HUMANE OBSERVER REPORT
PRIBILOF FUR SEAL HARVEST
JULY, 1984

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INTRODUCTION

The harvest of fur seals on the Pribilof islands began as early as 1790 when the recently discovered islands began to be exploited by russian fur traders. The methods of the harvest have evolved since then, from an essentially individual practice where a single person completed all steps of the harvest to a highly organized group effort. The methods of the harvest, the timing, organization and execution, are complex and involve specialized skills and knowledge. Part of the evolution of the sealing methods currently in use has been derived from the intensive scientific efforts of researchers examining the economically important fur seal under the auspices of programs supported by the United States, Japanese, Canadian and Russian governments. These studies of the fur seals' biology, ecology and economics have made the northern fur seal the best understood of any marine mammal, and have had significant impact on the harvesting methodologies and quotas. Other aspects of the harvest are deeply rooted in tradition and native folklore and are an integral part of the Priblovian Aleut culture.

This report is limited to the evaluation of the humane aspects of the harvest of fur seals as practiced on St. Paul Island in 1984. It will not address the ecological, biological or economic aspects of the harvest which have been and are most appropriately addressed by expert scientists in those disciplines.

Over the many years of the harvest, while sealing methodologies have changed, so has the philosophical base from which the general american public views the relationship between man and animals, both wild and domestic. Representative of a large population with widely varying concerns, the philosophical climate in regards to utilization of animal resources is far from a single unified position. This climate must be considered to be in the process of evolution. The concepts of animal rights have been developed and emphasized to the general public by several philosophers deeply involved in this intricate question. The complexities of balancing the needs of human survival with the humane treatment of animals have resulted in several divergent philosophical paradigms within even the relatively small cadre of staunch animal rights supporters. This schisim increases the difficulty of discussing humane issues, augmenting the subjective nature of certain humane precepts, with multiple definitions of basic founding principles. The staunch opposition to the exploitation of any animal for any reason including the rearing of farm animals for food, found in The Reverence for Life

philosophies of Regan and Schweitzer contrast completely with the utilitarian exploitation philosophies of other animal activists lead by Singer. Neither extreme addresses adequately the ecological interactions of interspecific relationships or their impact upon the objective criteria for man-animal interaction. While such debate continues even within one relatively new sphere of the philosophical universe concerning animal rights, it is clear that no absolute truths have been generated capable of serving as a fundamental moral guide in the evaluation of humane treatment in a real world situation involving conflicting needs of separate species.

It becomes imperative then to examine the tenets of a paradigm in current practice which deals with the issues of humane treatment in a defined manner based on actual practices in the world today. The American Association of Veterinarians, recognizing the moral and professional importance of the humane handling of animals during euthanasia, appointed an expert panel to examine this issue. Specifically addressing euthanasia, this panel identified eleven criteria for judging methods of euthanasia. These were: 1. the ability to produce death without causing pain; 2. the time required to produce loss of consciousness; 3. the time required to produce death; 4. reliability; 5. safety for administering personnel; 6. the potential for minimizing undesirable psychologic stress; 7. the compatibility with requirement and purpose; 8. the emotional effect upon observers or operators; 9. the economic feasibility; 10. the compatibility with histopathologic evaluation; and 11. the drug availability and abuse potential. These criteria will be utilized as the basis of this reports examination of the humaneness of the Pribilof fur seal harvest in 1984.

METHODS

Each of the twenty-four days of sealing conducted during the Pribilof fur seal harvest between July 2 and August 3, 1984, were observed personally throughout the entire active sealing process. In areas where multiple hauling grounds were harvested, drives were attended in rotation assuring that each drive route was observed at least once. The duration of the drive was measured by taking the time when seals first became aware of human intrusion, indicated by vocalization and head rearing, and the time when stunning started. Environmental conditions observed on the drive included the air temperature at the starting time and at the end of the drive. Temperatures were taken with a handheld mercury thermometer graduated in one degree increments. Weather conditions for the day were also noted and classified as one of the following: 1. Sunny , 2. High Overcast, 3. Fog, 4. Light Rain or Misting, 5. Rain.

The drives were also evaluated on the basis of terrain, being classified as degrees of dificulty I through III. Terrain I represents essentially flat grassy gently sloping terrain.

Terrain II represents steeper slopes on generally unbroken ground. Terrain III represents boulder strewn and gullied fields with some slopes. Drive distance was estimated by pacing the drive and classified into categories A through D with A being the shortest (less than 100 meters) and D being the longest (approximately 1 km). Resting and cutting practices were judged subjectively based on my observations of the seals' respiration and postures during the drive.

Herding was evaluated for milling and temperature response of the animals throughout the day's harvest with emphasis on the latter part of the day. Rectal temperatures of skinned animals were taken as soon as accessible on a series of 12 random animals in 49 degree air temperature with, 4 hours after initiation of drive. Animals from herds thought to be overheated were examined similarly as they occurred.

Pod cutting was evaluated by randomly estimating pod size as it arrived at the stunning station for 5 consecutive pods at the beginning and end of the harvest days for 12 of the 24 harvests. Bull percentage was taken from the same pods. Bull cutting efforts were evaluated subjectively on the basis of effort. Returns to the main herd were noted as they were observed.

Stunning was evaluated by taking a stun ratio of missed hits to optimal blows for fifty consecutive stuns. If subjectively an individual stunner seemed to be affecting this parameter, he would be evaluated individually for his next 10 stuns. An optimal blow was considered to be a well placed blow which rendered the animal unconscious within 2 seconds and did not require further blows to achieve stun. Missed blows were any other situation, counted as one per seal. Miscellaneous activities of the stunners were evaluated subjectively including protection of the crew behind, safety in directing blows, and pursuit. Culling efficiency was tallied by counting accidental takes of over age bulls, females, or tagged animals for the day. Fatigue was evaluated by examining the stun ratio at the beginning and end of harvests.

Three time factors were examined in the stunning process. Stun Time represents the time interval between the first blow taken and the final blow on a given killing field. It is inclusive of rest periods for workers and any other delays in processing while the animals remained in herd. Pod Stunning time was taken for random pods throughout the harvest and represents the time from entrance of the pod into the stunner's circle to the unconscious state of the last seal in the pod. Individual Stunning Time was taken from the time of entrance into the circle to unconsciousness for an individual animal selected during the stunning. This may have been biased by the observers tendency to selectively view any extended activity in the stunning circle. Air temperature was recorded by the same thermometer used in the drives at the first blow and after the final blow delivered on a

killing field.

Sticking, or the process of opening the chest and severing the great vessels of the heart was evaluated subjectively for the sticker's concern for adequate stunning before proceeding and for the time interval between stun and stick. The sticking ratio was recorded as the number stuck effectively (severing great vessels) over the total number stunned. This was measured 4 times on different days for each sticker on 100 consecutive animals.

Ripping, Pulling, Stick Picking and Meat Utilization were studied subjectively. Primary concerns were for the safety of the process for personnel and the effectiveness of the tally process. Animals were examined at the beginning of the ripping process to be sure they were clinically dead before the process was begun.

RESULTS

Driving

Drive sites have been selected historically to be accessible to transportation and to be as near to haulout beaches as possible. Ground conditions on the field are an important factor in locating the field. A total of 7 animals were lost on drives. The rugged boulder strewn terrain and particularly the deep gullies of Zapadni seemed most deleterious resulting in 4 deaths in a single drive when the animals became trapped in a gully. Management steps taken subsequently to route the drive over higher ground relieved this problem. Secondary drives initiated after the primary ones at North East Point resulted in two losses, one on each of two secondary drives attempted. The seventh animal was lost on North East Point on the same day during the primary drive. The longest drive, Tolstoi was not subjectively the most arduous based upon no animals being lost on the drives, and observation of the condition of the driven animals.

DRIVE CONDITIONS

SITE	# OBS	WEATHER	TERRAIN:DIST
Northeast Point east	3	3,3,2	I C
Norteast Point west	2	2,2	I B
Polivina	3	3,1,3	I C
Little Pol	2	2,3	I B
Kitovi	5	5,5,3,3,3	IIA
Lukanin	3	4,3,3	I B
Tolstoi	2	2,3	IID
Zapadni R.	1	2	I A
L. Zapadni	2	2,2	I A
Zapadni	5	2,2,4,2,3	III D
Reef east	2	2,2	II C
Reef west	3	2,2,3	II B
Zoltoi	1	3	II A

1. Sunny , 2. High Overcast, 3. Fog, 4. Light Rain or Misting, 5. Rain.
I. flat grassy gently sloping terrain, II. steeper slopes on generally unbroken ground, III. boulder strewn and gullied fields with some slopes.
A through D with A being the shortest (less than 100 meters) and D being the longest (approximately 1 km).

Weather conditions did not vary on the drives significantly. The early time provided relatively uniform cool moist conditions. Drive temperatures for 33 drives measured varied between 40 and 51 degrees farenheit with a mode of 43 and a mean of 45 degrees (S= 2.5).

Drive duration was variable, primarily due to the variability in organizational time between the drive and the initiation of stunning. Subjectively drive times became longer, allowing the animals more rest as the harvest continued while the

measured drive time decreased as organizational delays were reduced with the exception of the final week when organizational time seemed to increase. (figure 2).

FIGURE 2

DRIVE TIMES FOR NORTHEAST POINT

WEEK	START	STUN START	DRIVE TIME (MIN)
1	5:56	7:02	126
2	5:43	6:43	54
3	6;18	7:12	60
4	6:39	7:22	43
5	6:42	7:56	74

Resting of the animals during the drive seemed to improved as the harvest continued and the drivers became more aware of the need. Initially, drivers of the last pods in had a tendency to push their animals a bit hard in an apparent effort not to be last. Inexperienced drivers would continue to approach pods, forcing the rested animals to move on and compelling weaker animals to follow. More appropriate rest/drive intervals were achieved by the third harvest due to the instructional efforts of the foreman and sealing supervisor. Inexperienced drivers had a tendency to pick up objects on the beach and throw them at seals, or poke seals with sticks. This ineffective practice was appropriately discouraged totally by the supervisors whenever observed.

Cutting of nonharvestable animals, particularly bulls, was done on an individual basis. Experienced drivers were able to cull out a large percentage of the bulls making a more manageable pod for all subsequent steps of the harvest. Inexperienced drivers became more proficient at this as the harvest progressed.

Herding

Herding was one of the most critical talents related to the humane aspects of the harvest since animals were in contact with the herder for the vast majority of the time they were subjected

to human intrusion. The herders used varied in experience but were carefully supervised by the sealing foreman during the second week. Their job was to maintain the herd up wind of the stunning site, keeping the animals calm and preventing their return to the hauling beaches. Large herds were more difficult to manage, on two occasions requiring that the herd be split. More experienced herdsmen allowed the animals to spread out rather than bunching them up tightly. This seemed to benefit the animals significantly, reducing aggression and overheating.

When possible, experienced herdsmen would continue to allow bulls to escape the pod, further reducing internal friction and later confusion in the stunning circle. Three episodes of milling in the herd occurred. One of these was triggered by a siezuring animal which was stunned in the herd and the herd split to calm them down. The effective technique of herd splitting sufficed to stop the other two incidents which were apparently due to very large herd size (greater than 1200).

Release percentage was extremely variable and was a composite measure of the initial drive selectivity, and herd management in the form of pre culling bulls. Release percentage ranged between 2 and 38% with an expected value near 20%.

Rectal temperatures on 4 hour post drive initiation animals taken post stun and after skinning in 49 degree air temperature averaged 101 degrees. Rectal temperatures of animals showing overt signs of overheating on a single day when the sun came out at the end of the harvest bringing air temperatures to 52 degrees, was 104 degrees. The 40 animals involved were stunned in large pods to reduce the time they were subjected to the heat stress.

Pod Cutting

Pod size varied from 7.7 to 14.2 animals in twelve random evaluations of five consecutive pods. An apparent positive correlation with the size of the total herd did not prove statistically significant although positive correlations with both number of hours into the harvest and number of days into the harvest apparently exist but too few observations were taken to examine this question carefully. Another bias in this study was that as pod size increased beyond 12, I would contact the sealing foreman who might be supervising another part of the operation at the time. Quick and efficient remedial action was always taken reducing the pods back to an optimal 6 to 8.

Stunning

Stun ratio was very dependent upon the experience of the stunning crew. Three new stunners out of six were on line for the first day of harvest. The overall stun ratio initially was

0.333 but improved in 3 hours to 0.15. Experienced stunners had individual ratios of 0.15, 0.05, and 0.15 for twenty animals. Inexperienced stunners had ratios of 0.30, 0.45, and 0.65. It should be pointed out that individual ratios were taken after the total ratios based on different animals. The new stunner with the worst ratio was replaced on the second day with an experienced stunner. By the end of the first week both remaining new stunners had reached the 0.15 mark as a consistent ratio. Another new stunner was added to the group mid harvest and followed the same pattern, requiring a full week to come up to a good ratio. An experienced stunner was also substituted mid harvest and required 2 hours to come to a consistently good ratio. Fatigue was a factor in stunning. Experienced stunners from the second week maintained individual stun ratios of 0.1 or less for the first two hours of stunning. After two hours the total stun ratio would slip to as low as 0.33.

Culling efficiency was generally remarkably good. Only a single yellow tagged animal out of 112 opportunities in a sample of 22,078 animals was taken. A total of 11 large bulls were taken accidentally by my count. The majority of these were due to accidental hits in overly large pods resulting in injuries requiring euthanasia. Eight animals were hit with glancing blows accidentally and were deemed fit to release. Thirty-two cows were taken in error, 22 of which were black or mixed whisker cows difficult to distinguish from males. Ten adult cows were taken.

Individual stun time averaged just over 4 seconds and seemed a less useful parameter than pod stun time which ranged from 8 to 67 seconds. The 67 second value was an aberration due to a large pod size (16) including 2 bulls which interfered with stunners. Modal pod stun times for pods of 6 and 10 animals were 15 and 20 seconds respectively. Overall stun time varied directly with the number of animals in the herd and ranged from 9 minutes for 74 animals (7.3 sec/animal) to 6 hours and 17 minutes inclusive of breaks for 1562 animals (14.5 sec/ animal).

Sticking, Ripping, and Further Processing

Sticking efficiency was uniformly 100% for each sticker in each trial. Throughout the general observation of the harvest 5 animals were improperly stuck or not stuck at all out of 22, 078. Concern for proper stunning was extremely high. Stickers were instructed to error on the side of safety and second hits were encouraged by me on the logical basis that if they were necessary they should be delivered as quickly as possible and if they were unnecessary then no pain or sensation would be the result. The interval between stunning and sticking rarely exceeded thirty seconds. The most prolonged intervals were due to the collection of scientific samples which required sampling before the stick. When the interval on the processing line extended beyond ninety seconds the stunners were halted by the foreman and the stickers and rippers allowed to catch up. Ripping was never observed to

occur on an animal that was not brain dead.

Personnel safety was observed subjectively. Three accidents resulted in work stopage. A ripper suffered a hypoglycemic siezure and lacerated his hand with his knife. A puller was hit in the knee when his nipper failed to hold the skin, and a sticker knicked himself in the leg through his boot with his knife. One driver wrenched an ankle on the beach and was subsequently not able to work. No injuries occurred in herding, pod cutting or stunning.

DISCUSSION

Euthanasia Method

There are basically three mechanisms of terminating life utilized in euthanasia, 1. hypoxia, direct or indirect, 2. direct depression of neurons vital for life function or 3. physical damage or concussion of brain tissue. Direct concussion of brain tissue ultimately results in death due to hypoxia. Depression of vital centers halts respiration and the animal is rendered unconscious instantly although motor activity may occur after unconsciousness. Based on the deliberations of the AVMA panel on euthanasia, although this may be unpleasant to the observer, the animal is not suffering.

The eleven AVMA panel determined criteria for judging methods of euthanasia can be applied to the harvest methodologies currently employed on the Pribilofs. The ability to produce death without causing pain requires examination of the mechanisms of pain. An animal's pain perception depends on impulses from pain receptors traversing pain pathways leading to the thalamus and cerebral cortex. For pain to be experienced the cerebral cortex and subcortical structures must be functional. An unconscious animal does not experience pain because the cerebral cortex is rendered nonfunctional by means of concussion.

The time required to produce loss of consciousness can be examined from several areas. Certainly the pod stunning time and individual stun time support an extremely short lived period of awareness of untoward activity. Subjectively these appear to be appropriate measures of this criteria as the seals generally do not seem particularly concerned about remaining in herds so long as temperatures remain below 50 degress farenheit.

The time required to produce death in an unconscious animal is best reflected in this report by stick interval which rarely exceeded 30 seconds and compares favorably with other methods relying upon exsanguination. It should be pointed out that the definition of death is a legal question and is not uniformly agreed upon within the United States. On the basis of brain function as a criterion, the bulk of these animals would be considered dead within the individual stun time.

Reliability and safety for administering personnel in this method appears excellent. Euthanasia did not fail in over 22,000 trials and no injuries were connected with the administration of euthanasia.

The potential for minimizing undesirable psychologic stress is certainly the most controversial point of the 11 suggested by the AVMA panel, if only due to the difficulty of interpreting the concept. As wild animals, any close contact with man must be considered unsettling for fur seals. With current technology, however, it is not possible to eliminate this contact completely. It must then be accepted that the goal should be to minimize the contact. Careful consideration of this factor is given to the harvest. Seals are driven slowly in groups allowing their herding instincts to provide a sense of security. Herds are maintained by one or at most two people which hide and become evident only if the seals begin to move. The herd is held upwind of the stunning activity and as far away as is compatible with avoiding unduly long drives of the individual pods.

The requirement and purpose of the harvest are best served by the most humane and quickest method of euthanasia available. With this in mind the method of concussive stunning has proven most feasible of those methods available for animals destined for human consumption. It should be remembered that in euthanasia of animals intended for human food, agents cannot be used that lead to tissue residues, unless approved by the USDA. Carbon dioxide is the only chemical currently used in euthanasia that does not lead to tissue residues.

The emotional effect upon observers or operators of a euthanasia method is highly dependent upon the nature of the observer. Concussive stunning is not pleasant to watch and has a negative effect on many observers.

The harvest method's economic feasibility is highly dependent upon the marketablity of the products. As one of the least expensive methods available, concussive stunning must be considered a positive advantage to the harvest on this point. It is also compatible with the vast majority of histopathologic examinations with the exception of those of the brain and upper head. since the primary purpose of the harvest is not pathological examination this point becomes minor in the evaluation of the method. Finally since no drugs are used the abuse potential which could ordinarily be considered to be high in such a large operation, is zero.

Considering all eleven points together, the method of concussive stunning followed by thoracotomy and exsanguination, as carried out in the Pribilof fur seal harvest must be judged as appropriate and humane.

Organization and Supervision

The demeanor of the people involved in an operation of this nature is critically important and a contributing factor to not only the efficiency but the humaneness of the harvest. The fur seal harvest is a logistically complex and intricately timed operation. Its success depends very much on the strength and experience of its leaders and organizers. As the independent humane observer I was initially surprised and certainly impressed with the efficiency of the entire operation and the effectiveness of the supervisors. The field foreman, Greg Fratis, was particularly adept at instructing young inexperienced workers in all phases of the operation. He depended upon lead men in each phase of the operation to maintain quality while he examined each facet of the operation in detail, instructing in everything from proper pod cutting to ripping, and going where the most problems seemed to appear. His lead stunner, Anthony Kochutin, maintained a proper professionalism among the stunners and was quick to chastise them if they became the least bit sloppy. Although in the process of killing over 22,000 animals I did witness occasional incidents which were inappropriate, only rarely did I bring up a point which had not been observed by the supervisors and corrected on the spot. In fact they often drew my attention to errors by their corrective actions. Indicative of the strong supervision, the sealing foreman responsible for the entire processing and harvest operation, Vyacheslav Melividov, was present each day to assist in supervising the very difficult to manage drive and to observe the bulk of the harvest. The combined experience of these men made the operation a well run and efficient activity.

RECOMMENDATIONS

As stated above the operation as a whole was extremely efficient, and those recommendations that I could make were implemented immediately to the betterment of the harvest. They are included here only as a matter of form and as a guide for subsequent harvests.

Drivers should be schooled in the art of moving seals. It should be a matter of pride to be able to effectively move seals without use of sticks or flying projectiles. Experienced drivers move seals with little effort by carefully selecting the pathway and watching the seals' behavior. Although every effort was made to have experienced seal drivers work with inexperienced drivers, the relatively confusing period at the start of the drive frequently saw inexperienced drivers teaming up with the first pods and experienced drivers continuing to gather seals. Inexperienced drivers, reacting out of fear in some cases, were the only ones I witnessed throwing objects or using sticks to harass seals.

Herds greater than 1000 seem somewhat unstable and might best

be split. This is dependent upon the percentage of bulls in the herd. Every effort should be made to cull bulls from the herd as early as possible, even in the drive. They greatly affect the effectiveness of pod cutting and stunning later in the operation.

Optimum pod size appears to be 6 to 12 animals. This was maintained essentially all of the time. Enough large pods were processed, however, for me to feel confident in reaffirming the importance of small pods in the stunning operation.

Good hits are critical on the part of stunners, but second and third hits should be used whenever the slightest doubt occurs as to the condition of the animal. This requires extra effort on the part of the stunners but increases safety and reliability. Escaping animals should not be pursued unless injured and requiring euthanasia. The stunners were not as effective on the run and the effect on observers is particularly poor. This occurred no more than 6 times in the 5 weeks, and the loss of 6 animals in the harvest is negligible.

Stickers working on animals prepared for home use should still stick in the standard fashion, opening the chest at least 4 inches.

Visitors and particularly reporters and photographers posed some very real problems in the early weeks of the harvest. They must be very tightly controlled to keep them from obstructing the carefully maintained escape routes for the seals, and to prevent them from harassing the herds. None of these actions were intentional on their part but interfered with the humane operation of the harvest by delaying pod cutters and agitating herded seals. The curiosity value of the operation is such that this popular interest must be expected. Formal chaperones seem to be necessary to keep these people behind the stunners. This was particularly true of photographers who considered themselves to be from "important" magazines.

High temperatures, particularly associated with sun affect the seals very severely. I would recommend that when temperatures exceed 50 degrees the herd be examined. If less than 50 animals remain they should be dispatched with expediency. If a larger number remain, serious consideration should be given to releasing the remainder and ceasing operations. This is particularly recommended if multiple seals in the herd are refusing to move, laying on their backs, siezuring, or star gazing. In this situation, star gazers and siezuring animals should be dispatched and the remainder released.

REFERENCES:

Breazile, J.E.; Kitchell, R.L.: Euthanasia for laboratory animals. Fed Proc 28: 15777-1579. 1969.

Regan, T.: All That Dwell Therin, Essays on Animal Rights and Environmental Ethics. University of California Press, Berkeley, 1982.

Report of the AVMA Panel on Euthanasia. JAVMA 173 (1): 60-72, 1978.

Singer, P.: Animal Liberation. Random House, New York, 1975.

Schweitzer, A.: The Teaching of Reverence for Life. Holt., New York, 1965.

ɔrtions and place on a large
aluminum foil or place each
idual sheet of foil.
fat, lemon juice, salt and

fish portions in foil.
ɔrtion place a tomato slice,
e or green pepper ring and

l.
in the foil and pinch to make

packages on a baking sheet
ɔt oven (450° F.) for 15

ɔ be placed directly on the
loor barbecue allowing the
s. Serves 4.

ıcepan; blend in flour; add
l.
ıtil thick and smooth.
orcestershire sauce, remove

ld in fish flakes.
buttered baking dishes or 1

ed cheese.
crumbs.
out 20 minutes until top is

SEA MAMMALS

Seal

There are five species of seal in the Canadian Arctic, of which the ringed or jar seal and the bearded seal or square-flipper are the most common and have been the most valuable to the Eskimo economy. Seal are marine aquatic mammals living mainly on plankton, bottom organisms and some fish. They have played a vital role in the life of the Eskimo—their skins providing material for clothing, boots and boats; their fat or blubber supplying fuel for light and heating; and the meat providing food for man and his dogs.

During the summer months, seal are hunted in the bays and inlets along the Arctic coast from canoes, whaleboats or Eskimo schooners. The small bobbing head of a ringed seal, about the size of a large grapefruit, presents one of the most difficult targets ever sighted by a hunter.

Seals may also be hunted at their breathing holes on the spring ice. Hunters travel by dog-sled over sea ice that is still solid and safe despite long hours of sunlight and temperatures above freezing. When a seal is spotted, the dog team is stopped a quarter to a half mile away, and the hunter must stalk the seal across the ice to within a shooting range of 50 to 200 yards.

Definite open season dates have not been set for seal because the season depends on ice conditions which may vary from year to year and from one part of the coast to another. The spring seal hunt generally takes place in May and June, and the summer hunt during late July and August.

Skin and dress the seal according to directions from the Eskimo guide. Seal skins can be made into beautiful garments or wall hangings provided they are properly cared for and tanned.

Discard the liver of the bearded seal. Like polar bear, it also has a high concentration of Vitamin A which produces a toxic reaction in the body, and may cause death.

The meat from young seals is excellent but is highly flavoured in its natural state. It should be washed thoroughly and then hung in the fresh air for a few days before cooking. Blanch the meat by placing it in a pot of cold water, bring the water to a boil then remove and drain the meat. Remove all blubber (seal fat) before cooking, and use beef suet or salt pork to enhance the flavour.

Braised Seal

- 2 pounds seal meat
- 1 teaspoon soda
- 1 quart water
- 2 tablespoons butter *or* pork fat
- Flour for dredging
- ½ cup chopped celery
- 1 cup diced carrots
- 4–5potatoes, diced
- 1 lemon, juice and rind
- Salt and pepper to taste

1. Soak seal meat in soda and water solution for ½ hour. Drain, then trim off all the fat.
2. Cut seal meat in small pieces and dredge in flour.
3. Heat butter or pork fat in a heavy pot and brown the pieces of meat.
4. Add the chopped celery, carrots, potatoes, and lemon juice and rind.
5. Add enough water to cover and simmer until tender and flavours are blended. Season to taste. Serves 6.

Seal on a Bun

- 1 cup cooked seal meat, chopped
- 1 cup grated cheddar cheese
- 2 tablespoons chopped sweet pickle
- 2 tablespoons chopped onion
- 2 tablespoons prepared mustard
- 6 hamburger *or* hot dog buns

1. Combine first five ingredients.
2. Spread mixture generously on the buns, then wrap each bun in aluminum foil.
3. Seal the ends and heat in 350° F. oven for 20 minutes.
4. Serve hot with potato chips, carrot sticks and ripe olives. Serves 6.

Casserole of Seal

- 2½ pounds seal meat
- 4 tablespoons flour
- 1 teaspoon salt
- ¼ teaspoon pepper
- 3 tablespoons butter
- ½ cup dried onion flakes
- ¼ teaspoon ground cloves
- ¼ teaspoon thyme
- 1½ cups water
- ½ cup dehydrated carrots *or*
- 1 cup fresh *or* canned
- ½ cup dehydrated turnips *or*
- 1 cup fresh *or* canned
- 2 bouillon cubes
- 3 tablespoons butter
- 3 tablespoons flour

1. Trim all fat from seal meat.
2. Cut meat into 2 inch portions and dredge in flour seasoned with salt and pepper.
3. Melt 3 tablespoons butter in heavy fry pan and brown the chunks of meat.
4. Place in casserole, add onion flakes, ground cloves, thyme and 1½ cups of water.
5. Cover and bake in 300° F. oven for 1½ hours.
6. Parboil the dehydrated carrots and turnips until almost tender.
7. Drain, then add 2 bouillon cubes to the liquid and thicken with 3 tablespoons butter and 3 tablespoons flour crumbled together, stirring until smooth.
8. Add the carrots and turnips to the meat in casserole, then pour in the gravy and blend. Serve hot. Serves 6.

Newfoundland Flippers

- 4 seal flippers
- 1 quart cold water
- 1 teaspoon soda
- 1 tablespoon fat
- 3 tablespoons chopped onions, *or*
- 2 tablespoons onion flakes
- 1 teaspoon salt
- 1 tablespoon flour
- 1 cup cold water
- 1 teaspoon Worcestershire sauce

1. Soak seal flippers in water and soda solution for about ½ hour. This solution makes the fat snow white. Take a sharp knife and remove all traces of fat.
2. Dip the seal flippers lightly in seasoned flour and brown in hot fat in heavy fry pan.
3. Add the chopped onions and brown lightly. Remove from pan and place in roaster.
4. To make gravy, combine 1 tablespoon flour and 1 cup water, pour this paste into frying pan stirring until smooth. Add Worcestershire sauce and season to taste.
5. Pour gravy over meat and onions in roaster. Cover and bake in moderate oven (350° F.) until tender. Serves 4.

Baked Seal Flippers with Vegetables

2 seal flippers
1 teaspoon soda
1 quart cold water
3 slices salted pork fat
2 onions, chopped
2 carrots, cut up
1 turnip, cut up
1 parsnip, cut up
5 potatoes, cut up
1 teaspoon salt
¼ teaspoon pepper

Biscuit Dough

2 cups sifted flour
4 teaspoons baking powder
½ teaspoon salt
½ cup shortening
½ cup water (approx.)

1. Soak seal flippers in soda and water to cover for about ½ hour.
2. Remove the white fat from seal meat with a sharp knife. Wash the meat and cut it into serving portions.
3. Fry the slices of salt pork in a heavy pot, then remove the "scrunchions".
4. Brown the seal flipper pieces in the hot fat, add 1 cup water, reduce heat and let simmer until partly tender.
5. Add the chopped vegetables, except the potatoes, and 1 cup water. Boil about 30 minutes.
6. Add the potatoes, salt and pepper and cook another 15 minutes, adding more water if needed and cook until tender.
7. Place in a casserole and top with biscuit dough as follows:
8. Sift flour, baking powder and salt together.
9. Cut in the shortening with pastry blender or two knives.
10. Add the water and blend to make a stiff dough.
11. Roll out ½ inch thick and place on top of meat and vegetables in casserole.
12. Bake in hot oven 425° F. for 20 minutes or until lightly browned. Serves 6.

Seal and Rice Casserole

3 cups cooked rice
4 tablespoons melted butter
Salt and pepper to taste
2 tablespoons flour
½ teaspoon salt
1 cup milk
1 cup cooked seal meat, chopped
1 tablespoon chopped parsley
1 tablespoon minced onion
Dash of curry powder (optional)
1 egg, slightly beaten
½ teaspoon Worcestershire sauce

1. Grease 1½ quart casserole.
2. Combine cooked rice with 2 tablespoons melted butter, and line the casserole with it. Saving ½ cup for top.
3. Make a medium white sauce by melting 2 tablespoons butter in a saucepan, add the flour and salt and stir till smooth. Gradually add the milk, stirring constantly until sauce is thickened.
4. Add remaining ingredients to the white sauce and fill the rice mould with the mixture.
5. Spread the remaining rice on top of the casserole.
6. Place casserole in pan of water in a 350° F. oven and bake for 40 minutes. Serve with tomato or parsley sauce. Serves 6.

Quick Seal Casserole

- 1 cup cooked seal meat, chopped fine
- 2 cups cooked rice (*or* soft bread crumbs)
- ¾ cup chopped onion
- ¼ cup chopped green pepper
- 2 tablespoons butter
- 1 10 ounce tin cream of tomato soup *or* cream of mushroom *or* celery soup
- ½ cup milk
- 2 cups potato chips, coarsely crushed

1. Add chopped seal meat to rice.
2. Cook onion and green pepper in the butter over low heat until tender.
3. Add to seal and rice and mix lightly.
4. Blend soup and milk.
5. Place half the crushed potato chips in the bottom of a greased 2 quart casserole.
6. Cover with alternate layers of seal mixture and soup, ending with soup on top.
7. Top with remaining potato chips. Bake in a moderately hot oven (375° F.) for approximately 25 minutes. Serves 6.

Note

⅓ cup dehydrated onions and 2 tablespoons pepper flakes may be used instead of fresh. Pour boiling water over them, let stand for 15 minutes, then drain and use as above.

White Whale

(Beluga)

As early as the 17th Century, the white whale of Canada's Arctic waters attracted the attention of European whalers, and for many decades it was hunted commercially for its valuable oil. While there are now very few commercial whaling operations based on the beluga, it is still hunted by residents of the far north, including those on the shores and islands of Hudson and Baffin Bays, as a source of food and fuel.

The beluga averages ten feet in length and 700 pounds in weight, but it may grow to a length of sixteen feet and weigh as much as three to four thousand pounds. Its colour ranges from the slate blue of the young, through the grey of the half grown animal, to the pure white colouring of the fully grown whale. They feed mainly on squid, shrimp, capelin and other fish.

Special arrangements for hunting the white whale must be made well in advance of the open season, which varies from mid-July to late August, depending on weather conditions. The hunting is usually done from forty foot boats known as "Peterheads". With an Eskimo guide at the controls, the boats cruise in a known feeding area until a school of whales is sighted. The hunter must then have two weapons, an Eskimo-style harpoon to prevent the whale from sinking, and a heavy calibre rifle for the kill.

Whale meat is boneless and free from gristle. It is very fine grained, similar in appearance and texture to liver due to its high blood content. If the blood is removed by soaking the meat in salt water, the appearance and texture of the meat becomes similar to fine grained beef, and it may be prepared by any of the methods recommended for tender cuts.

Muktuk is the outer covering of the whale. It includes the white skin, approximately 1 to 2 inches thick, plus a thin pinkish layer immediately underneath. Most Northerners prefer to eat their muktuk raw, as it has a tender-crisp texture and tastes like fresh coconut. (If the whale has been caught in swiftly running water, and the muktuk is eaten soon after the kill, there is little danger from bacterial poisoning). Between the muktuk and the whale meat is a four- to five-inch layer of fat or blubber which is valued for fuel, as it has a low melting point (180° F.) and is easily rendered.

Whale Bobotee

- 4 cups cooked whale meat, chopped
- 1 large onion, chopped fine
- 1½ teaspoons salt
- 1 teaspoon Worcestershire sauce
- ½ teaspoon savory
- ¼ teaspoon pepper
- 1 cup tomato juice
- 4 cups mashed potatoes

1. Combine the coarsely chopped whale meat and the finely chopped onion.
2. Add the Worcestershire sauce, salt, pepper, savory and tomato juice.
3. Place in a buttered casserole and cover with the mashed potatoes.
4. Bake in a moderate oven (375° F.) for about 30 minutes or until the potatoes are lightly browned. Serves 4.

Stuffed Whale Roast

- 5 pounds whalemeat
- 1 gallon water
- 2 tablespoons salt
- 1 tablespoon soda
- 4 tablespoons butter
- 1 teaspoon celery salt
- 1 large onion, chopped
- 4 cups cooked rice
- 1 teaspoon salt
- ¼ teaspoon pepper
- 6 slices salt pork *or* thick bacon

1. Slice whale meat into 6 slices (approximately 1 inch thick).
2. Soak the meat for an hour in a brine made from one gallon of cold water and 2 tablespoons salt, to remove the blood. Drain the meat.
3. Place the meat in a pot, sprinkle 1 tablespoon soda over it then cover it with fresh water.
4. Bring the water slowly to a boil and let the meat simmer for 20 minutes, skimming the surface of the liquid as necessary. Remove the meat, spread it out and pat dry.
5. While the meat is simmering, melt the butter in a heavy fry pan, add the celery salt, onion, cooked rice, salt and pepper and stir until lightly browned.
6. Divide the rice mixture into 6 equal portions and spread on the slices of meat, then roll and tie each slice.
7. Place the stuffed rolls in a roaster, putting a piece of salt pork or bacon on top of each one. Roast in a 375° F. oven until tender, (about 1 hour), basting occasionally. Serves 6 generously.

Fillet of Whale with Mushroom Sauce

- 2 pounds whale meat
- 1 gallon water
- 2 tablespoons salt
- 1 tablespoon soda
- 3 tablespoons butter *or* margarine
- ½ teaspoon salt
- ¼ teaspoon pepper

1. Slice the whale meat into 4 steaks.
2. Soak the meat for an hour in a brine made from one gallon of cold water and 2 tablespoons salt, to remove the blood. Drain the meat.
3. Place the meat in a pot, sprinkle 1 tablespoon soda over it then cover it with fresh water.
4. Bring the water slowly to a boil and let the meat simmer for 20 minutes, skimming the surface of the liquid as necessary. Remove the meat, spread it out and pat dry.
5. Melt the butter in a heavy fry pan, sprinkle the meat with salt and pepper then place it in the melted butter in the fry pan over lowest heat and let stand for 1 hour, turning the steaks over once during this time.
6. Pour off the butter into a saucepan and use it for making the sauce.
7. Brown the meat on both sides in fry pan over high heat. Serve hot with mushroom sauce.

Mushroom Sauce

- 1 tablespoon flour
- 1 cup water
- ½ pound mushrooms
- 2 tablespoons lemon juice
- Salt and pepper

1. Add flour to melted butter poured from meat.
2. Stir until well blended, then add water and sliced mushrooms and cook until mushrooms are tender.
3. Add the lemon juice, season to taste, and pour the sauce over the meat. Serves 4.