. There are two sites for injection which must both be used in order to ensure an adequate job. Three to five ml of anesthetic should be given at each site. The nerve supply to the antler of the red deer has been described by Adams in New Zealand. Basically there are two branches of the trigeminal nerve, as illustrated below, and both must be anesthetized. The photographs opposite illustrate these injections being administered.

The next step is to apply a tourniquet at the base of the antlers around the pedicles. Various materials have been used. Probably the simplest is a length or rubber (slingshot or inner tube) tied in a figure 8 with an extra turn around both pedicles. It would be best to avoid tying this off with anything other than some sort of quick release knot that can be undone without much trouble.

Cutting the antlers

Next, the antlers should be cut. The steps are illustrated on Page 3 opposite. The cut should be made just below the brow tine, making sure to leave about 1.5 cm (half an inch) of antler on the pedicle. If you cut the pedicle you will very probably damage future antler growth. Some farmers in the USA cut between the brow and the bez tine. Opinions differ on the best tool for the job. If you choose to use a wire saw, you should first cut around the base of the antler, above the pedicle, with a sharp instrument such as a scalpel, in order to avoid stripping of the velvet at the end of the cut. A better instrument is probably a flat bladed, medim toothed saw, such as a back saw, which can be used on its own. Meat saws are preferred by some.

Handling the antlers

As soon as you have cut off the antlers you must make sure to turn them so that the base is uppermost, so as to avoid any blood loss. You should also tag and weigh them as soon as feasible after cutting. They should then be carefully wrapped, cooled and frozen as soon as possible. Damage or the spilling of blood on the antlers at this time will seriously downgrade them.

Tourniquet

Before giving the antidote you should to leave the tourniquet in place for five to ten minutes.

An antidote to the immobilizing drugs can be given as soon as you wish, but do not forget that this is a very convenient time to administer vaccinations and/or de-worming drugs. Currently the best available antidote to Rompun™ is Yohimbine, but it is not licensed for use in elk or any other species. Your veterinarian can obtain some under special permits.

Yohimbine should be given intravenously. Accidental injection into the carotid artery has produced violent and sometimes fatal effects, so it is probably best to give the injection into a leg vein. The table at the top of Page 3 shows the results of a study conducted by Rick Alsager and I in which elk given Rompun™ (2-4ml) were treated with 40-50 mg of Yohimbine. All of them had lifted their cars and become alert within a short time. Most of them stood up within 10 minutes, even if they were not disturbed. Only one needed an extra dose. I have found that 4-amino-pyridine (4A-P) is not needed.

Diagram of the nerve supply to the antler of the elk

Figure showing the correct injection sites for local anesthesis of the antler. These are just dorsal to the rim of the orbit and just behind the zigomatic process of the frontal bone.
The effects of Yohimbine as an antidote to Rompun. Time in minutes after intramuscular Rompun until the animals lay down. Time in minutes after intravenous Yohimbine. Arousal time is the time at which elk raised their ears and lifted their heads. Standing time is the time at which they stood of their own accord. Data on 25 elk are reported (2 animals did not go down, but were sedate enough to allow work).

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Rompun dose</th>
<th>Recumbency time</th>
<th>Yohimbine dose</th>
<th>Arousal time</th>
<th>Standing time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>397</td>
<td>250mg</td>
<td>12min</td>
<td>48mg</td>
<td>1.5min</td>
</tr>
<tr>
<td>Range</td>
<td>340-454</td>
<td>200-400</td>
<td>3 - 61</td>
<td>36-79</td>
<td>1 - 3</td>
</tr>
</tbody>
</table>

Photographs of correct administration of local anesthetic prior to removal of velvet antler

a. Dorsal to the orbital rim

b. Caudal to the zygomatic process of the frontal bone

Photo illustrating correct angle for cutting velvet antler

Elk after antler removal. Tourniquet still in position

GF-A-2-03
Antler weights
The weights of velvet antler will vary considerably depending on the number of days of growth and also the age and nutritional state of the animal. By and large antlers harvested from mature bulls at 70 days of growth will vary from 6 to 10 kg per animal (13-22 lbs). Anything above 11 kg of velvet (24 lbs) is exceptional.

If the antler is allowed to grow out to its full size the weight will of course be greater. Weights of antlers collected by Flook in Banff National Park from mature bulls (6 years and older) averaged from 6 to 10 kg, with top weights at 11 kg. I have weighed several sets of antlers in the 15 kg range and one exceptional set of 17 kg. It may be that the availability of a certain supply of good quality feed when needed allows the captive elk to develop larger antlers than his wild counterpart.

If you choose not to cut the antlers when they are in velvet you will have to be that much more cautious around the animals during the rut. You may have to remove them when they are hardened and for this procedure you will only need to immobilize the animals. The administration of local anesthetics will not be needed as there is no nerve supply to the hardened antler.

Antler products and their sales
Harvested elk antler can be sold locally within Canada. In several cities there are a sufficient number of people who wish to purchase and use antlers for a variety of medicinal purposes. Such potential customers have often come from the orient.

Another option is to sell the antler, which should be carefully preserved in a frozen state, to a broker or dealer for export. In time there may develop a sufficiently large supply to ensure that the processing is carried out here in Canada, which should have beneficial effects upon the price obtained.

The antler is prepared in at least three different ways. The softest part, where most of the blood is situated, is used for the production of an elixir. The middle part is cut wafer thin, and a powder is prepared from that portion of the antler near the base, which is the hardest. Fully hardened antler is also sold in Korea. This comes in the form of sections about 10 cm long that are shaved very fine and added to water as a sort of soup.

The use of antler in traditional medicine is steeped in history. Excavation of a Han tomb in China in the year 168 B.C. revealed scrolls that showed that antler had been used for at least 2000 years for a variety of medicinal purposes. In A.D.1977 the Encyclopedia of Chinese Materia Medica listed four different antler products that could be used in the treatment of lumbago, gonalgia, mastitis, ecchymosis, carbuncles, tuberculosis in bones and joints, impotence, spermatoidea, metrorrhagia, frequent urination, wet dreams, vertigo and anemia.

Recent studies at the Kyung Hae University in Seoul have shown that elk antler seems to be superior to that of reindeer, red deer or sika deer in the treatment of anemia. Much research remains to be done to satisfy western medicine of the potential effects of antler products. Who knows what may develop?

Elk of North America Ecology & Management
Edited by: J.W. Thomas & D.E. Toweill
Publ. Stackpole Books, Cameron & Kelker Sts., Harrisburg, PA USA 17105
ISBN 0-8117-0571-4

Biology of Deer Production
Edited by: P.F. Fennessey & K.R. Drew
Bull. #22, Royal Society of New Zealand, Private Bag, Wellington, New Zealand.

Antler development in Cervidae
Edited by: R.D. Brown
Caesar Kleberg Wildlife Research Institute, Campus Box 218, Kingsville, Texas 78363
ISBN 0-912229-04-7

Deer Antlers: Regeneration, Function, and Evolution
Goss R.J., Academic Press, 6277 Sea Harbour Dr., Orlando, Florida 32887-0510
ISBN 0-12-293080-0