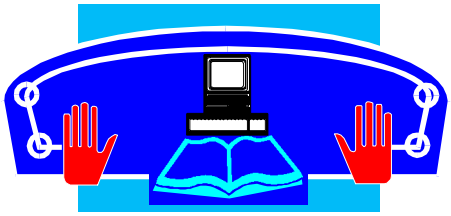

Trap Manufacturing Feasibility Study;phase 1 Report: Market Potential
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INTRODUCTION

We are pleased to present the Phase I report and study update. We are awaiting formal documentation from a variety of sources on many of the Phase I components of this study. However, in view of the passing time, it is necessary to submit this report even without formal supporting documentation.

The report addresses the following issues as derived from our terms of reference:

(a) profile of the current status and prospects of the trap manufacturing industry including the principal competitors in the industry, how they are performing, growth in sales, profits end current market share, price of traps, service, warranties, distribution and other features;

(b) description of the C-120 Magnum trap for pine marten and mink end its application;

(c) assessment of the research and development work that must be completed before the C-120 traps are placed on the market, the potential effects of a patent on the trap and of regulatory changes to legislate the use of approved traps;

(d) identification of the potential customers, their location, and their acceptability of the traps;

(e) identification of market trends and growth potential for me C-120 and other approved traps;

(9 estimate of the sales and market share (units and dollars) of the traps and compare with an estimate of sales and market share of competitors;

(g) discussion of a strategy for the sale and distribution of traps;

(h) description of options for manufacture of the traps including requirements for plant facilities and equipment, manufacturing processes and labour;

(I) describe any service or warranty policies that will be given with the traps; and

(j) describe quality, production and inventory production and inventory control procedures.

Note that a discussion item (j) above is premature, since many other issues must be resolved before operational planning for production management becomes relevant Hence, it is not addressed in this report.

STATUS OF THE WILDLIFE TRAP MANUFACTURING INDUSTRY

Aggregate Demand

The North American trap manufacturing industry is small by any standards. Total manufacturers' sates of traps are estimated to have averaged $8.5 million annually for each of the past three years. Sales in Canada averaged approximately 25% of the total ($2.1 million) while sales to the U.S. market are estimated to have accounted for 75%. The U.S. and Canadian markets differ in that me trap models which are big sellers in Canada are not the same models that account for the largest volume In the U.S.

Competition

The trap manufacturing industry is dominated by the Woodstream Corporation, which is owned by the EKCO Group, Inc. of Nashua, New Hampshire. Woodstream is estimated to account for up to 85% of the North American market for traps. Woodstream traps are manufactured in Lititz, Pennsylvania Traps manufactured for sale in Canada are assembled in Canada. Woodstream traps are distributed in 'the U.S. by the EKCO Group end in Canada by Woodstream Canada, which is based in Niagara Falls, Ontario. - -

Woodstream's major competitor is Montgomery, which is based in western Pennsylvania. In addition to Woodstream, other small, regional manufacturers, such as Sass Manufacturers and Hunter Wire Steel Co., market their products through auction houses in Canada.

There has been some competition from manufacturers located off-shore; however the price competitiveness of traps manufactured off-shore is affected by currency exchange rates, which are eroding the competitive advantages of Asian manufacturer. The specialized nature of wildlife trap marketing is a significant deterrent to new competitors.

Market Trends and Forecasts

There is considerable variability in the demand for traps from year to year. Estimated annual total demand in the North American market ranged from $3.7 million to $10.5 million over the four yearn from 1986 to 1989.

Sales volumes fluctuate with fur prices. Fur prices are affected by the following factors:

- the supply of mink; '
- currency exchange rates;
- fashion trends; and
- the supply of wild fur.

Woodstream's sales of traps peaked In the years 1980 and 1981. White sales volumes have fluctuated since that time, there has been *a* general decline in overall sales volume during the past eight years; and 1989 promises to be the worst year in recent memory, primarily due to low fur prices.

"Flat" furs are currently in fashion, whereas long haired furs are out of fashion. Market prices for flat fur are affected by the supply of mink, since mink is a substitute for other flat fur species. There is currently an over supply of mink; hence the depressed prices for flat fur.

Volatility in the price of fur and, hence, sales of traps, is expected to continue in an unpredictable fashion.

Pricing and Warranties

The Victor and Conibear lines of Woodstream manufactured traps are premium traps and are priced as such, because of their quality. Very few of these traps prove defective. Defective traps are returned to the dealer, and, then, to the factory. Woodstream estimates that its warranty and customer service costs are not material. There is little price competition for premium traps, allowing for an estimated manufacturing contribution margin of up to 48%.

In addition to the Victor and Conibear lines, Woodstream also carries the Northwoods line, lower quality traps that were originally imported from the Far East, and which are now manufactured in Lititz. Northwoods traps are priced competitively with those of other manufacturers in a very price-competitive market. No warranty is provided with the Northwood traps, or other traps of lesser quality.

[t is assumed that the manufacturer of the C-120 Magnum trap would be wise to pursue a warrantee and service policy appropriate for high quality traps: ie., replacement of defective traps at no cost to the customer.

Distribution Channels

Marketing of traps is relatively specialized, Woodstream employs a dedicated sales force rather than using manufacturers' agents. In the past, most sales were to hardware wholesalers and to farm supply chains for the U.S. market; however, in recent years, there has been a trend away from sales to hardware wholesalers and a growing trend toward sales to fur collectors and auction houses. Currently, approximately *70%* of Woodstream's sales are to the fur industry. Woodstream maintains between 12 and 15 accounts in Canada, and approximately 150 accounts in the United States. Woodstream's major amounts in Canada are the Hudson's Bay and North Bay Auctions as well as *a* major hardware wholesaler.

The trend toward an increasing proportion of sales to the fur industry has had a significant impact on operating practices and financing, Production used to occur on a year round basis; however, now most manufacturing occurs during the second and third quarters of the calendar year, with most sates occurring in the third and fourth quarters. Terms of sale now tend to be less satisfactory to the manufacturer. Hardware chains carry traps as only a small proportion of their inventory and, therefore, their cash flow and ability to the pay the manufacturer is relatively insensitive to fur prices. Fur dealers such as auction houses, on the other hand, are profoundly affected by fur prices. Since most of their working capital Is tied-up in unsold inventory of furs from the 1987 trapping season, they have little cash with which to buy traps from manufacturers. Under-capitalization of the fur marketing industry has adverse implications for the trap manufacturing industry, both In terms of sales volumes and requirements for working capital.

Manufacturers are under pressure to offer discounts for the eariy purchase of traps by the fur dealers; and to finance the trap inventory of the fur dealers by deferring demand for payment until late in the fourth quarter of the year. This increases the amount of working capital required by the manufacturer.

Mark-ups differ, depending upon the marketing intermediary. Wholesalers require a margin of approximately 25% on sales, and retailers a margin of *50%.* in contrast, fur dealers take a margin of only *5%* - 20%, thereby *offering* lower prices to trappers and encouraging trappers to sail to these dealers. These relatively iow margins reduce the profitability of trap sales for fur dealers and make them more inclined to ask the manufacturer to carry the cost of inventory for them.

Woodstream Corporation spends very little money *on* advertising, as advertising is not deemed to be a cost effective way to reach the market for wildlife traps. There aiso appears to be little need for extensive promotional literature. The primary marketing expenditures are the salaries and expenses of the specialized sales staff.

Profitability

The major concerns of the trap manufacturing industry are:

1. Fluctuations in sales volumes, with a downward trend from $10 to $3 million in annual sales to the Northern American market;

2 *The* animal *rights lobby* much of which is committed to eliminating me wildlife trapping industry; and

3.' *The* emergence of the under-capitalized fur industry as the major marketing intermediary, which imposes downward pressure on sales and margins, while increasing manufacturers' requirements for working capital.

A trap manufacturing operation must have sufficient financial resources to sustain operating losses for several years in anticipation of increased fur prices and increased sales of traps. In practical terms, this means that the trap manufacturing operation should be integrated as part of a much larger and more diversified business that can sustain the losses expected to be incurred during the downward portion of the business cycle for the manufacture of traps.

This has been Woodstream's strategy. While the company claims that the ratio of before-tax profits to sales has averaged 15% per annum over the long haul (this is not an indicator of profit), other Woodstream operations have sustained the company. While the trap manufacturing business used to be 20% to 25% of Woodstream's annual business volume, the trap manufacturing business now represents only Approximately 10% of the company's total business volume.

MARKET CHARACTERISTICS

The markets for wildlife traps differ between Cartada and the U.S. and, hence, should be analyzed separately.

Canadian Market

End users of wildlife traps in Canada consist mostly of professional trappers. We have utilized the Fur Institute of Canada and Indigenous Survival International estimates of 100,000 trappers in Canada. The composition of these trappers has been verified by interviewing relevant fur management contacts at the provincial level in each of the major jurisdictions in Canada. This interview program not only verified the 100,000 trapper number, but provided us with more detailed appreciation of the number of trappers, both Indian and non-Indian, who are trapping on a commercial scale in each of the provinces. Estimates of the number of trappers in eaoh jurisdiction, confirmed through telephone contacts with fur management officials in most jurisdictions are:

Location	Registered and Resident Trappers	Percent Aboriginal
British Columbia	6,100	49
Alberta	8,000	48
Saskatchewan	17,000	53
Manitoba	20,000	15
Ontario	15,600	22
Quebec	20,000	15
New Brunswick	3,600	5
Newfoundland	2,300	7
Northwest Territories	3,020	99
Nova Scotia	5,000	1
Prince Edward Island	600>	1
Yukon	800	69

Source: *"Wild Fur Bearer* Management and *Conservation in North America", Ontario Ministry of Natural Resources, 1984.*

According to our contacts with manufacturers, the most popular traps among the Canadian market are:

Model	Species
#120 -2 Conibear	Marten, mink, muskrat, skunk, weasel
#3 Soft-Catch (Victor)	Beaver, bobcat, coyote, lynx
#3 Victor Coil Spring	Beaver, bobcat, coyote, lynx
#280 -2 Conibear	Beaver, bobcat, coyote, lynx
#1.5 soft-catch (victor)	Marten, mink, muskrat, skunk, weasel

The total Canadian market averages about $2.1 million in annual manufacture' sales.

United S&&S *Market*

End-users of traps sold in the United States tend to be farmers and part-time trappers, based mostly in the states east of the Mississippi River (more fur is harvested In Louisiana than in any other state).

The most popular traps in the U.S. market are:

Model	Species
Victor Long Spring (various sizes)	Various
#1 VG Stop-Loss	Mink, muskrat
#110-2 Conibear	Mink, muskrat, weasel
#220-2 Conibear	Badger, beaver, fisher, marten, nutria, opossum
#330-2 Conibear	Beaver, bobcat, lynx, otter
#1.5, #1.75, #2 Coil Spring	various

Manufacturers' sales of traps in the U.S. average $6.1 million annually.

International **Markets**

Woodstream has made little effort over the yearn to penetrate markets beyond Canada and the U.S., primarily because of the demographics *of the wild* fur industry. Most of the world's harvest of wild fur is taken in the U.S.A., Canada and the Soviet Union, with relatively little activity scattered across Northern Europe. The easing of cold war tensions have only recently made the Soviet Union accessible as a market; hence, Woodstream has concentrated exclusively on the U.S. and Canadian markets.

PROSPECTS FOR THE TRAP MANUFACTURING INDUSTRY

The linkages between the trap manufacturing industry and the fur garment industry are worth exploring because growth in the fur garment industry will affect the demand for wild fur. The long-term prospects for the fur garment industry are uncertain, dependant as they are on fashion and cultural trends. The activities of vocal animal rights lobbies, which are particularly active in Great Britain and the Netherlands, may indicate that fur products may be in the process of becoming distasteful to European consumers; however, them is no evidence that the fur garment industry is on the dedine. Growth in the fur garment industry is being stimulated by the emergence of new markets in the Pacific Rim and by a growing market in Europe and North America for iow priced, mass produced fur coats.

Growth of the trap manufacturing industry is obviously constrained by the extent to which trappers will purchase new traps in the future. The trapping industry is stagnant and may even be shrinking. There is ample evidence that the wild fur resource is diminishing, primarily due to the adverse impact of industrial development upon wildlife habitat Trapping is dearly not a growth industry. The fur garment industry recognizes the ["mutations to the wild fur resource, and expansion of the fur garment industry is not predicated the availability of more wild fur. The example of the Jindo Corporation of Korea may be an indicator of the growing trends in the fur garment industry. Jindo aims to capture 10% of the world market for mink coats, which it mass produces at its modem, highly automated plant. To ensure a source of supply of suitable fur, Jindo is integrating vertically into the fur ranching business.

While destruction of wildlife habitat is the most serious long-term threat to the trapping industry, and hence the trap manufacturing industry, the animal rights lobby Is a much more immediate threat The animal rights lobby has created considerable pressure for the adoption and enforcement of humane trapping standards and have made it clear that their ultimate objective is to eliminate the wild fur tapping industry. While there is much concern about the impact of this lobby on the demand for Canadian wiid fur, it is worth noting that the primary impact to date has been on the Northern European market. The impact of this lobby on the North American market has not been significant to date; and it

has been suggested that the emerging markets in the Pacific Rim are culturally immune-to appeals based on animal rights.

Nevertheless, the fur Industry is taking the animal rights lobby seriously, particularly the recent commitment of the EEC to impose an import ban, by 1996, on some fur species from counties that have not adopted humane trapping standards.

If humane trapping standards are formally adopted by governments in Canada and the United States, and if such governments subsidize trap replacement Programs, *there* could be a short-term surge in North American demand for animal traps. The prospects for such developments are not sufficiently certain to provide a basis for a decision to enter the industry and a short-term trap replacement program would not be expected to affect the long-term prospects for the industry.

THE G-120 MAGNUM TRAP

The consultants have conducted interviews with Dr. Gilbert Proulx, Traps Research Director, at the Alberta Environment Centre (Vegreville) Where the C-120 Magnum trap has been developed, as wefl as with Neil Jotham of the Fu nstitute of Canada. No technical reports or current specifications have been made" available for our review and analysis. Nor was a prototype available for inspection. Hence, this report is based on interview data and press reports.

The C-120 Magnum trap has been designed to conform to humane trap specification being developed by the Fur Institute of Canada (see Appendix A).

Official technical reports are due to be published shortly and we will append these technical reports to our final report once they have been received. However, it is our understanding that the Magnum trap is under review by the Canadian Standards Association as the prototype for development of a CSA approval specification which would apply to all humane traps. If so, then the C-120 Magnum will become the first such trap to receive CSA approval which could provide a competitive advantage to a potential manufacturer.

The C-120 Magnum trap underwent significant field testing this past trapping season through the auspices of both me Alberta Environment Centre (Vegreville) and the Fur Institute of Canada through Environment Canada and Canadian Wildlife Service. Both sets of results have been encouraging with reports of more efficient and effective kills, ease of handling and general user satisfaction with the performance of the traps in killing the target species: mink and marten.

There is, however, some concern among trappers that the traps, with their strong springs, may pose a potential danger to the trapper if mishandled.

Patent Search

Two separate legal opinions have been sought as to the patentability of the C-120 Magnum trap. Initially the law firm of Ridout and Maybee, Patent Lawyers, in Toronto, rendered an opinion that the C-120 Magnum trap is not patentable in that any innovations to the original Conibear (patents expired) traps are not significant enough to allow a new patent; and the innovation is mainly in the kill bars applied to the Magnum which were disclosed in 1981.

A second opinion was obtained from the Canadian Patent and Development Corporation in Ottawa. Their opinion was the same as the Ridout and Maybee opinion for many of the same reasons.

Both of these legal opinion documents have been requested through the Fur Institute of Canada, but have not yet been received.

This inability to patent initially led the study team to seriously doubt the feasibility or advisability of any Indian start-up manufacturing facility trying to compete directly with Woodstream to manufacture what is essentially a Woodstream product The lack of patent protection, of course means that Woodstream could enter the market at *any time with* only a fraction of the capital costs that a new company would incur. While the estimated capital wets to Woodstream to retool its plant to produce the C-120 Magnum trap is $100,000, the capital cost to a potential competitor would be much greater. If an Indian owned company were to begin producing the trap, capital investment would be required not only for plant and equipment but also to set up a distribution network to compete with the well established network of Woodstream. Hence, working capital requirements would be substantial, in addition to me cost of the plant and equipment.

It is highly unlikely that an Indian venture would, or could, be given the exclusive right to manufacture the C-120 Magnum trap under some sort of registered trademark agreement Even if such an arrangement could be established, companies like Woodstream could at any time manufacture the same product under *their* own trademark (i.e. CONIBEAR and others) which is already in a market dominant position as regards to brand recognition and market acceptance.

POTENTIAL IMPACT OF THE LEGAL AND REGULATORY ENVIRONMENT ON DEMAND FOR TRAPS

A distinction must be made between the anti-fur lobby and the anti-kg-hold trap lobby, as well as the differential impact of lobbies on markets in Canada arid the U.S.

The anti-fur lobby is, Potentiality, a real problem for the fur industry. For example, the activities of the Green Party in Germany, which includes opposition to fur garment production and sales in its platform, has done serious damage to fur garment sales in

Germany. Tine fur garment industry is now taking the anti-fur lobby seriously. Major fur garment manufacturers are contributing a percentage of sales to a central, co-ordinated counter-lobby.

The anti-leg-hold trap lobby, in contrast, is not a threat to the fur garment industry as such, but does pose a threat to the trapping and trap manufacturing industries. Response to the anti-leg-hold trap lobby in Canada has taken me direction of developing "humane, quick kill" traps; however, the direction in the United States is toward development of so-called "soft-catch" traps. Hence, the two markets must be examined separately.

Canada

The development of so-called "humane" traps has been a major issue in Canada. Much time and energy has been devoted to the development of species-specific traps, such as the C-120 Magnum; and there is speculation about possible legislation to ban kg-hold traps and enforce their replacement with the so-called humane traps.

There would appear to be two major drawbacks to these new "humane" traps from the point of view of the consumer. Firstly, the new, experimental traps, are so strong that they pose a danger to the trapper. Secondly, they are more expensive than conventional traps, and trappers cannot be expected to replace their current inventory of traps voluntarily, especially since there is no financial advantage to them in doing so because there is no price premium paid for wild fur harvested in humane traps. Consequently, it is anticipated that no market for humane traps will develop unless use of such traps is enforced through legislation and government agencies subsidize a trap replacement program, Even then, there is uncertainty as to whether or not the volumes of potential humane trap sales potentially available within the Canadian market are sufficient to justify investment by a manufacturer to retool to produce such traps.

We have conducted a telephone survey of major Canadian jurisdictions to assess the current status of trap replacement programs and to quantify the potential Canadian market for the C-120 Magnum trap or some equivalent. The results are summarized in the following table:

Jurisdiction	Intent Re: Trap Replacement	Timeframe for Implementation	Government funds to be Committed	Potential Retail Purchase of C-120 Magnum or Equivalent
British Columbia	No Response		-	-
Alberta	Yes "	Late 1990	$500,000	?
Saskatchewan	uncertain -		-	-
Manitoba	No Response -		-	-
Ontario	No	-	-	-
Quebec	Probable	Uncertain	>$100,000	?
N.W.T.	Yes	Immediately	-	$600,000
Yukon	Yes	Details not yet available	-	-

This information will be updated in our final report as additional data is received from governments currently considering trap replacement programs. Preliminary estimates of the potential demand for C-120 Magnum traps have been developed by utilizing *available* harvest data for mink and pine marten in each province and estimating the number of trappers Of these species in each province,

The demand for humane traps such as the C-120 Magnum will be influenced by a number of variables that are not in the control of any potential manufacturer of traps. These variables include:

- International pressure (against inhumane trapping) is building for the adoption of bans against products from countries not adopting internationally agreed standards. A deadline of January 1, *1996* has recently been set for fur exporting countries to agree to and comply with International Standards.

- The potential response to this international pressure against inhumane trapping, and the potential impact upon sales of humane traps is unclear. it is expected that trappers will replace their existing traps with new traps which meet humane trapping standards oniy if it is to their economic advantage to do so. This means that the market will have to differentiate between pelts caught in humane traps and pelts taken through inhumane traps. It is not yet clear how this will be accomplished. No arrangements for labelling of pelts caught in humane traps have yet been established. if the use of humane traps is legislated, it is not dear how the legislation will be enforced. Also, it is not dear that the passage of legislation and the adoption of humane trapping practices will reduce the pressure from animal rights activists.

- There is a high degree of variability and unpredictability of future federal and provincial polities regarding exchange or subsidy programs to encourage trappers to convert to any humane trap, iet alone the C-120 Magnum.

- The continuing debate amongst trappers and fur industry leaders concerning the pros and cons of humane traps vs leghold traps on land as opposed to water, tends to cloud the issue in the minds of many trappers and provincial fur management officials; thereby affecting the pace of implementation of policy and decisions by trappers to convert to new, humane equipment.

Nevertheless, we must develop a potential demand scenario in order to assess the viability of some type of manufacturing opportunity for Indian people.

Assuming that there are approximately 26,000 trappers in Canada who could be expected to acquire significant numbers of the new trap, and assuming that each trapper acquires an average of 50 traps @seal on projections of the GNWT trap replacement program, total Canadian demand for the trap would be 1,300,000 units to be purchased over the next five yearn. If professional trappers each acquire an average of 150 traps, potential sales could total 3,900,000 million units.

At $8.00 per unit (manufacturing cost + 20%) this represents a potential market of $10.4 to $31 million. Clearly the market will not be supplied in one year, and *only* represents one line of Magnum trap. Work is already underway for Magnum type traps for other species.

It should be noted that the total estimated Canadian market demand Of between 1,300,000 and 4,000,000 units represents the total Canadian market for replacement traps to harvest mink and marten. Sales of me C-120 Magnum trap would depend upon the percent of market share captured by the manufacturer. Woodstream is currently in a prominent market position with the market share estimated at 80 percent. If Woodstream were to manufacture the C-120 Magnum trap, it could be expected to maintain this dominant position, thereby generating sales of between 1 million and 3 million units, realizing revenues to the manufacturer of between $6.7 million and $20 million.

These projections demonstrate the dramatic effect that *a trap* replacement program could have upon the Canadian market for traps. Even if sales of the trap were a total of only 1.3 million units over five years, the annual increase of revenue to manufacturers of $2.08 million (1.3 million units ÷ 5 years x $6.00) would be almost double the size of the current Canadian market for all traps.

The development of internationally accepted humane trapping standards is a key variable in , influencing government policy with respect to trap replacement and, hence, the future sales of traps. It is assumed that the C-120 Magnum design is currently in the best *position* to penetrate any replacement market which will develop because Canada Is a world leader in developing humane trapping standards; and the C-120 Magnum design has undergone thorough testing against F.I.C. standards, unlike potential competitors developed by other inventors and trappers.

U.S.A.

The market for humane, quick kill traps, would be expected to be primarily a Canadian market since the impact of potential government regulation in the U.S. upon the demand for traps is expected to be much different. The major public issue in the U.S. which would affect the future demand for traps is not alleged cruelty to wildlife through the use of conventional leg-hold traps; rather pressure arises because of potential conflict between trappers and hunters/pet owners. The fur resource within the United States is located in the heavily populated eastern states, where hunting with dogs is a major recreational pursuit There is considerable controversy within the U.S. because hunting dogs and pets are often caught in leg-hold traps set by trappers. The hunting lobby, which is muoh stronger politically than the trapping lobby, has been putting pressure upon state legislatures to ban or regulate the use of leg-hold traps. The state of New Jersey has banned the use of leg-hold traps for this reason. Hearings regarding the future use of leg-hold traps are currently underway in the State of Massachusetts and are expected to begin shortly in New York State.

This pressure is expected to create a growing market for the so-called "soft-catch" traps. So-catch traps are leg-hold traps which have rubber pads attached to them. Such traps will hold an animal securely, but will not do much physical damage. One state has already recognized the difference between a soft-catch trap and steel-jawed leg-hold traps; and, hence, potential growth in sales in the U.S. market is expected to be for soft-catch traps. The stats of Louisiana is encouraging the use of soft-catch traps by introducing a trapping season during which trapping activity is restricted to soft-catch traps. This provides an incentive for trappers to switch from leg-holds to soft-catch traps.

The so-called humane "quick kill" traps are not expected to become major sellers in the U.S. market There is pressure upon governments to permit only the use of traps which will hold animals without doing them any harm, rather than traps which have the potential to kill hunting dogs and other pets which stray into the traps.

DEVELOPMENTAL WORK REQUIRED PRIOR TO MANUFACTURE OF C-120 MAGNUM TRAP

If we accept the validity of verbal reports about the technical studies done to date on the C-120 Magnum trap. We conclude that no additional product development work is required prior to manufacture of the C-120 Magnum. A manufacturer with access to the technical specifications of the C-120 could have dies produced to stamp out the required parts and begin production.

It is noteworthy that Woodstream has elected not to manufacture the C-120 Magnum. One factor contributing to this decision is the fact that the owner of Woodstream has chosen to sell the wildlife trap manufacturing operation; however, another major contributing factor is uncertainty about the" potential market. No U.S. sates could be anticipated and market success would be entirely dependent upon future policy decisions to be made by Canadian governments to impose regulatory controls upon the types of traps in use, adopt humane trapping standards to which the G120 Magnum conforms and subsidize the purchase of the new traps by Canadian trappers. Such decisions would transform the Canadian market for wildlife traps, virtually doubling demand for new traps.

Woodstream is not prepared to gamble that these events will materialize in the near future by beginning manufacture of the C-120 Magnum; however the potential purchaser of Woodstream could bring a C-120 Magnum product to market within several months should a market for the product materialize.

CONCLUSIONS REGARDING POTENTIAL INDIAN INVESTMENT IN THE TRAP MANUFACTURING INDUSTRY

Any potential investor in the trap manufacturing industry has to consider prospects for a financial return on that investment. On the basis of information gathered to date, we conclude that the proven market for the C-120 Magnum trap is of insufficient size to warrant investment in a new business venture committed solely to the manufacture of the C-120 Magnum at this time. If and when a market of significant size materializes, the eventual purchasers of Woodstream will be the best position to bring a product to market to profit from the opportunity.

Hence, we recommend that a potential Indian-owned business consider, instead, entry into the trap manufacturing business on a broader basis than commitment to a single product the C-120 Magnum. To pursue a start-up production venture for C-12(I Magnum traps without the benefit of patent protection would be futile unless federal and provincial officials would provide replacement subsidies or incentive programs which specified that only C-120 Magnum traps acquired from the proposed Indian venture were eligible for funding. This scenario is extremely unlikely,

We recommend that a potential Indian entrant to the trap manufacturing industry be prepared to confront the current economic realities of the market and develop a business strategy that does not depend for its success upon a hypothetical transformation of the industry through the sudden and widespread implementation of government-subsidized trap-replacement programs.

We suggest that a successful entrant to the market will have to meet the following criteria:

- Established history in the metal fabricating industry;
- Size and/or financial strength sufficient to accept the risks inherent in the trap manufacturing business and fluctuations in cash flow and profit/loss levels due to the volatile nature of the trap manufacturing industry; and
- Location in Eastern Canada and/or Eastern United States, close to transportation corridors and sources of available labour and support services.

One possibility would be to establish a new trap manufacturing business, in competition with Woodstream. While there is no longer any effective patent protection for most Woodstream products, a new entrant into the industry would face considerable expense to tool up a plant to manufacture a full product line, and to establish an effective distribution network Because the trap manufacturing industry is mature and there are no short-term prospects for a considerable growth in demand, a new entrant would be faced with the challenge of attracting market share away from Woodstream. Given the small size of the total market the prospects for financial success are not good.

The other obvious alternative would be to purchase the trap manufacturing division of Woodstream, which the ECKO Group is prepared to sell. While financial information provided by Woodstream indicates that its trap manufacturing operations have been profitable, a prospective buyer needs to forecast the profitability of the operation under new ownership. Critical issues in this profitability analysis indude:

- the need to assure future sales volumes by maintaining an effective distribution network, and to factor in the annual variability in sales volumes;
- forecast manufacturing costs for a Canadian operation, including capital costs for goodwill, plant, equipment and raw material as V/en as labour costs (the productivity of Canadian labour to be hired and trained to operate a new plant is an issue);
- the need to develop at a distribution system that would maintain adequate profit margins for the manufacturer.

We have reached a decision point in this study. Since it appears that any Indian owned venture would not be able to obtain either patents, trademarks *or* exclusive rights of any kind, including any sort of "preferred supplier' status under existing or proposed trap replacement or subsidy plans; and given that the Woodstream trap manufacturing operations are available (on the market) to be acquired; we have been instructed to utilize the balance Of this projects budget to examine the feasibility of an Indian venture acquiring the Woodstream operations.

The EKCO Group has acquired the Woodstream Corporation based in Lancaster, Pennsylvania. Part of their plan is to sell or disband various Woodstream Corporation operations and consolidate manufacturing into other plants internationally, Current Canadian operations will revert to distribution points. We understand the assets of the wildlife trap manufacturing operation is available for safe. We have visited the Woodstream plant and undertaken extensive interviews with WoodsRream management

EKCO'S DIVESTITURE STRATEGY

The Ekco Group is a major distributor of kitchenware. The largest group of purchasers of Ekco products are adult females. The involvement of Ekco in me manufacture of wildlife traps makes Ekco potentially vulnerable to adverse publicity generated by anti-leg-hold trap activists. Since it is assumed that adult females are not particularly enthusiastic about the use of leg-hold traps which may impose suffering upo n wildlife, a lobby group could impose serious damage upon Ekco by organizing a boycott "of Ekco products because Ekco is involved in the manufacture of wildlife traps. Therefore, Ekco has decided to divest the wildlife trap manufacturing business; however, Ekco W-II continue to use the name Woodstream and will continue to manufacture and market Victor brand traps for pest control.

Ekco is committed to selling the wildlife trap manufacturing assets as soon as possible. Staff in the Lititz plant have been notified that the wildlife trap manufacturing operation will close once a buyer is found and Ekco is anxious to dose a deal as soon as possible to avoid encountering an attrition problem among staff in anticipation of a sale.

As an interim strategy, pending a sale, Woodstream's trap product lines are being shortened to reduce the requirement to maintain inventory; and research and development activities with respect to wildlife traps have virtually ceased.

The Ekco Group is committed to terminating its association with me manufacture of wildlife traps, as far as its U.S. market is concerned, and would, therefore, play no role in the future marketing of wildlife traps in the United States.

In Canada, however, the Ekco Group is prepared to continue to sell wildlife traps on behalf of the new owners. While Ekco's Canadian staff are prepared to represent the product and to book orders, Ekco will not be involved in promoting the sale of WoodStream wildlife traps in Canada. The Ekco Group seeks a 12% commission on Canadian sates for several years. This is really a royalty to be regarded as part of the purchase price of the Woodstream wildlife trap manufacturing assets. The Ekco Group would be prepared to ' accept an additional cash payment of $750,000 at the front end, in lieu of a distribution agreement The distribution agreement would, however, make part of the price paid by the purchaser variable and tied to future safes of traps.

The Ekco Group is determined to sell all of the wildlife trap manufacturing assets to a single buyer. The buyer could then decide whether to not to liquidate some of the assets.

Production CONSIDERATIONS

Plant Size and Location

A Canadian based trap manufacturing operation would require a plant of 30,000 to 40,000 square feet in size. Technical experts would have to be engaged to establish an appropriate plant layout.

[n addition to the operation of the plant itself, additional support services are required For example, a machine shop must be available, if not within the operation itself, at least near by. Even at low production volumes, several tool and die people are required to support the operation at any given time.

The need for skilled labour, support services and access to transportation corridors for raw materials, supply and physical distribution effectively preclude the possibility of establishing an economically viable plant at a remote location. Consideration of factors such as availability of skilled labour, access to raw materials and physical proximity to markets

suggest that the Northeastern U.S. would be the most economically advantageous site for a plant. Woodstream suggests that the State of Ohio would be the optimum location, relative to markets. Advantageous locations in Canada would probably include either Southern Ontario or Southwestern Quebec.

Woodstream has maintained a manufacturing operation in the U.S. and an assembly plant in Canada, as a pre-free trade strategy, recognizing the necessity to be able to control prices in both the U.S. and Canadian markets. Because consumers can purchase in either Canada or the U.S., it is important to maintain price parity in the two countries .

Equipment

The plant requires both generic and specialized equipment Forming equipment, such as punch presses and spring coilers tend to be heavy, generic items that can be purchased in either Canada or the US. If the plant is to be relocated in Canada, it mght be advantageous to liquidate the heavy equipment in the U.S. and to purchase similar equipment in Canada if the cost of disassembly freight and re-assembly is prohibitive.

The equipment required for sub-assembly and assembly, by contra% is specialized equipment The most significant investment in essential capital would be for the tooling.

Woodstream claims that the net book value of the machinery and equipment is under-appraised.

Other potential purchasers have brought machinery experts to inspect the plant outside of normal operating hours to determine the value and condition of the equipment If purchase is to be contemplated seriously, such an individual should be engaged to undertake an inspection.

Suppliers

Woodstream currently purchases from steel distributors located throughout the Eastern United States. Its main supplier is Ivaco, a Canadian company whose headquarters are located in Quebec, which provides flat *wire* to Woodstream from its plant in Baltimore.

Requirements for Skilled Labour

At its current minimal level of operation, the trap manufacturing plant employs approximately 25 people. The staff includes approximately 8 core positions, including press operators, multi-slide operators, set-up persons, a lead man and a foreman.

It would extremely difficult to set up a new plant and get it into operation unless *several* of the key, skilled employees of the existing plant were available to set up the new plant, get it into operation and train Canadian employees. For example, it takes approximately six months to train a multi-slide machine operator. These employees will be released by

Woodstream with the sale. Woodstream management thinks it extremely unlikely that they would be prepared to relocate to Canada, given the availability of alternative different employment in the Lititz area.

One alternative to hiring Lititz-based staff to ease the transition and the establishment of a new plant might be to engage some of the Woodstream staff who are currently based at the assembly plant in Niagara Falls, Ontario.

CRITICAL SUCCESS FACTORS FOR ACQUISITION AND OPERATION OF IHE WOODSTREAM WILDLIFE TRAP MANUFACTURING OPERATION

Acquisition

1. A deal must be consummated quickly because Ekco is committed to selling the trap manufacturing operation as soon as possible (ie., during the year 1989). The following sequence of events must occur as soon as possible:

   - a potential Indian buyer must be identified;
   - economic and financial feasibility of the venture must be demonstrated;
   - probable sources of financing must be identified; and
   - mutually satisfactory conditions of sale must be negotiated.

Transition

2 A suitable plant location must be identified which provides cost effective access to:

   - sources of supply;
   - markets;
   - required auxiliary resources (e.g., machine shops); and
   - skilled or easily trainable labour.

3. Required equipment must be moved successfully to the plant Site, installed and set-up. This will require the existence of senior production personnel currently employed by Woodstream, either at Lititz or Niagara Falls.

4. A successful training program must be undertaken to get the plant into production and achieve economies in production.

Operations

5. A distribution network must be established in the U.S. and either established or maintained in Canada to retain market share.

Requirements FOR PHASE [1 RESEARCH

1. **Identify potential Indian business that meet criteria** for success in the **trap manufacturing** business.

2 Undertake a **preliminary** study of the **economic feasibility** of **establishing Indian-owned trap manufacturing business in** Canada by forecasting revenues and associated **costs** under various assumptions with respect to plant **location,** sales **volumes, plant efficiencies** and **distribution arrangements.**

3. **Determine a potential value of the Woodstream operation to a Canadian buyer, based upon financial projections.**

4. **Compare value to buyer with asking price to determine whether or not there is a basis for** negotiation with **Ekco.**

5. **If a basis for negotiation is established, research should be commissioned to define** costs ***for*** **transfer** of the **Woodstream** equipment **to** a new plant site as **well** as set-up of **plant** as **a** turn-key operation.

As additional **information becomes available regarding** the commitment of governments **in Canada to trap replacement programs, the economic feasibility** of establishing a **stand-alone operation for manufacture of the C-120 Magnum trap will be examined** in greater detail.

APPENDIX A

'Humane' trap ready for market

By DON THOMAS
Journal Staff Writer

A "humane" trap that makes animals unconscious within three minutes was developed nearly two years ago, but no one has shown any interest in manufacturing it.

The Fur Institute of Canada announced Monday it developed the Magnum 120 after three years of research.

It is a modification of the commercial Conibear 120 quick-kill trap and is intended specifically for marten and, with further modifications, for mink.

The research was done at the Alberta government's Environmental Centre in Vegreville.

It is intended as one alternative to the leghold trap opposed by groups that have launched an international campaign against wild fur trapping.

Institute standards require that a humane trap must render an animal irreversibly unconscious within three minutes.

The Magnum exceeds that, averaging that effect within one minute and often almost instantaneously, says Gilbert Proulx, traps research director at the Vegreville Environmental Centre.

Other work at the centre involves new types of traps for fisher and for larger animals such as red fox, lynx and coyote.

But so far the traps are not getting into the hands of trappers, he says.

"There is a very discouraging delay from the discovery to the manufacturers," says Proulx. He said the Magnum was available in the spring of 1987, although further field testing came after that.

Part of the problem may be bureaucratic delays since the traps program involves several levels of government, private agencies and universities, he says.

Monday's news release from the institute was in part intended to encourage interest in manufacturing it, says Kirk Smith of Toronto, executive director of the institute.

Very few trapping [illegible] get into mass production, he says.

"We're not in the business of making traps, but it seems to us there is an opportunity for someone to get into it," he says.

"The trap works, it's proved and it's likely to be used voluntarily or involuntarily eventually."

Report of the
FEDERAL PROVINCIAL
COMMITTEE For
HUMANE TRAPPING

FINDINGS AND RECOMMENDATIONS

b) Defining the Problem and seeking Solutions

The aim of the FPCHT was to provide as much information as possible to allow the assessment and development of complete humane trapping systems within the following 3 basic classifications, with emphasis placed on work within the first:

1. On land Killing systems (including snares)
2 On land: Holding trap systems
3. Underwater: Holding and killing systems

Following ore listed the three systems, the furbearers taken within them, and research done during the mandate pertinent to each.

1. on Land: Killing Systems

(animal groupings ore based on available kill threshold data, and some considerations d animal size and trapping systems used.)

For:

1. Ermine, squirrel
2 Muskrat, marten, mink
2a Lagomorphs, skunk
3. Raccoon (fisher*)
4. Beaver (otter")
5. Lynx, bobcat {fisher")
6. Badger, wolverine (otter')

*indicates a species which if certain conditions are met may fall into mofe than one group (see Trap Criteria).

Research Undertaken

1975-76 Mechanical and Biological Testing
1977 Determination of Criteria for the Evaluation of Humane Traps
1978 Lateral Impact Study
1977-81 Mechanical Evaluation & Development Programme
1977-81 Approach Study
1977-81 Trap Evaluation Work
1979-81 Snare Research
9979-81 Clamping Study
1980-81 Trapping Systems Survey

2 On Land: Holding Systems

For:

large land animals:
lynx, bobcat, fox, coyote, wolf, bear, cougar

Research Undertaken

1977 Approach Study
1977-81 Field Testing
1980-81 Trapping Systems Survey

3. Underwater: Holding and Killing Systems

For:

water (semi-aquatic) animals:
mink muskrat, beaver, otter

Research Undertaken

19?7 Terminal Dive (feasibility) Study
1978 Mechanical Evaluation and Development Programme
1979-81 Underwater Approach Study
197%81 Post Mortem Work
1980-81 Trapping Systems Survey

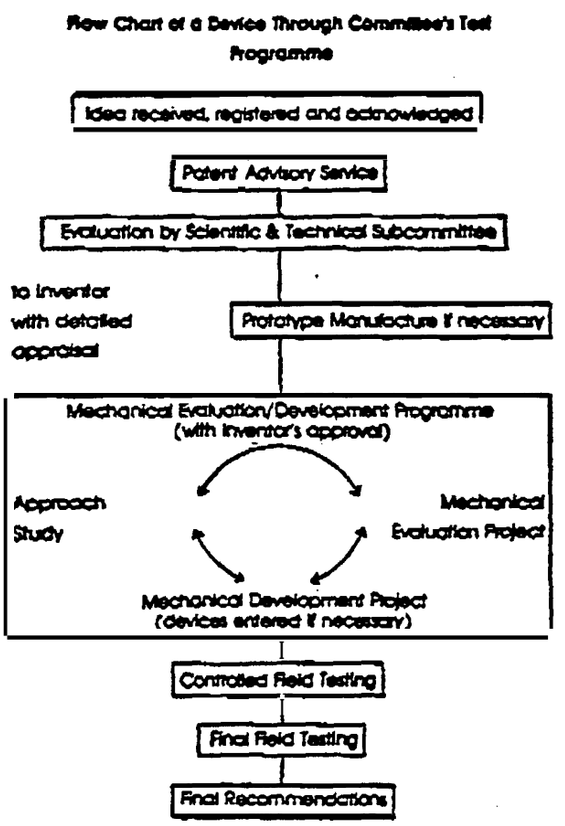
Concentration on Killing Traps

Because the object of trapping for fur is the acquisition of the pelt, the death of the animal is inevitable Given this it follows mat the most humane and best stressful system will be that which achieves a rapid death in the target furbearer. Therefore the FPCHT concentrated most of its resources upon the analysis and development of systems which are intended to kill furbearers rather than hold them alive. Certain holding systems were examined, however, because the committee recognized that holding systems would need to be povided for certain situations. Moreover, the work of the Government of Ontario h developing the Novak Footsnare and its evolving preference for the selectivity offered by such live holding devices, were known to the committee, and duplication in this area would have been a waste of resources.

Importance of Kill Thresholds

Central to the FPCHT trap evaluation and development programme (for killing traps) has been the provision of kill thresholds. These thresholds were achieved by subjecting anaesthatized animals to systematically varied levels of impact

Explanation of the FPCHT Trap Evaluation and Development Programme (killing-traps)



Registration and Coding

All incoming ideas were registered with the date of receipt and coded with the committee's own coding system, and the inventor was notified to this effect.

Patent Advisory Service

Most submissions had not been patented before being sent to the committee. As a service to inventors, arrangements had been made early on in the mandate with a patent attorney for provision of a preliminary assessment of a device's patentability. This assessment carried no guarantee, but gave inventors a broad look at whether it was worthwhile investing in a full patent search and subsequent patent application.

In some cases where further patenting assistance was required, and justifiable, FPCHT arranged for some funding from other agencies.

Preliminary Evaluation

Each of the elements listed above, or the potential of each, together with its relationship to the trap as a whole, was appraised by the Scientific and Technical Subcommittee (STS).

Results at this preliminary evaluation were passed on to me inventors, with comments on the device and advice on what could be done to improve it Where this was warranted.

The assessment, particularly in the early stages of the work, was of necessity a subjective one. However, as the committee's knowledge increased, the evaluations became more precise, although the subjective element was never entirely absent. Traps were evaluated within the categories outlined in Appendix D.

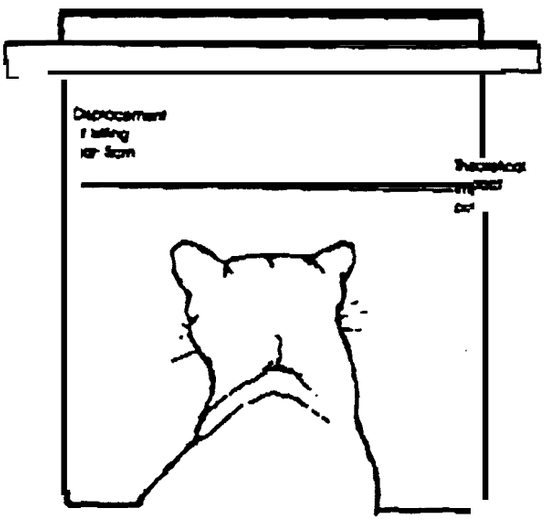
Because of the growth h knowledge over the years, each trap was re-appraised during the last months of the committee's mandate h order to ensure that no idea had been missed, and that no inventors had inadvertently been given inapposite or inaccurate advice.

Prototype Manufacture

This was rarely undertaken by FPCHT at this particular stage in the development process, which probably reflects more upon the degree of thought and commitment given an idea by its inventor than upon any lack of effort by the committee. People whose devices were submitted as prototypes had at least worked out the major drawbacks inherent in their concepts. However, the submission of drawings or idea layouts certainly helped to cut down unnecessary and duplicated effort. Manufacture of prototypes was most often undertaken as a part of the Mechanical Evaluation and Development programme.

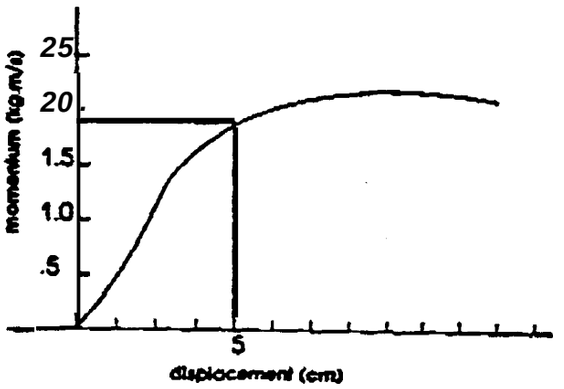
Mechanical Evaluation

Traps selected as suitable by the Scientific and Technical Subcommittee were mechanically analysed for their impact and clamping energies (in kg-m/s of momentum, and newtons). Traps were rated for humane potential against the pertinent thresholds as these became available from ongoing threshold research. Whereas this sounds simple, the process is complicated by the need to tie in all the variables related to how the animal may enter the trap. This is broadly how the rating was made.



iv.. and calculation is made of displacement Of me killing bar to what has now become the theoretical impact point for the trod/neck strike.

v. The trap's momentum at impact performance is checked at me established displacement, thus:

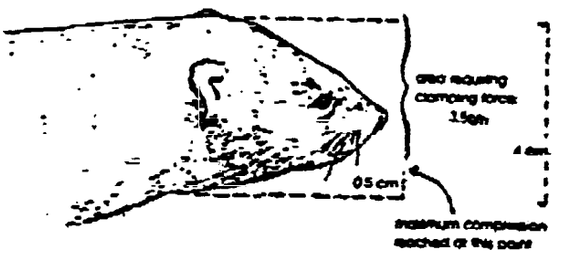


The momentum at the required displacement is 1.85 kg.m/s.

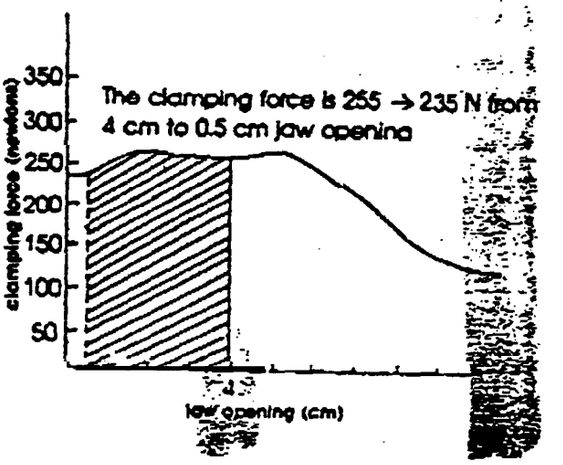
In rotating-jaw type traps (including some mousetrap types where the jaws rotate from a central pivot point), impact is determined at one half the total displacement from trip position of one closing jaw. Since such traps hit with 2 jaws, this value is then doubled. In other traps, unless the triggering system or trap geometry allows accurate prediction of the impact point, impact is determined at one third the total displacement of the killing bar from trip position.

For determining clamping force:

vi. Firstly, the appropriate average dimension of the target animal is checked and the maximum compression established during threshold research.



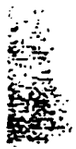
vii. Then trap performance is determined in terms of clamping force between the required dimensions, thus:



c) Trap criteria and Approved Traps & Systems

Notes:

- Boxtraps can be used for most species on land.
- Live-holding traps should be visited at least once every 24 hours.
- It is recognized that many species are shot. However, since the FPCHT mandate refers to traps and trapping methods, no reference is made here to shooting.
- Most killing traps listed should be positioned to trip dorso-ventrally for use on land.
- Lateral blows are not generally recommended for use on land.
- Approach information is given where it is available.
- The FPCHT is recommending the following methods. By implication any methods not listed are not considered acceptable at this time.
- " indicates a species which may fall into more than one group.
- Approved traps are those meeting both approach and mechanical requirements.



Group 2

Mink, marten, muskrat: On land

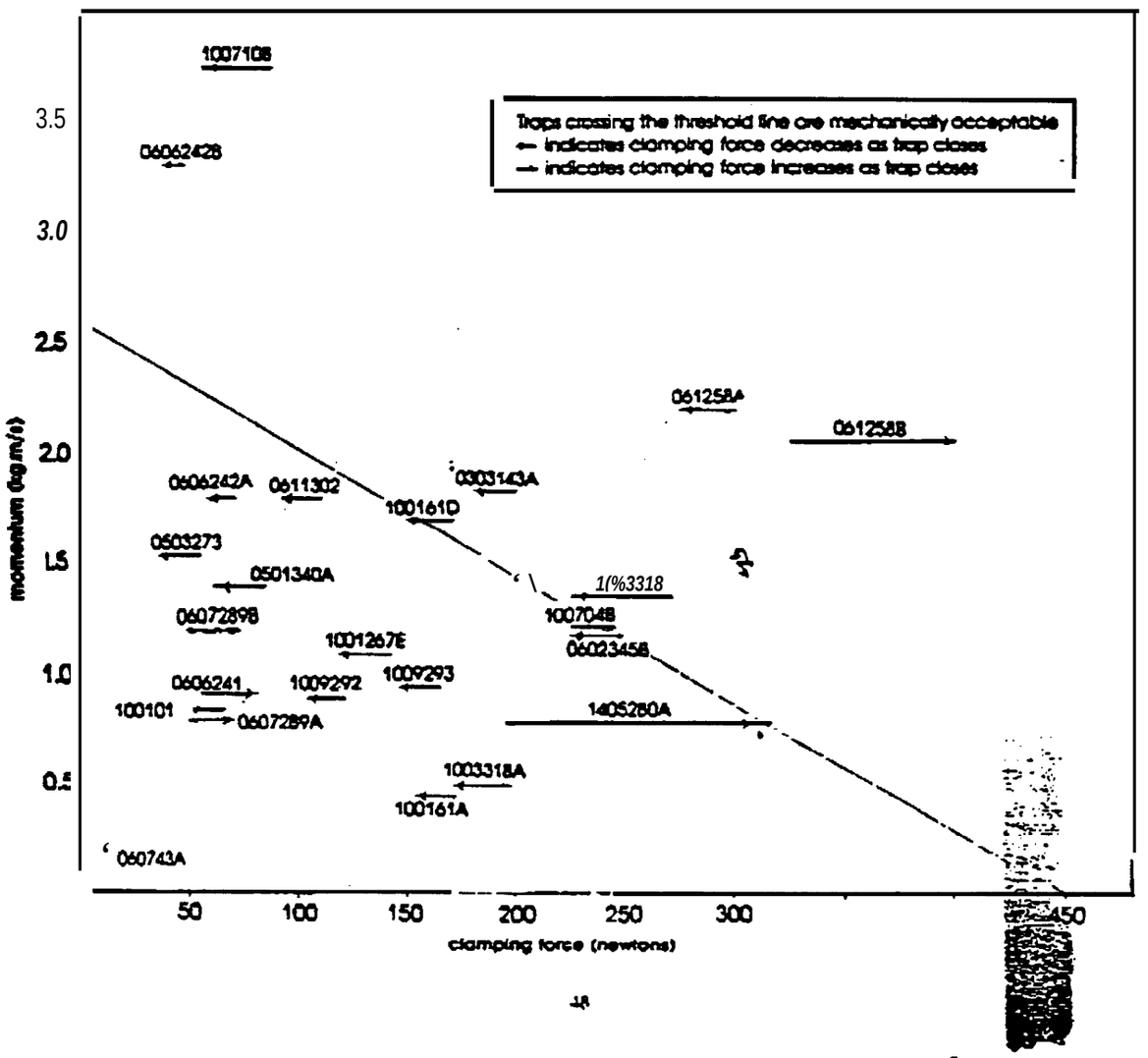
Killing-traps only

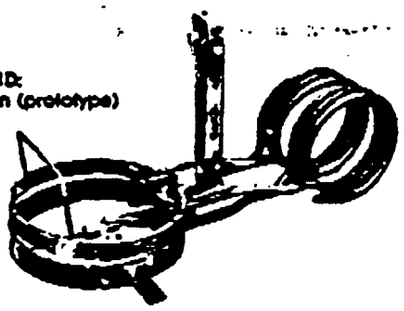
A Mechanical Criteria. The line on the graph indicates the synergistic impact/clamping kill threshold. The graph also illustrates traps rated against the kill threshold line.

Mass of killing bar: no greater than 340g

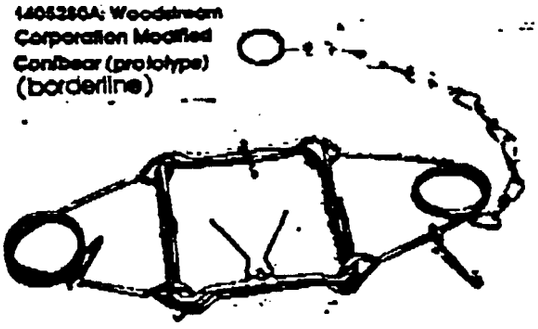
Clamping force: to be applied within jaw opening
4 cm – 0.5 cm

Graph II

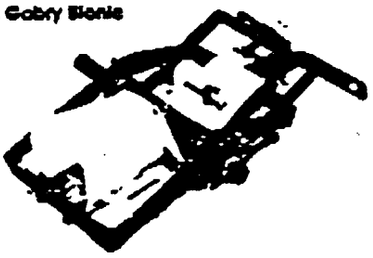




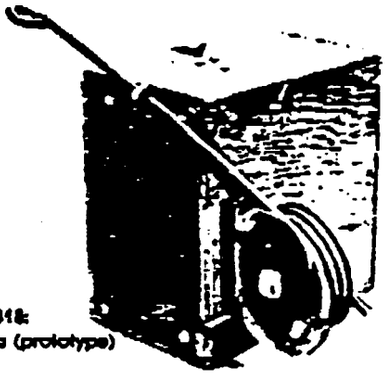
1001610:
Hanson (prototype)



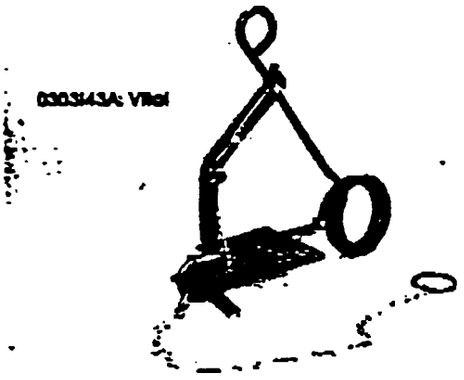
1405280A: Woodstream Corporation Modified Conibear (prototype) (borderline)



1007108: Gabry Bionic



1003318:
Kania (prototype)



0303143A: Vitel

Group *3*

Raccoon, fisher*

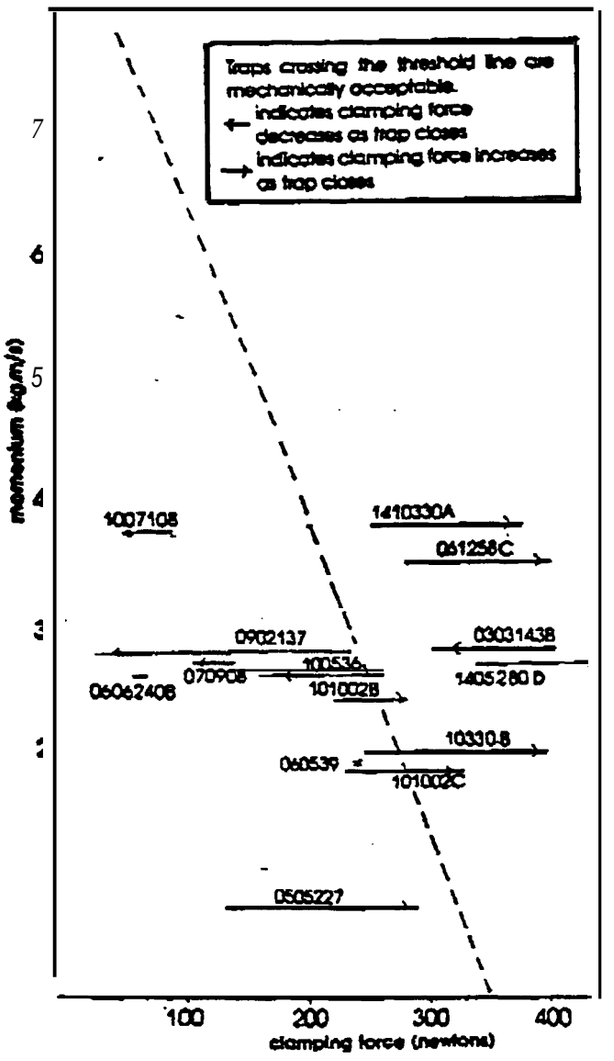
Killing traps only

A Mechanical Criteria: raccoon. The broken line on the graph represents me potential synergistic impact/clamping kill threshold. The graph also illustrates traps rated against the kill threshold line.

Suggested killing bar mass limit: 520 g

Clamping force: to be applied within the jaw opening 7 cm — 1.5 cm.

Graph III



Mechanical criteria: fisher

Preliminary investigation leads to the suggestion that fisher may have a high-clamping/low impact (as per mink) threshold line. One anesthetized fisher tested at 400N did not show any noticeable response and was subjected to euthanasia. One anaesthetized fisher tested at 2.7 Kg.m/s and 250N died within 3 minutes.

B. Approach information

Raccoon

General:
These animals tend to investigate objects with front paws, a problem when attempting head-neck strikes. Sets which encourage a first approach with the head should be used.

It does not appear that unconsciousness can be achieved in under one minute in these animals in killing traps.

i. Mousetrap-type traps
No practical application seen at this time for raccoon

ii. Rotating-jaw traps:

a. Pan and baited triggers:

not recommended.

b. Whisker triggers:

Raccoon box set only: box 15 cm (6") above ground. Trigger on proximal bar, and at front of set (towards direction animal would enter set). Monofilament line should be stretched between trigger prongs: this increases likelihood of a good strike, preventing the animal from getting too far in. This set reduces possibility of double-bar strikes, which are undesirable.

iii. Planar traps:

a. Pan and bait triggers:

to be avoided

Group 4

Beaver, otter*

killing-traps: on land and in water

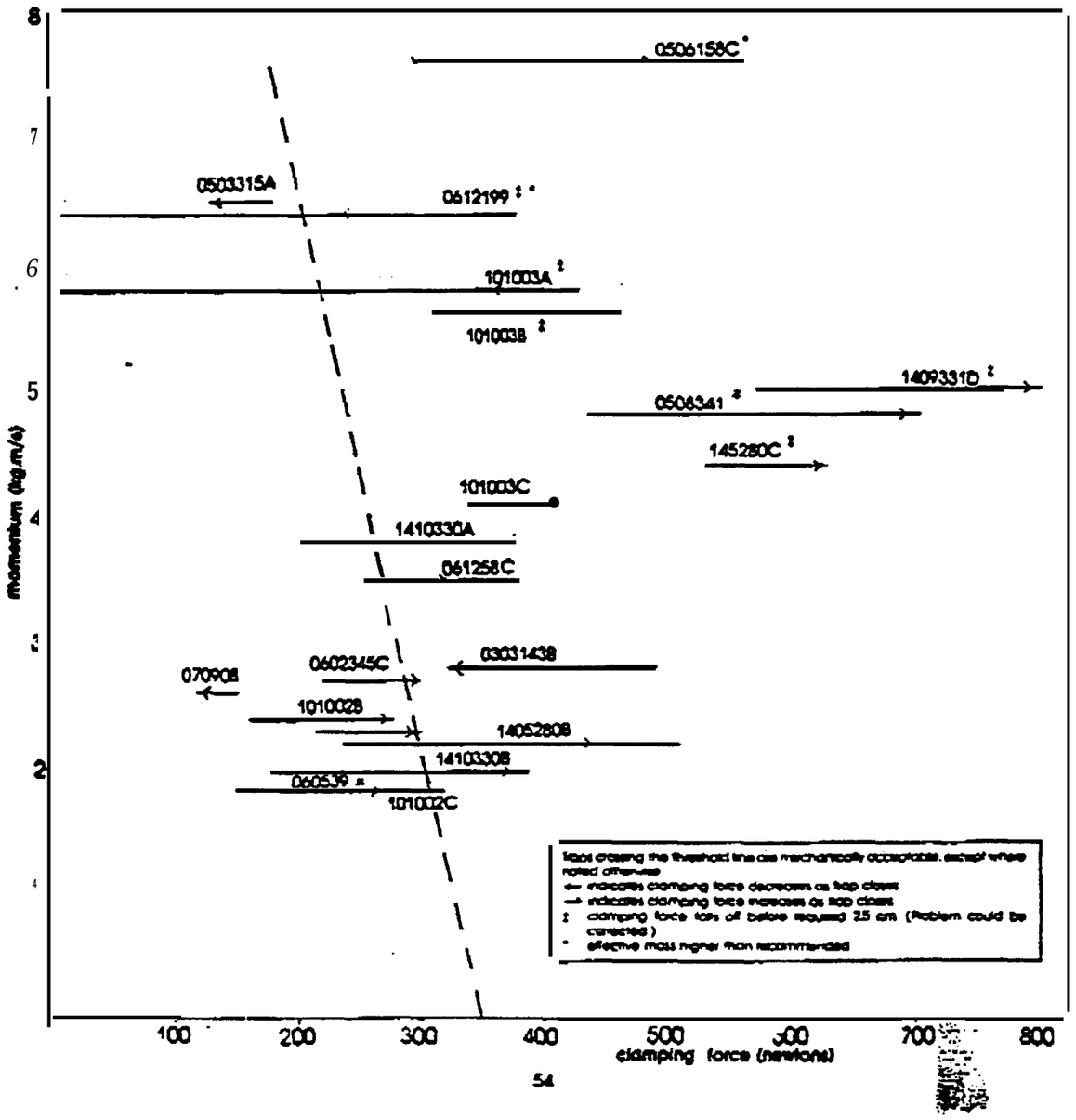
A. Mechanical Criteria: beaver. The broken line on the graph represents the potential synergistic impact/clamping kill threshold. The graph also illustrates traps rated against the kill threshold line.

Otter are included here although threshold information is not available. Otter, like the other mustelids, may require high clamping - low impact traps. Underwater capture is suggested for otter at this time.

Suggested killing bar mass limit: 520 g

Clamping force: to be applied within the jaw opening 11 cm. – 2.5 cm.

Graph IV



Group 5
lynx, bobcat, fisher

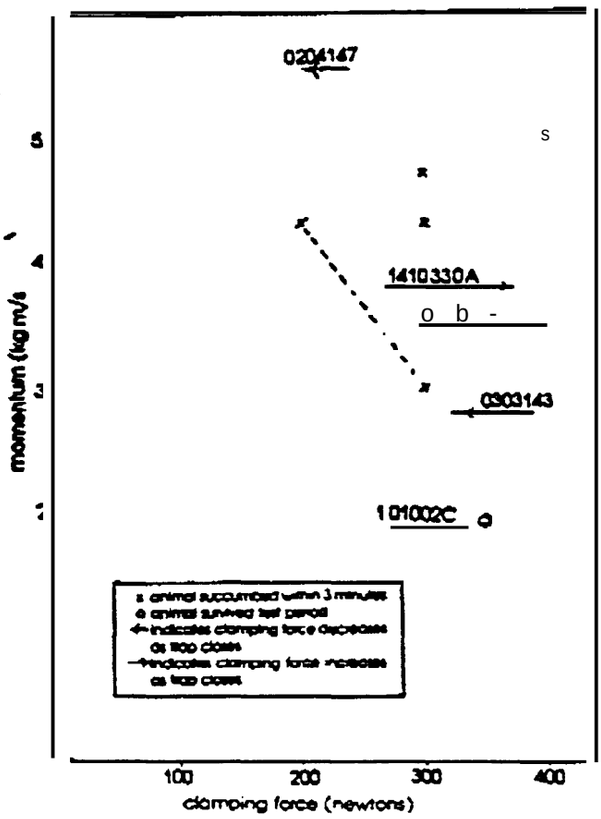
killing-traps

A *Mechanical Criteria:* lynx, bobcat. The broken line on the graph represents a partial, potential synergistic impact/clamping kill threshold. Traps are rated against this line.

Suggested killing bar mass limit: 520 g

Clamping force: to be applied within jaw opening 6 cm - 1.5 cm

Graph V



B. Approach information

a. Pan triggers:

Are not recommended. Lynx will enter smaller traps but will paw at the opening. Rotating-jaw traps should have a jaw-opening of at least 18 cm (7¼") with the trigger at the top. Traps with a smaller jaw opening should be raised 25 cm from the ground to the lower bar.

For fisher, see group 3.

C **Approved traps meeting both approach *and* mechanical requirements**

061258C Novak 280 (prototype) prong trigger

1410330A Montgomery

030314387 Vitel

Other Methods

Lynx, bobcat:

Evidence to date shows potential for footsnares. (ref. Ontario Ministry of Natural resources).

There is also a potential in killing snares (standard neck snares) and in power snares. Unconsciousness in one lynx occurred in a standard killing-snare in approximately 5 minutes: predictably the time-period would be less with the use of power snares.

Further work is required in the area of killing-snares and in the provision of power snare kin threshold values.

COMMENTS ON LIVE-HOLDING BOX-TRAPS

The FPCHT did not concern itself with the specific evaluation of box traps unless these showed features which were obviously inhumane.

Use of box traps is generally limited to specialist fields where in most cases they are operated by people who are trained in their use — wildlife researchers and urban animal control officers for example. Some researchers and biologists are seriously considering the use of box traps in commercial trapping for the benefits offered in terms of wildlife management, where unwanted species or animals of given ages or a given sex within one species can be released.

In terms of their application on commercial traplines, box traps have been considered impractical in this country. However, some trappers have built large log box traps on the trapline, which can be used season after season and which appear to well repay the initial effort involved in their construction. In rural or urban areas particularly the use of box traps in fur trapping should not be ruled out.

The following points are made in relation to box trapping:

a) The sizes of traps to be used for the various species are recommended in manufacturers' instructions.

b) Some traps are more #went than others. For example, animals can overturn some traps and escape since this causes the latches to loosen. This can be avoided by pegging traps to the ground, or by increasing spring strength.

c) Box traps should be visited frequently: at least once every 24 hours in winter, and every few hours (or at least twice a day) in hot weather.

d) Particular attention should be paid to the type of trap used, as Same animals will chew the wire and damage their teeth.

e) Where animals are box-trapped near human habitation the trap should be well camouflaged so that people da nat become tempted to taunt the trapped animal. It is often the stimulus of a human presence which causes animals to fight the trap and damage themselves.

Winter
Open traps should be covered with evergreen boughs, burlap, or other materials. Closed traps, particularly metal, should have bedding provided inside.

Summer
Closed traps in summer can cause heat prostration in the trapped animal; ventilation holes should be provided.

f) When animals are transported from the trap site, me trap should either be covered to minimize possible distress, or the animal should be moved in a properly designed transportation cage.

COMMENTS ON LEGHOLDING DEVICES

The use of powerful killing-traps must generally be restricted to areas with a relatively low human population. Devices for humanely trapping and holding animals alive are a necessary part of trappers' and wildlife managers' equipment, and some people believe that they will become increasingly important with time.

Factors contributing to the well-being of the trapped animal while it is restrained by the leg in a footsnare/trap are listed below.

a) The legsnare/trap should hold the animal without cutting off blood circulation to the trapped part.

b) The snare wire or trap should not lacerate the animal's skin.

c) Wild animals may instinctively bite at something which holds them. A good holding device should not allow the captive animal to break or damage teeth during escape attempts.

d) It is suggested that on legsnares, and on modified leghalds for fox, a short tether with c

Problems include: -

a) providing correct dose for size and species caught

b) chain reaction of certain drugs/poisons

c) spoilage of meat which could be used for human or pet consumption

d) current legal situation prohibiting the unlicensed use of drugs/poisons

e) danger of drug abuse or misuse

f) trapper aversion. Following is a statement from the Canadian Trappers' Federation President, Roger de Denus:

"The use of poisons as a means of harvesting furbearing animals is absolutely out of the question.

"Poisons are non-selective and indiscriminately kill all animals, furbearers, game and domestic animals as well as birds. The lethal chain of other animals consuming carcasses and the danger to the user are arguments that cannot be ignored.

"Trappers condemn the use of poisons and feel strongly that no exceptions exist."

3. Large and dangerous traps (e.g., those designed for wolf and bear)

The Scientific and Technical Subcommittee has reviewed some devices, which were evaluated as being too dangerous to the user, to people generally, and to other lifeforms.

While it is possible that killing devices for animals in Groups 7 and 8 may be developed to perform humanely and yet be safe to use and operate, this committee has not reviewed any which are suitable.

The FPCHT recommends that large and dangerous traps should not be used.

4. Devices incorporating spearing mechanisms

Some ideas reviewed during the mandate utilized spearing or cutting mechanisms. The Scientific and Technic@ Subcommittee considered these unacceptable, because:

a) animal positioning to ensure a humane kill is critical, and was largely unpredictable in the devices reviewed;

b) the concept was not consistent with the subcommittee's perception of humaneness;

c) some pelt damage is inevitable.

5. Other methods

The range of possible ways of capturing furbearers is limited only by man's imagination. Some traditional methods of capture have been briefly discussed, and as quickly dismissed. These include snagging beaver, and some live-holding practices which have no regard for the condition of the trapped animal.

INFORMATION NOTE

Subject: International Humane Trapping Standards

Background

A resolution by Gambia was tabled at the 1983 CITES meeting to prohibit trade in products from animals taken by cruel methods, including the steel-jawed leg-hold trap. The resolution was rejected by the CITES members but the animal welfare intent behind it was discussed. The Parties agreed that definitions of "cruel" and "inhumane" in the context of taking animals or their by-products to be entered into trade were not clearly understood in the same way by all countries. Canada therefore suggested that, in the matter of trapping, the subject be considered by the International Organization for Standardization (ISO) headquartered in Geneva with a view to establishing international humane trapping standards. Canada agreed to take a lead in this initiative and to provide secretariat.

A great many countries have their own National Standards setting process and they in turn directly relate to ISO for the purpose of establishing international standards. This is to ensure equality of weights, measures quality, etc., of goods and services traded internationally.

Through the Canadian General Standards Board, External Affairs and other Canadian government agencies, Canada enlisted the support of six other countries to participate in the process to establish international humane trapping standards through ISO. For ISO to establish a Technical Committee to undertake the process of drafting any Standard, at least five countries must agree to full participation status. Since seven countries agreed in this case, ISO established Technical Committee 191 (TC191) on Humane Animal (Mammal) Traps to set the process in motion. Countries joining Canada in this process are the U.S.A., Sweden, West Germany, Finland, Australia and Argentina. Nine other countries have agreed to observer status (see attached).

The U.K. was approached through the British Standards Institute but so far has declined even observer status.

At the 1988 meeting of the International Union for Conservation of Nature and Natural Resources (IUCN), a resolution was brought forward by two NGOs calling for a worldwide ban on the manufacture, sale and use of the steel-jawed leg-hold trap. The resolution suggested that alternative trapping devices were available but gave no indication whether they would be acceptable to all countries on the grounds of humaneness and efficiency. The resolution was withdrawn by the chairman but an Executive Committee is to review the situation over the next three years and report back.

Over 300 NGOs and some 100 nations are involved in IUCN deliberations which again points up the need to develop international trapping standards.

N. Jotham
Co-ordinator
Humane Trapping Program
Canadian Wildlife Service

"

May 11, 1988
997-0832

STATEMENT OF RESULTS / EXPOSE DES RESULTATS

Date: 1987-03-31

ISO/TC 191

ISO/TC191 NE

Title of TC/Titre du TC

HUMANE ANIMAL TRAPS — FIRST MEETING

ISO

Please send this form by airmail to the ISO Central Secretariat, preferably on the last day of the meeting.
Veuillez envoyer cette formule par avion au Secrétariat central de l'ISO de préférence le dernier jour de la réunion.

Meeting dates/dates de la réunion	Place and country/lieu et pays
1987-03-19/20	QUÉBEC, CANADA
Number of delegates/nombre de délégués	Number of countries represented/nombre de pays représentés
EIGHT PLUS TWO OBSERVERS	FOUR

Chairman of the meeting (name and country)/président de la réunion (nom et pays)

MR. N.R. JOTHAM, CANADA

Important decisions taken (such as: setting up/dissolution of SCs/WGs, proposed new tasks, decisions on priority, special studies or investigations, etc.)/décisions importantes prises (telles que: création/dissolution de SC/GT, nouvelles tâches proposées, décisions concernant la priorités, études spéciales ou enquêtes, etc.)

AGREED TO AMEND TITLE TO HUMANE ANIMAL (MAMMAL) TRAPS.
AGREED ON SCOPE: STANDARDIZATION OF TERMINOLOGY, CLASSIFICATION, CHARACTERISTICS, AND TEST METHODS FOR EFFECTIVE HUMANE ANIMAL (MAMMAL) TRAPS AND THEIR USE.
ESTABLISHED WORKING GROUPS: WG 1 TERMINOLOGY/DEFINITIONS
WG 2 KILLING TRAPS
WG 3 RESTRAINING TRAPS

Draft proposals approved (numbers and titles)/avant-projets approuvés (numéros et titres)

NONE.

Other matters (comments) of special interest (to the public or to the ISO membership)/autres questions (commentaires) présentant un intérêt particulier (pour le public ou les membres de l'ISO)

Name and signature/nom et signature

NATIONAL STANDARD OF CANADA

NORME NATION ALE DU CANADA

CAN2-144.1-M84

Animal Traps, Humane, Mechanically-Powered, Trigger-Activated

Pièges mécaniques, indolores, a détente, -pew animaux

Canadian General Standards Board CGSB
Office des normes générales du Canada ONGC

CAN2-144.1-M84
Supersedes/Rer
144-GP-1MP

NATIONAL STANDARD OF CANADA

NORME NATIONALE DU CANADA

ANIMAL TRAPS, HUMANE, MECHANICALLY-POWERED, TRIGGER-ACTIVATED

PIÈGES MÉCANIQUES, INDOLORES, A DÉTENTE, POUR ANIMAUX

This standard replaces a provisional standard, 144-GP-1MP, with a similar title, that was issued in 1979 to provide preliminary criteria for humaneness. This new edition is based largely upon research conducted for the Federal-Provincial Committee on Humane Trapping and upon the Recommendations of that Committee.

La présente norme remplace & norme provisoire 144-GP-1MP dont le titre est semblable, qui a été publiée en 1979 en vue d'établir les critères préliminaires relatifs à une mort sans douleur. La nouvelle édition est, en grande partie, basée sur les recherches effectuées pour le Comité fédéral-provincial du piégeage sans cruauté et sur les recommandations présentées par ce comité.

Prepared by/Préparée par
Canadian General Standards Board CGSB
l'Office des normes générales du Canada ONGC

Approved by/Approuvée par le
Standards Council of Canada
Conseil canadien des normes

Published March 1984 by the
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CAN2-144.1-M84
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December/Décembre 1979

CANADIAN GENERAL STANDARDS BOARD

Standard for

ANIMAL TRAPS, HUMANE, MECHANICALLY POWERED, TRIGGER-ACTIVATED

COPE

his standard applies to mechanically powered, rigger-activated killing traps that, when properly et or applied, will render • humane death to itended animals The traps are for use on land or water, primarily by the fur industry.

aps conforming to this standard are considered itable for the species named in par. 4.1, which es not include such species as bear, cougar, fox, yote, and *wolf.*

• minimum detail requirements in Section 6 have en established from data on traps striking from ove or below. Traps designed to deliver lateral side blows are not covered by this standard, nor power snares, gravity-operated devices or set-

$ standard does not cover non-killing traps such olding devices.

LICABLE PUBLICATIONS

following publications are applicable to this dard:

dian Standards Association (CSA)

– welded Steel Construction (Metal-Arc elding)

rican Iron and Steal Institute (AISI)

Products Manual: Alloy Steel: Semifinished; Rolled and Cold Finished Bars

ty of Automotive Engineers (SAE)

– Chemical Compositions of SAE Alloy els.

nce to the above publications is to the latest nless otherwise specified by the authority g this standard. sour&a for these publica- re shown in the Notes section.

OFFICE DES NORMES GÉNÉRALES DU CANADA

Norme

PIÈGES MÉCANIQUES, INDOLORES, À DÉTENTE, POUR ANIMAUX

OBJET

La présente norme s'applique aux pièges mécaniques à détente qui, une fois installés ou appliqués de manière appropriée, tuent les animaux de façon indolore. Ces @gee sont destinés à être utilisés sur terre ou dans l'eau, surtout par l'industri"e& la fourrure.

Les pièges conformer à la présente norme conviennent aux animaux énumérés au par. 4.1 qui ne comprennent pas l'ours, le cougar, le renard, le coyote et le loup.

Las exigences particulières minimales, détaillées à la section 6, ant&6 établies à partir des données relatives aux pièges qui frappent d'en haut ou d'en bas. Les pièges conçus pour frapper latéralement ainsi que les collets mécaniques, les pièges à poids, les pièges à balle ne sont pas régis par la présente norme.

Les pièges à récipient @i. * sont pas destinés à tuer ne sont pas régis par la presente norme.

PUBLICATIONS APPLICABLES

Les publications suivantes s'appliquent à la présente norme:

Association canadienne de normalisation (ACNOR)

-.SS9 – Welded Steel Construction (Metal-Arc-Welding)

American Iron and Steel Institute (AISI)

Steel Products Manual: Alloy Steal Semifinished; Hot Rolled and Cold Finished Bars

Society of Automotive Engineers (SAE)

J404 - Chemical Compositions of SAE Alloy Steels.

Sauf indication contraire de l'autorité appliquant la présente norme, ces publications s'entendent de l'édition la plus récente. La source de diffusion est indiquée dans la section intitulée Remarques.

Class 2 – Mink, muskrat, marten, rabbit, hare, skunk

Catégorie 2 – Vison, rat musqué, martre, lapin, lièvre, mouffette

Class 3 – Raccoon, fisher

Catégorie 3 – Raton laveur, pékan

Class 4 – Beaver, otter

Catégorie 4 – Castor, loutre

Class 5 – Lynx, bobcat, fisher

Catégorie 5 – Lynx, lynx rouge, pékan

Class 6 – Badger, wolverine, otter. (See note)

Catégorie 6 – Blaireau, carcajou, loutre (voir remarque)

Note: No data are yet available for Class 6, and no requirements for Class 6 are given in this standard.

Remarque: Vu qu'aucune donnée n'est encore disponible pour la catégorie 6, cette dernière catégorie n'est pas visée par la présente norme.

4.2 Otter and fisher are for the time being included in more than one class because data are currently insufficient to permit greater precision.

La loutre et le pékan sont pour le moment inclus dans plus d'une catégorie parce que les données sur ces animaux sont encore insuffisantes pour préciser davantage.

5. GENERAL REQUIREMENTS

EXIGENCES GÉNÉRALES

5.1 Humaneness - The trap shall meet all requirements (Section 6) to produce a humane death for the intended target species. The manufacturer shall identify the class of trap (Section 4) and the intended target species (par. 6.6) in his instructions and/or packaging.

Mort sans douleur - Le piège doit satisfaire à toutes les exigences requises (section 6) pour tuer de façon indolore les animaux auxquels il est destiné. Le fabricant doit identifier la catégorie du piège (section 4) ainsi que les animaux à piéger (par. 6.6) dans ses instructions ou dans son emballage.

5.2 Strike Effectiveness - The design and geometry of the trap shall be such that the trap is capable of consistently striking and holding its target species between the back of the eyes and the fourth cervical vertebra with a specified combination of impact momentum and clamping *force* (See Table f). Devices that consistently strike their target species in a single location that is posterior to the fourth cervical vertebra are not acceptable.

Efficacité de frappe - La conception et la forme du piège doivent être telles que le piège peut, de façon constante, frapper et retenir sa victime entre l'arrière des yeux et la quatrième vertèbre cervicale à l'aide d'une combinaison spécifique de quantité de mouvement à l'impact et de force de serrage (voir tableau 1). Les dispositifs qui frappent habituellement l'animal à un seul endroit derrière la quatrième vertèbre cervicale ne sont pas acceptables.

5.3 Safety - The trap shall be designed to protect the user during cocking and setting. The safety catches, when engaged in the recommended manner, shall provide reasonable safety to the user.

Sécurité - Le piège doit être conçu de façon à assurer la protection de l'utilisateur lors de l'armement et du dressage. Les crochets de sûreté, une fois enclenchés suivant la méthode recommandée, doivent permettre à l'utilisateur de mettre le piège en place sans danger.

5.4 Operation - The trap shall be designed in that adverse weather and field conditions have minimal effect on its operation. The trap shall be reliable and consistent in operation at temperatures down to -50°C. The trap shall incorporate a means for securing it at its intended location.

Fonctionnement - Le piège doit être conçu de façon que les intempéries et les conditions d'utilisation réelles ne puissent vraiment nuire à son fonctionnement. Le piège doit être fiable et fonctionner de manière adéquate à des températures descendant jusqu'à -50°C. Il doit également comprendre un dispositif d'attache permettant de la fixer à l'endroit choisi.

5.5 Pelt Integrity - The trap shall be designed so as not to damage the pelt of trapped animals of the intended target species.

Intégrité des peaux - Le piège doit être conçu de manière à ne pas endommager la peau des animaux capturés de l'espèce désirée.

6.5 **Marking** - Individual traps shall be marked legibly and permanently with the manufacturer's name, symbol or trademark

Marquage - Le nom, le symbole w la marque de commerce du fabricant doivent être marqués sur chaque piége en caractères lisibles et indélébiles.

& 6 **Instruction For** use - Instructions for use, setting, placement, maintenance, service and safe operation of the trap mechanism shall be provided at the point of safe of the device and shall also be available directly from the trap manufacturer. The instructions *and/or* trap literature *provided* by the *manufacturer* shall clearly indicate the class of the trap and the intended target species.

Mode @~ - Les instructions relatives à l'utilisation, o u dressage, o l'installation, à l'entretien, à la réparation et au fonctionnement sûr du piège doivent être fournies au moment de la vente du dispositif ou doivent pouvoir être obtenues en communiquant directement avec le fabricant. Les instructions et la documentation fournies par le fabricant doivent indiquer clairement la catégorie du piège et k type d'animal auquel il est destiné.

7. **INSPECTION**

INSPECTION

7.1 **Sampling** - Sampling for testing shall be at she discretion of the authority applying this standard (par. 9.1).

Échantillonnage - L'échantillonnage est laissé à l'appréciation de l'autorité appliquant la présente norme *(par.* 9.1).

7.2 **Determination of Impact Momentum**

Détermition de la quantité de mouvement à l'impact

Impact Momentum, $p = m_e v$ (kg·m/s)

Quantité de mouvement à l'impact, $p = m_e v$ (kg·m/

where m_e = Effective Mass (kg) (See par. 7-3)

où m_e = masse effective (kg) (voir par. 7.3)

v = Impact Velocity {In/s) (See par. 7.4)

V = vitesse de frappe (m/s) (voir par. 7.4)

7.3 **Determination** of **Effective** Mass+ **Calculate** the effective mass (m_e) of the striking bar. For traps with simple U-shaped or rectangular-frame killing bars describing a rotating motion titan axis, the detailed procedures *of* Appendix A may be followed.

Détermination de la masse **effective** - Calculer la masse effective (m_e) de la mâchoire. Dans le cas des pièges en U ou à mâchoires formant un cadre rectangulaire qui tournent autour d'un axe, suivre le mode opératoire détaillé à l'annexe A.

7.4 **Determination** of **Impact Velocity** - Determine the velocity of the striking bar at the specified jaw opening for the appropriate class of trap. This determination maybe done either (a) directly, by measuring the velocity ● t the specified jaw opening; or (b) indirectly, with an accelerometer mounted on the striking bar as in Figure L (A rubber or plastic dummy target will prevent damage to the trap and to the measuring device.) The direct procedure (a) requires only the measurement of the velocity ● t-h specified jaw opening. The indirect procedure (b) requires a complete recoding of the acceleration of the striking bar from the timed tripping to the time of reaching the specified jaw opening. Integration of the time-acceleration curve provides ● time-velocity curve from which the velocity ● t impact may be read. The mass of the accelerometer shall be taken into account in the determination of the*= velocity. Report the average value of the results of five impact velocity tests in metres per second (m/s) ash impact velocity of the specimen.

Détermintion de la vitesse de frappe - Déterminer la vitesse de la mâchoire à l'ouverture précisée pour la catégorie de pièges appropriée. U est possible de calculer la vitesse de frappe a) directement, en mesurant la vitesse à l'ouvertur ● des mâchoires prescrite ou b) indirectement, en plaçant un accéléromètre sur la *ire comma illustré à la figure 1. (Une prise factice, en caoutchouc ou en plastique, évite d'endommager le piège et l'accéléromètre.) Dans le cas du procédé direct a), la vitesse ne doit être mesurée qu'à l'ouvertur ● + mâchoires prescrite tandis que clans celui du procédé indirect b), l'accélération de la mâchoire doit être enregistrée à partir du moment* elle est déclenchée - moment où elle at-mint l'ouverture prescrite. L'intégration de la courbe temps-accélération donne une courbe temps-vitesse à @t&de laquelle la vitesse de frappe peut être lue. La masse de l'accéléromètre doit être prise en compte lors de la détermination de la vitesse de frappe. La moyenne des résultats de cinq essais de vitesse de frappe, calculée en mètres par seconde (M/s), constitue la vitesse de frappe du spécimen.

TABLE I

TABLEAU I

Property	Class / Catégorie 1	Class / Catégorie 2	Class / Catégorie 3	Class / Catégorie 4	Class / Catégorie 5	Caractéristiques
Striking Bar Diameter or Least Width*, mm		4 - 6	4 - 7	4 - 8	4 - 8	Diamètre ou largeur minimale de la mâchoire*, mm
Effective Mass of Striking Bar(s), m_e,	40	340	520	520	520	Masse effective des mâchoires m_e, Max, g
Clamping Force, F, Min., N		50	75	100	125	Force de serrage, F, Min., N
Combined Impact Momentum, p, kg·m/s and Clamping Force, F, N.	Appendix / Annexe	$p \geq 2.6-0.0058F$	$p \geq 9.3-0.027F$	$p \geq 16-0.047F$	$p \geq 7.4-0.014F$	Quantité de mouvement d'impact p, kg·m/s, et force de serrage, F, N, combinées
Jaw Opening for Determination of Impact Velocity, Min., mm		40	70	110	60	Ouverture des mâchoires pour la détermination de la vitesse de frappe, Min., mm
Jaw Opening** for Determination of Clamping Force, mm		5	15	25	15	Ouverture des mâchoires** pour la détermination de la force de serrage, mm

NOTES

* If, notwithstanding this requirement, striking bar widths are outside the required limits, the onus shall be upon the manufacturer to demonstrate that the traps produce a humane death for the target species.

** The trap jaw opening dimensions given in Table I are associated with average head and neck dimensions of mink, raccoon and beaver, and with the maximum compressions shown in testing procedures.

REMARQUES

* Nonobstant la présente exigence, dans le cas des pièges dont la largeur des mâchoires dépasse les limites prescrites, il incombe au fabricant de démontrer que les pièges tuent, sans douleur, les animaux auxquels ils sont destinés.

** Les dimensions d'ouverture des mâchoires énoncées au tableau I sont associées aux tailles moyennes de la tête et du cou du vison, du raton laveur et du castor et aux efforts de compression maximaux démontrés lors des essais.

(This appendix does not form a part of the standard)

(La présente annexe ne constitue pas une partie de la norme.)

A1. **Determination of Effective Mass of Striking Bars** - The following calculation is typical of the method to be used to determine the effective mass (m_e). The example pertains only to traps having a striking bar that executes a rotating motion on being triggered.

Détermination de la masse effective des mâchoires - Le calcul suivant est représentatif de la méthode à utiliser pour déterminer la masse effective (m_e). L'exemple s'applique seulement aux pièges dont une mâchoire effectue un mouvement de rotation lorsqu'elle est déclenchée.

Figure A1 shows the dimensions and geometry of the rotating mass of a trap's striking bar. The moment of inertia of this U-shaped frame about the axis of rotation equals the sum of the moments of inertia, about this same* of the three bars that make up the frame. Assuming the masses m_1, m_2, and m_3 are uniformly distributed, the total moment of inertia is,

La figure A1 donne les dimensions et la forme de la masse pivotante d'une mâchoire de piège. Le moment d'inertie de ce cadre en forma de U, autour & l'axe de rotation, est égal à la somme des mouvements d'inertie des trois parties qui ferment le cadre autour du même axe. Si les masses m_1, m_2 et m_3 sont uniformément réparties, le moment d'inertie total est:

$$I = m_2 l_1^2 + 1/3\, m_1 l_1^2 + 1/3\, m_3 l_1^2$$

In terms of the effective mass located entirely l_1 from the axis of rotation, the moment of inertia is:

En termes de masse effective m_e située entièrement l_1 de l'axe de rotation, le moment d'inertie est:

$$I = m_e l_1^2$$

Equating the moments of inertia yields

Les moments d'inertie mis en équation donnent

$$m_e = m_2 + 1/3\,(m_1 + m_3)$$

Since moments of inertia are additive if they are about a common axis, the effective mass of rectangular frames symmetric about the axis of rotation may be obtained by doubling the effective mass of one half the frame. The latter would then have geometry similar to that shown in Fiie L

Puisque les moments d'inertie peuvent être additionnés quand ils sont autour d'un même axe, la masse effective des cadres rectangulaires symétrique à l'axe de rotation peut être obtenue en doublant la masse effective d'un demi-cadre. Ce dernier aurait des dimensions semblables à celles de la figure L

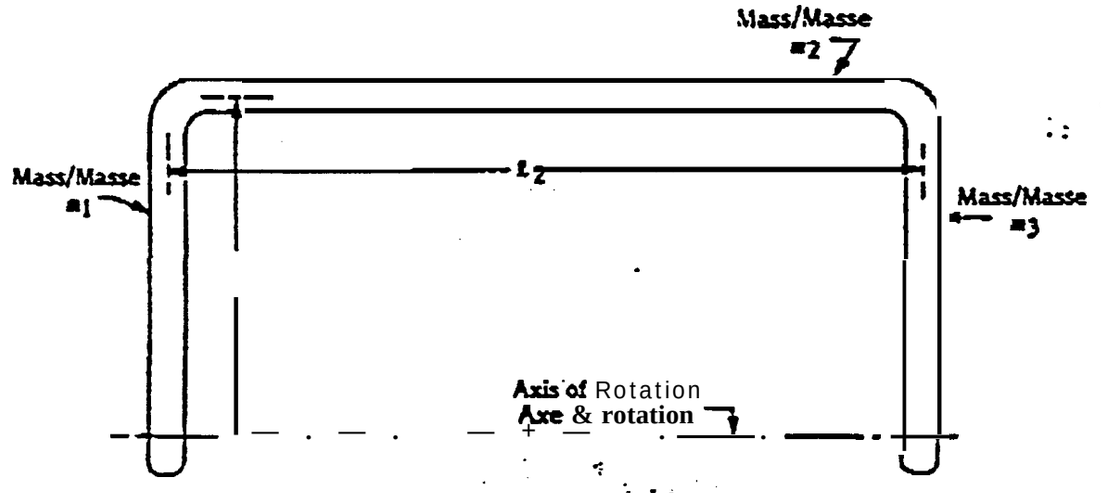

FIGURE A1

Typical Striking Ear for Determination of Effective Mass
Mâchoire type pour déterminer la masse effective