4th Revision - Adopted 1 December, 2019.

MUSH WITH P.R.I.D.E.

Sled Dog Care Guidelines

Introduction to the 4th Revision

The Mush with P.R.I.D.E. Sled Dog Care Guidelines represent a standard of care that is consistent with the 5 Provisions of Animal Welfare paradigm, prevents unnecessary harm and promotes the welfare of the dogs to which they apply. Our recommendations have a general level of acceptance among knowledgeable practitioners and experts in the field. Strong preference is given to peer-reviewed scientific literature. Where scientific evidence is lacking we recommend practices that have robust experiential foundations, are based on logic and reason and are practical in the multiple-dog setting of a sled dog kennel.

Since it's foundation in 1991 the role of Mush with P.R.I.D.E. has been defined by our name - to **P**rovide **R**esponsible **I**nformation on a **D**og's **E**nvironment. Experience has shown that the Mush with P.R.I.D.E. Sled Dog Care Guidelines must be updated regularly to keep pace with advances in science and communications as well as the ever-changing social perceptions of the many dog-powered activities that enhance not just our own lives, but the lives of our dogs as well.

The current Mush with P.R.I.D.E. Board of Directors strongly feel that it is our job to research and provide responsible information and evidence based recommendations that give mushers and kennel operators a range of options from which to choose. It is the job of the musher or kennel operator to use this information to prevent unnecessary harm and promote the welfare of your own dogs.

According to the American Veterinary Medical Association (AVMA), "Ensuring animal welfare is a human responsibility that includes consideration for all aspects of animal well-being, including proper housing, management, nutrition, disease prevention and treatment, responsible care, humane handling, and, when necessary, humane euthanasia."[1]

The recommendations in these Guidelines are based on the Five Responsibilities of Mushers and Sled Dog Kennel Operators, namely, to take practical steps to achieve the goals of all Five Domains of Animal Welfare, as described by David J. Mellor, PhD, in order to meet our human and humane responsibility to ensure that our animals are well cared for.[2]

The Five Responsibilities of Mushers and Sled Dog Kennel Operators, and their Animal Welfare Objectives

Responsibility	Sled Dog Welfare Goals
1. *Good nutrition:* It is the responsibility of the musher or kennel operator to provide ready access to fresh water and an adequate diet to maintain full health and vigor	Minimize thirst and hunger and enable eating to be a pleasurable experience
2. *Good environment:* It is the responsibility of the musher or kennel operator to provide every dog within the kennel with suitable housing, good air quality and comfortable resting areas	Minimize discomfort and exposure and promote thermal, physical and other comforts
3. *Good health:* It is the responsibility of the musher or kennel operator to prevent or rapidly diagnose and treat disease and injury, and to foster good muscle tone, posture and cardiorespiratory function	Minimize breathlessness, nausea, pain and other aversive experiences and promote the pleasures of robustness, vigor, strength and well coordinated physical activity
4. *Appropriate behavior:* It is the responsibility of the musher or kennel operator to provide sufficient space, proper facilities, congenial company and appropriately varied conditions	Minimize threats and unpleasant restrictions on behavior and promote engagement in rewarding activities
5. *Positive mental experiences:* It is the responsibility of the musher or kennel operator to provide safe, congenial and species-appropriate opportunities to have pleasurable experiences	Promote various forms of comfort, pleasure, interest, confidence and a sense of control

While the responsibilities for our dogs are always in the forefront during our daily routines, we also need to be cognizant of our responsibilities to our fellow humans. It is the responsibility of the musher or sled dog operator to understand and follow the laws and regulations that govern each individual area.

The Mush with P.R.I.D.E. Sled Dog Care Guidelines should not be confused with the term "best practices." The word "best" implies that all other practices are inferior and neither the scientific nor experiential evidence on which these Guidelines are based indicates that any one practice or method, or even any particular combination of practices and methods is superior to all of the others. These Guidelines are presented as responsible information that mushers and kennel operators can use to help determine what is best for their own dogs.

The Mush with P.R.I.D.E. Sled Dog Care Guidelines are based on the philosophy that it is the responsibility of every musher or kennel operator to have a reason for everything you do with and for your dogs, and be able to explain that reason to others when it's necessary to do so.

References:

[1] AVMA statement - https://www.avma.org/KB/Resources/Reference/AnimalWelfare/Pages/what-is-animal-welfare.aspx

[2] Mellor, D. "*Moving beyond the "Five Freedoms" by Updating the Five Provisions and introducing Aligned "Animal Welfare Aims*": Animals - Open Access Journal: 2016: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5082305/ accessed 5-5-2019.

Contents

Chapter 1. Managing the Physical Environment of Sled Dogs

Locating Your Kennel

If you have not yet established your kennel or are considering relocating, there are some general things worthy of your consideration. Perhaps the most important is the realization that even though every musher or sled dog kennel operator has a mental vision of an 'ideal' location for a sled dog kennel, the 'perfect' location probably doesn't exist.

Renting or leasing property versus ownership if property:
Caring for sled dogs and operating even a small-scale kennel are long-term commitments. As a general rule starting a sled dog kennel on rented or leased property should be considered only a temporary arrangement. There is never a guarantee that a rental contract or lease will be renewed when it expires. The more dogs a musher or kennel operator owns, the more difficult it becomes to find another suitable property available for rent.

One of the most common reasons that adult dogs are relinquished to animal shelters is owners moving into a new living arrangement that does not permit dogs.[14] All too frequently mushers who establish their kennels on rented or leased property find themselves in heartbreaking situations that force them to rehome some, or even all of their sled dogs.

Adequate space
The minimum amount of space required for each dog is 100 square feet. A modest 10-dog kennel would require an absolute minimum of 1,000 ft^2 just for housing and confinement. The confinement area is only a part of a sled dog kennel's space requirements. One must also consider the space needed for exercise and play yards or paddocks, the musher or kennel operator's home, storage sheds, driveways, vehicle and parking areas and other needs.

The point is to be sure your property has enough space to accommodate the needs of your dogs as well as your own before you start developing your sled dog kennel.

Access to resources
Every dog must be provided daily access to food and water to maintain good health. Veterinary care is necessary for the treatment of illnesses and injuries. Mushers and kennel operators in areas inaccessible by road or railroad must have a viable plan to ensure access to these important resources.

Communications and transportation infrastructure.
Mushers living well away from veterinary services need a means to communicate directly with animal health care professionals for assistance with emergency care and treatment of injuries and diseases. Mushers or kennel operators in regions where communication or transportation infrastructure is lacking must be well prepared to manage emergencies on their own.

Access to trails
Sled dogs require a lot of exercise and both training and conditioning require access to trails on which you and your team can work out and practice. Many mushers do fine transporting their dogs to relatively distant trails, but most prefer to have access to mushing friendly trails close to home. Many mushers agree that it is well worth the time and resources to implement easy access to trail systems directly from your property.

Exposure to Environmental Conditions
A dry, well-drained area makes life pleasant for both dogs and musher. These conditions are also best for the dogs' feet and for disease control. A location both visible and audible from a house window allows you to enjoy the company of your animals and alerts you to problems or emergencies.

Locating the kennel on a slight slope or on a high spot will greatly improve drainage. Low lying, flat areas may seem perfectly dry during winter but a few weeks of standing water during spring thaw will make life miserable for both you and your dogs. If at all possible try to avoid establishing your kennel in a flood plain.

In summer, shade helps keep the dogs cool, and a breezy location helps keep bugs away. During winter, a sunny area that is protected from wind helps conserve the dogs' energy. It is best to lay out the dog yard so the ground is exposed to full sunlight for at least part of the day. Direct sun (ultraviolet light) is one of the best natural means of controlling disease organisms. However, you should try to provide at least one shady spot for each dog to retreat from the sun's heat.

Ideally, your kennel should be located on a southern aspect adjacent to hardwood (deciduous) trees. The trees will provide summer shade, and after leaf fall the winter sun will improve the microclimate of the kennel.

Plan your dog yard in a way that allows you to do your chores efficiently so you can spend more time caring for and interacting with your dogs. If you are able to run dogs directly from the yard, it's well-worth planning a safe takeoff area for runs. Other considerations include access by vehicles for loading up dogs and for maintenance.

The risk of natural disasters should also be considered when selecting a location for your kennel. The two most common disasters that impact sled dog kennels are floods and wildfires. If at all possible, sled dog kennels should be located well above the floodplain of nearby waterways, and mushers or sled-dog kennel operators should follow the guidelines of local wildland firefighting agencies to reduce the risk presented by wildfire.

Confinement and Housing

It is the musher or sled dog kennel operator's responsibility to confine and house every dog in a manner that prevents escape, provides protection from natural or human threats, and helps achieve the welfare goals of the 5 responsibilities of sled dog welfare.

The manner in which a musher or sled dog kennel operator confines and shelters his or her dogs has a direct impact on four of the 5 Responsibilities of Mushers and Sled Dog Kennel Operators:

- Good environment
- Good health
- Appropriate behavior
- Positive mental experiences.

Each of these must be considered when designing, building, improving and managing your kennel.

Primary Confinement

Currently available scientific evidence does not support any confinement method to be either superior or inferior to others. All are associated with both positive and negative factors that mushers or kennel operators must consider when deciding which method or combination of methods is best for his or her own dogs and circumstances.

A June 2019 poll on social media asked dog mushers "how do you confine your sled dogs?" Poll results indicated that the majority of small-scale mushers confine their dogs primarily in their own homes with a fenced yard. [1] The majority of larger sled dog kennels preferred a combination of small-group pens and tethers (55%), small group pens only (25%), tether system only (9%), unheated building with attached individual runs (5%), and large group (>3 dogs) pens (5%). Only 1 respondent housed his or her dogs in a climate controlled building with attached runs.

5% of respondents confined their dogs with some other method.[2] When asked to elaborate, these mushers described a combination of their homes and small pens, homes and tethers, or buildings and pens.

Outdoor Confinement Methods

A thorough review of scientific literature found only 1 peer-reviewed paper assessing the outdoor confinement of sled dogs. In that study the researchers determined that both small-group pens and tethers designed specifically as recommended in this guideline are equally humane[3] Both methods are well supported by experiential evidence in the setting of sled dog kennels.

Small-group (2 - 4 dogs) Pen Confinement

Positive Factors	Negative Factors
Dogs housed in pens are less likely to escape than dogs housed on tethers. [4]	Size requirement of small-group pens has not been well established by science.[5] Mush with P.R.I.D.E. recommends small-group pens provide at least 150 square feet for 2 dogs plus 50 additional square feet for each additional dog confined within the pen.
Provides opportunity to interact with compatible pen mates	Cannot easily prevent fights. Mushers must assess the temperaments of dogs housed in small group pens carefully to ensure that pen mates are compatible.
Lower long-term repair and maintenance costs than other confinement systems.	Higher initial cost than recommended tethering system.
Dogs housed in small groups bark less frequently than dogs in individual runs.[19]	Maintenance and repairs may require more time and resources than maintenance and repair than some other confinement methods
	Dogs in adjacent pens may engage in obsessive parallel running or fence-fighting that can lead to serious dog fights should the antagonists be provided an opportunity to do so.

Recommendations:

When confining dogs in pens, the dogs sharing space must be chosen based on compatibility. In most circumstances dogs of the same sex should not be housed together as they are more likely to fight among themselves than dogs of opposite sexes. This is equally true regardless of whether the dogs are intact or have been spayed or neutered.[14] In circumstances in which intact and 'fixed' dogs live in the same kennel, intact dogs can share pens with compatible spayed or neutered companions of the opposite sex.

Many sled dogs are notorious escape artists. Fencing material of pens should be sturdy and resistant to chewing. Chain-link or sturdy woven-wire fencing is preferable to more flimsy materials. Pen walls should be buried 6 to 12 inches (15-30cm) into the ground to discourage digging under.

Fence height of at least 6 feet (1.8 m) or more is recommended to discourage climbing. Coyote rollers can be installed across the top of fence walls to help prevent dogs from jumping or climbing out. Coyote rollers consist of a metal cable that is mounted at the top of the fence. The cable is run through the center of plastic pipe (usually three to four inch diameter pipe). The cable is mounted high enough above the fence so that the pipe is free moving on the cable but the dog or coyote cannot slip between the top of the fence and the cable. As a dog (or coyote) tries to climb the fence and tries to get a grip on the pipe, the pipe rolls and the dog or coyote falls back to the ground.

One can prevent dogs from tunneling under a fence by creating an L-footer along the base of the fence. Take a roll of heavy garden fence or hardware cloth and unroll it alongside your fence. Bend the fencing so a foot of it can be attached to the base of your fence posts and the remainder will lie flat on the ground at the base of the fence extending into your yard. The base of the L can be staked to the ground, covered with dirt, gravel, or other substrate.

Runs and pens must be equipped with gates that are wide enough to permit easy entry and exit from the enclosure while carrying feed or water pails or bedding material, but small enough to be closed quickly if necessary to prevent a dog from "rushing" the gate and escaping. A dual gate or "airlock" zone allows a caretaker to enter or exit the pen with less risk of a dog bolting through a single open gate. Gates must be equipped with latching devices that are easy for the musher to manipulate while wearing gloves, but difficult for dogs to manipulate. During winter it is important to shovel snow well away from gates in order for them to swing fully open when necessary.

Doghouses should be placed in areas of the pen where they cannot be used as platforms from which a dog can climb or jump over a fence.

Because there is scientific evidence that single-housing dogs in pens may be detrimental to their welfare, in most circumstances Mush with P.R.I.D.E. does not recommend pen confinement for an individual dog housed outdoors. Possible exceptions are;

- When that individual is the only dog owned by the musher.
- It is necessary to confine a female in estrus (in season or in heat).
- It is necessary for care and recovery from an illness or injury.[7.8]

When such circumstances require isolating a dog from his or her kennel-mates it is recommended that they be housed within sight of the other dogs and that they receive extra attention from caretakers. [9]

Tether Confinement

Positive Factors	Negative Factors
Allows dog to interact with up to four different kennel mates	Space requirement not well determined by science [5,6] . Mush with P.R.I.D.E. recommends a minimum of 100 square feet per dog confined by the recommended tether system.
Prevents dogfights and allows dogs to safely retreat from more aggressive neighbors.	Requires close monitoring and more frequent maintenance of hardware to prevent injury or escape.
Allows caretakers easy access to each dog for individual health care, husbandry, and individual socialization and training.	Requires appropriate collars for each individual dog's coat type and head shape.
Allow caretakers to monitor the amount of food or water consumed by the dog, quality of the dog's feces and individual behavior without the interference or stimulation of a second animal in the same space.	Tether systems with low-lying anchors requires the chain to drag entirely on the ground, stirring up dust and spreading feces. Such systems require more frequent feces removal (scooping).
	Tether systems with low-lying anchors can result in the chain freezing to the ice and snow when the dog urinates on its post.
	Dogs are more likely to escape from tethers than from fenced enclosures. [4]
	Illegal in some political jurisdictions and socially controversial in others.

Tethering systems are controversial and when used inappropriately have been associated with circumstances that are detrimental to the welfare of dogs. Association is not causation, and when used appropriately by diligent mushers or kennel operators there is no evidence that tethering in and of itself results in poor welfare.[3,4]

Recommendations:

The circular tethering system described in these Guidelines is intended for use only in sled dog kennels housing four or more dogs. Each dog confined on a tether should be able to interact with at least one of his or her kennel mates. This requires that anchors be placed close enough to allow dogs to touch noses and play, but far enough to prevent chains from tangling. In a circular tethering system 6 foot (1.8 m) chains measured from the anchor point to the snap and spaced 14 feet (4.27 m) apart accomplishes this.

Cable must never be used to tether sled dogs. Cable is much too likely to tangle around legs (in an armpit or hock) and can cinch up like a snare. Cables also have a tendency to fray and break.

Elevated anchors that prevent the chain from dragging on the ground are generally preferable to ground level anchors where ground conditions permit their use. Elevated anchors prevent the chain from dragging on the ground, spreading feces and generating dust. In circumstances where elevated anchors are impractical ground level anchors are permissible but require more frequent feces removal.

The preferred tethering method consists of a chain attached to a rotation device at the top of a post or pipe, thus allowing the chain to travel in a full circle around the anchor. A simple rotation device, called a "spinner", consists of a piece of rebar with a 90-degree angle bend and an eye for the chain welded on the end. A hollow iron or steel pipe is driven deeply into the ground to serve as the post. In use, the long arm of the spinner slips inside the pipe, allowing the spinner to swivel through a complete circle. With this system the post can be easily lengthened in deep snow by slipping a taller pipe of larger diameter over the shorter summer post.

Collars of dogs confined on tethers should be well constructed of durable material, at least 3/4" wide and caretakers must be diligent to ensure the system is not inadvertently causing injury. Collars should be inspected daily to ensure they are not abrading the dogs' fur or chafing the dogs' necks. Chains, connectors and snaps should be inspected for wear at least monthly. Some dogs put a great deal of strain against their chains, causing links to stretch over time. Therefore it is recommended the chain be measured at least every 6 months to ensure they don't stretch so much that dogs can tangle together.

Indoor Confinement Methods

In Home Confinement

Positive Factors	Negative Factors
Promotes more frequent interactions with human caretakers making it easier to monitor body condition, vigor and behavioral indicators of welfare.	Requires a greater time commitment for socialization, habituation and training than some outdoor confinement methods.
Most homes provide a temperature controlled environment adequate to meet the thermoregulatory requirements of dogs.	May not provide the space required for sled dogs to engage in the full range of typical behaviors.
May provide more opportunities for environmental enrichment than outdoor confinement methods.	May expose dogs to environmental toxins such as household cleaners and chemicals, human foods that are unsafe for dogs and other substances not normally found in an outdoor environment.
	May require temperature regulation more suited to the dog's needs than those of human residents
	May promote competition between dogs for resources, including caretaker attention that can lead to dogfights, resource guarding behavior and other unpleasant interactions between dogs.
	Close confinement in an indoor space may promote the spread of infectious diseases.
	May be difficult or impossible to separate intact females from intact males during estrus.
	Noise levels may be excessive and uncomfortable or unhealthy for both dogs and human caretakers.
	Dogs housed in human dwellings may not be adequately acclimated to tolerate cold temperatures during dog mushing activities.

Building with Attached Runs, Pens or Yards (Paddocks)

Positive Factors	Negative Factors
May be able to incorporate climate control mechanisms (heat or air conditioning) appropriate for the needs of dogs.	Space requirement not well determined by science [5,6] . Mush with P.R.I.D.E. recommends that each dog housed in a building with attached runs or pens be provided at least 100 square feet for an individual dog plus an additional 50 feet for each additional dog sharing the space.
When equipped with dog-actuated doors, permits individual dogs to choose between different environments.	Construction, maintenance and climate control expenses can be considerable.
Depending upon wall and flooring materials, it may be easily cleaned and sanitized.	Close confinement in an indoor space may promote the spread of infectious diseases.
When well constructed and maintained is perceived positively by most of the general public as a confinement method.	Requires adequate ventilation
	Noise levels may be excessive and uncomfortable or unhealthy for both dogs and human caretakers.
	Maintenance and repairs may require more time and resources than maintenance and repair than some other confinement methods

Recommendations:

Poor air quality has been identified as a potential welfare concern in USDA regulated indoor kennels and animal shelters and is applicable to both the musher's home as well as kennel buildings. It can have a detrimental impact on human health as well as the health of our dogs. The American Veterinary Medical Association states that proper ventilation removes excess heat, dampness, odor, airborne microbes, and pollutant gases such as ammonia and carbon monoxide, while allowing for the introduction of fresh air. Both the AVMA and the Association of Shelter Veterinarians recommend 10 to 20 fresh air changes per hour in buildings or rooms in which animals are housed.[17,18]

Adequate ventilation is particularly problematic for dogs housed in the owner's home. Modern homes constructed in northern regions are relatively air-tight to conserve energy, and most are so tightly constructed as to permit less than 1 fresh air change per hour. It is nonetheless the responsibility of the musher or kennel operator housing sled dogs in his or her own home to ensure that air quality is adequate to remove heat, dampness, odor, airborne microbes and pollutants as necessary to ensure a healthy environment for his or her dogs.

Dogs housed inside buildings are at particular risk in the event of a structural fire. Many government jurisdictions enforce building codes that regulate the construction and maintenance of buildings in which animals are confined. It is the musher or kennel operator's responsibility to ensure that his or her own kennel is in compliance with all applicable statutes and regulations.

Mush with P.R.I.D.E. recommends that any structure in which sled dogs are housed, including the owner's home, be equipped with A-B-C type fire extinguishers located within 50 feet of any point in the structure. Heating devices used in dedicated kennel structures should be of a type designed for agricultural use and placed well away from any flammable materials. Straw, wood chips or other bedding material should be stored away from the building in which dogs are housed and evacuation routes such as aisles or alleyways must be kept clear of obstructions.

Alternative Confinement Systems

Although the confinement methods listed above are recommended other alternatives may also be acceptable so long as they meet the objectives of preventing escape from the owner's property, provide adequate space, allow interaction with caretakers and other dogs and provide protection from natural and human threats. Mush with P.R.I.D.E. encourages mushers using suitable confinement methods not included in this chapter to share their experiences with others so we can build on the body of evidence that supports excellent welfare for our dogs.

Space Requirements for Dogs Housed in Sled Dog Kennels

It is the musher or kennel operator's responsibility to provide every dog confined and/or housed within the kennel adequate space to engage in a full-range of species typical behaviors, including elimination of waste outside the shelter or bedding area, standing upright, lying down full length, turning about, walking, running, trotting and jumping at least the distance of the dog's height as measured at the shoulders.

In circumstances in which a dog's behavior must be restricted for the treatment of illness or injury, the dog must nonetheless be provided adequate space in which to stand upright, turn about, sit upright or lie full length.

The space requirements of dogs have not been well established by scientific researchers.[5,6] The most useful study thus far available shows that dogs housed as a pair in a 193.8 ft^2 (59 m^2) enclosure were 1.34 times more likely to be active than a single dog housed in a 96.9 ft^2 (29.3 m^2) kennel.[6] This suggests that available space can influence the well being of kenneled dogs because more space allows dogs to engage in a wider range of natural behaviors.

The space recommendations in this guideline are based on the limited available scientific evidence combined with the experiential evidence provided by sled dog veterinarians and the observations of experienced dog mushers. We recommend providing an individual dog with at least 100 square feet (30.4 m^2), with an additional 50 square feet (15.2 m^2) for each additional dog housed in the same space. Less space may be acceptable in circumstances in which dogs are provided ample opportunities to exercise in a larger area outside of their primary confinement area.

Recommendations:

Dogs housed primarily in their owners homes should be provided at least 100 square feet of floor space unencumbered by furniture for 1 dog, and an additional 50 square feet for each additional dog. Less space may be acceptable in circumstances in which those dogs are provided opportunities to exercise outside the house several hours each day. Dog actuated doors providing free access to a fenced yard increases the dogs' available space considerably.

Pens used for primary confinement should provide at least 150 ft^2 for two dogs, and an additional 50ft^2 for each additional dog in the group. Therefore a group of three dogs should be provided a pen of at least 200 ft^2 and four dogs a pen of at least 250 ft^2. In circumstances requiring that a single dog be confined alone in a pen, that pen should provide at least 100 ft^2 of space.

Measured from the anchor to the snap, chains used in the circular tether methods should be a minimum of 6 ft (1.8 m) in length. This provides each individual dog at least 113 ft^2 (34.4 m^2) of space.

Perimeter Fencing

Wherever practical, Mush with P.R.I.D.E. highly recommends that sled dog kennels be surrounded by a perimeter fence that is tall and strong enough to prevent any dogs that escape from their primary confinement from leaving the owner's property and to prevent wild animals, stray pets or human trespassers from coming into contact with the dogs.

Shelter

It is the musher or kennel operator's responsibility to provide each dog with easily accessible shelter sufficient to provide protection from wind and precipitation, to meet the dog's physical thermoregulatory needs and to promote physical comfort during extremes in environmental temperature.

Every dog confined outdoors or in a building that does not include climate controls (heating and/or air conditioning) or who spends unsupervised time outdoors must be provided a house that is adequate to meet his or her thermoregulatory needs, even if the dog chooses to not use it. The type of house should be based on the dog's coat type and condition, body condition, age and general health.

In the United States wooden doghouses have been criticized because they are difficult to thoroughly clean and sanitize. Meanwhile in Norway plastic doghouses are criticized because they may not provide adequate insulation to meet the needs of the relatively thin-coated dogs that are popular in long-distance sled dog racing in that region. To address these conflicting concerns Mush with PRIDE presents several different options. It is the kennel operator's responsibility to choose the option best suited for each dog in his or her kennel.

Uninsulated Wood or Plywood Dog Houses

Positive Factors	Negative Factors
Good wind and precipitation resistance	Difficult to clean and sanitize
Provides more insulation than plastic	Easily damaged by chewing and dogs may ingest wood splinters.
Easily constructed, maintained and repaired.	Unsightly if not frequently maintained
	In extreme northern climates may only be suitable for adult dogs with thick, double-layered coats and a body condition score of 4 or higher (9-point scale) in good general health. May not be suitable for very young, very old, thin-coated or underweight dogs.

Insulated Wood or Plywood Dog Houses

Positive Factors	Negative Factors
Good wind and precipitation resistance	Difficult to clean and sanitize
Provides adequate insulation for most thin-coated sled dogs.	Easily damaged by chewing and dogs may ingest wood splinters.
Easily constructed, maintained and repaired.	Heavier, more expensive and more complicated than uninsulated houses.
	Unsightly if not frequently maintained
	Adult dogs with thick double-layered coats in good body condition and health may avoid using insulated houses, particularly during relatively mild temperatures.

Repurposed Plastic Drums

Positive Factors	Negative Factors
Good wind and precipitation resistance	May require ventilation to prevent accumulation of frost
Repurposed non-biodegradable barrels would otherwise be discarded, possibly into a landfill or the general environment.	May not provide adequate insulation for thin or short coated dogs in harsh winter environments.
	Socially controversial

Commercially Manufactured Dog Houses

Positive Factors	Negative Factors
Generally perceived positively by the general public.	Expensive compared to owner-built and repurposed options.
Variety of styles widely available	Insulation value varies greatly and is sometime difficult to determine.
Many are constructed of materials that are easily cleaned and sanitized.	Some are easily damaged by dogs who may then ingest pieces of the construction material.

Recommendations:
Every dog that spends unsupervised time outdoors must be provided a shelter adequate to meet his or her thermoregulatory needs. Most mushers accomplish this by providing each dog a doghouse. Each doghouse should be suitable for that individual dog's coat type, body condition, age and general health. Each house should be large enough for the dog to turn around and relax inside, but small enough to conserve body heat during winter.

During winter dogs should be provided insulative bedding material such as straw, hay or wood chips. Bedding should be monitored closely, replenished as needed and replaced if it becomes wet. Beware of foxtails, mold, contact dermatitis and individual allergies. If a dog develops an issue with one type bedding switch to another. Remove organic bedding material during the summer to keep dogs cooler and prevent irritation from mold, dampness or skin parasites. Removable roofs or floors make it easier to remove or maintain bedding material.

During winter the doorway to the doghouse must be elevated above the level of the snow and snow shoveled away from the doorway to ensure the house is accessible to the dog. A trim board or small tunnel-like portal extension around the door of the house helps prevent males from urinating through the door, deflects wind and rain and discourages chewing and chain wear around the door.

Although doghouses with pitched or domed roofs are acceptable, those with flat roofs offer several advantages. Snow accumulation on a flat roof provides additional insulation and flat roofs provide comfortable sunning, sleeping and observation platforms for dogs. Many mushers train their dogs to jump on top of flat-roofed doghouses for handling, nail trimming and other husbandry procedures.

Wooden doghouses painted with non-toxic coating are more durable and more easily cleaned and sanitized than untreated wood. Be sure to avoid paints or coatings that contain lead or other toxic chemicals. Coating the interior of wooden doghouses makes them easier to clean and sanitize when necessary.

Substrate (Surface Material)

While there is strong scientific evidence that the type of surface on which animals live is important to their health and well-being, there are few scientific papers that support any type of surface as being either superior or inferior to any others for dogs.[10]

Natural Earth

Positive Factors	Negative Factors
Least expensive	May harbor parasites and bacteria for long periods of time.
Permits the innate natural behavior of digging	Difficult to clean and nearly impossible to sanitize
Easily manipulated with hand tools or light equipment	Requires frequent maintenance
	Wet, muddy conditions can result in foot injuries to some dogs, including splits or fissures.[11]
	May allow rock eaters access to stones that can cause health and life threatening gastrointestinal blockages.

A 2019 poll of Mush with P.R.I.D.E. members found the majority of our members house their dogs primarily on a surface consisting of natural earth or a mixture of natural earth and organic material, sand or gravel .[12] Natural soil without other materials is fine in areas with good drainage but long term exposure to mud or wet surfaces can result in foot injuries, including splits and fissures.[11]

Recommendations:

Excessive silts and clays in the surface will produce a rock-hard surface when dry but slows drainage and becomes slick and sticky when wet. Adding sand or fine gravel to soil improves drainage and also helps reduce dust during dry conditions. Due to the risk of dogs eating rocks, it is recommended that screened gravel less than 3/4 inch (19 mm) in diameter be used for this purpose.

During wet seasons many mushers add straw, woodchips or other organic materials to help keep the surface drier. Because excessive amounts of decaying organic material increase water retention and increase the amount of fungi, mites and other potentially health-threatening organisms such materials should be removed when the weather improves.

Digging is an innate, "species typical" behavior. When unable to dig many dogs resort to displacement behaviors to vent their frustration such as chewing on houses, stereotypical pacing, rock eating and other potentially dangerous behaviors. Many mushers accept the extra work of filling in holes rather than discouraging or preventing digging.

Some methods that can limit digging to acceptable areas or depths include installing platforms over just a portion of the dog's confinement area or by burying sturdy fencing or concrete reinforcing mesh beneath the surface material.

Wooden Platforms and Home Flooring

Positive Factors	Negative Factors
Prevents digging	Thwarts innately rewarding behavior, which may be detrimental to welfare.
Easier to thoroughly scoop feces, clean and sanitize than natural earth	May harbor parasites and pathogens within pores.
When well maintained and tidy is visually appealing to humans.	May be slippery increasing the risk of injuries to both dogs and caretakers.
May provide a cleaner and drier surface in kennels located in low-lying areas with high water tables or areas prone to heavy seasonal rainfall.	Requires more frequent nail clipping and care on the part of caretakers
	May have a detrimental effect on the development of bones and joints in very young puppies.[13]

Concrete, Asphalt or other Pavement

Positive Factors	Negative Factors
Prevents digging	Thwarts innately rewarding behavior which may be detrimental to welfare.
Easier to thoroughly scoop feces, clean and sanitize than natural earth or wood or wood-like materials	May harbor parasites and pathogens
When well maintained and tidy is visually appealing to humans	May be slippery when wet or icy, increasing risk of injuries to both dogs and human caretakers
	Is abrasive and may cause excessive wear and injury to feet.[11]
	May have a detrimental effect on the development and health of bones and joints, particularly in very young puppies.[13]

Recommendation:
Mush with P.R.I.D.E. recommends that dogs housed on primarily solid surfaces such as wooden floors, home flooring, platforms or pavement be provided ample opportunities to play and exercise in a larger area with natural surface.

Kennel Maintenance and Hygiene

It is the musher or kennel operator's responsibility to provide each dog a safe environment that promotes comfort and good health.

Waste Management

Dog feces are a significant source of bacterial and parasitic infectious material, and frequent feces removal is important to the health of both dogs and human caretakers. Mush with P.R.I.D.E. recommends that all visible feces be removed from each dog's primary confinement at least once every day, and encourages more frequent scooping. It is good practice to integrate scooping with other routine kennel chores such as feeding and watering, and remove feces whenever it is encountered.

Once removed from the kennel, feces have to go somewhere. In many jurisdictions official regulations or ordinances govern disposal of pet waste. It is the musher or kennel operator's responsibility to know and obey the laws of his or her own community.

Disposal in Municipal Sewage Systems

Positive Factors	Negative Factors
Preferred by United States Environmental Protection Administration (EPA).	Impractical to introduce the volume of feces produced by more than a few dogs into the sewage system.
Suitable for small kennels.	

Where practical, disposal into municipal sewage systems is the method most highly recommended by the United States Environmental Protection Administration (EPA). Mushers or operators of small-scale sled dog kennels can conveniently dispose of their dogs' feces by simply flushing it down a household toilet. Those with larger kennels should discuss the feasibility and methods of introducing dog waste into those systems with public works or sanitation department officials.

Disposal in Municipal Landfills

Positive Factors	Negative Factors
Removes waste and associated pathogens from the kennel.	Contributes significant volume to the waste stream.
Prevents waste products from leaching into the watershed.	Requires off-site transportation and may require payment of disposal fees.
Preferred method of disposal in some municipalities.[16]	

Disposal in a municipal landfill is the preferred method of disposal in many suburban and developed rural jurisdictions. Landfills are designed to prevent contaminants from leeching into both surface and groundwater. Removing the feces from your kennel property prevents dogs from coming into contact with it, which helps reduce the risk of disease and parasites.

Composting

Positive Factors	Negative Factors
Destroys many pathogens	Does not adequately destroy all pathogens in some environments.
Reduces risk of polluting groundwater and streams	Requires additional organic material (straw, wood chips, etc.) to break down the feces and kill pathogens.
Produces a useful, safe soil amendment	Discouraged in some municipalities.[16]
	Dog waste compost is not safe for use in agriculture or gardens where human food is produced.
	Ineffective during winter so requires accumulation and storage of feces until outdoor temperatures rise in spring.
	Moderately complex process requires monitoring and significant time commitment.

Good composting can remove raw dog waste from the environment where it can pollute surface water and streams. Good composting is believed to destroy pathogens and produce a safe soil that can be used for flower beds and landscaping purposes. It also eliminates the need to transport dog waste to a landfill or safe disposal facility.[15]

Safe dog waste composting requires sustained temperatures of 140° F (60° C) or higher for extended periods of time. While this is achievable during most warm weather months, composting is ineffective during periods of freezing outdoor temperatures. Guidelines and instructions for dog waste composting can be downloaded at ftp://ftp-fc.sc.egov.usda.gov/AK/Publications/dogwastecomposting2.pdf.

Dog Waste Digesters and Septic Systems

Positive Factors	Negative Factors
On site treatment.	High volumes of hair and ash not normally found in human waste, can interfere with septic system functions and clog drain fields.[29]
Relatively odor free	Septic systems designed for kennel use are expensive to install and require periodic maintenance.
	Discouraged in some municipalities.[16]
	Digesters are ineffective during winter so require accumulation and storage of feces until outdoor temperatures rise in spring.
	Based on manufacturer recommendations, commercially manufactured digesters lack the capacity to manage waste from more than 2 or 3 typical sled dogs.

Members of the Mush with P.R.I.D.E. Guidelines Committee lack the technical expertise necessary to provide reasonable recommendations for the use of septic systems or digesters for disposal of dog waste. Mushers or kennel operators interested in building or installing such systems should discuss the feasibility of such systems with local public works, sanitation department, or environmental regulatory officials.

Waste disposal pits

Positive Factors	Negative Factors
Removes feces from the primary confinement and housing area.	Attracts flies and mosquitoes, which may then transmit bacteria or viruses to dogs or humans.
Reduces contamination of surface water.	May be a source of sub-surface groundwater pollution.
Relatively inexpensive to construct and maintain.	Odoriferous, particularly during warm weather.

Dog waste disposal pits serve the same purpose as dry-pit latrines (outhouses) for human use. They are most suited for kennels located in very remote rural or frontier settings. Their primary purpose is to prevent dogs and people from being exposed to feces that has been removed from the primary confinement area and to prevent contamination of surface water while the feces decomposes naturally.

A waste disposal pit is simply a hole in the ground. Fecal material is dropped into the hole as it is removed from the kennel. Organic materials such as used straw or wood chips from doghouse bedding or that has been used to improve drainage in the dog yard can also be disposed of in the pit. When the disposal pit is nearly full it should be covered with at least 24 inches (61 cm) of soil and new pit dug in a different location to serve in its place.

Mush with P.R.I.D.E. Guidelines Committee members were unable to find any evidence based guidelines for dog waste disposal pit construction or maintenance. The following information is based on Alaska Department of Environmental Conservation regulations for the construction and operation of pit privies for human waste.[30] *Because the suitability of these guidelines for dog waste disposal cannot be determined, this information is provided for comparison purposes only.*

Site Selection:

- *Find a site where the groundwater table is deep enough to ensure the four foot minimum vertical separation between the bottom of the pit and the groundwater.*
- *Locate the pit privy in area where the water will drain away from pit.*
- *A pit privy shall not be installed in an area that is subject to flooding.*
- *Pit privies meeting the below requirements are not required to be approved by or registered with the Department. Check with local government for additional restrictions or requirements.*
- *The pit privy must meet the following minimum separation distances (setbacks)*

Minimum Required Separation Distances Measured Horizontally or Vertically

Distance in Feet	***Separation Distance to...***
100 feet	*Surface water, wetlands, sloughs, swamps and from any potable water system that is not a public water system*
200 feet	*Any water source used to supply a public water system serving at least 25 people for more than 60 days*
6 feet	*From the edge of the pit privy to any other soil absorption fields*
4 feet	*The distance between the bottom of the pit privy and seasonal high groundwater table*

Pit Construction:

- *Dig a pit deep enough to provide capacity for the amount of waste anticipated. When sizing the pit, include the estimated amount of used bedding and other organic waste if you intend to dispose of in the pit.*
- *As noted above, dig the pit so that the bottom of the pit is at least four feet above the groundwater table to prevent flooding of the pit and provide adequate treatment of the waste.*
- *Construct the pit to prevent cave-ins. If necessary, cribbing can be used to shore up the sides of the pit. Cribbing should fit firmly against the earthen walls on all sides. Cribbing should descend the full depth of the pit and rise flush with the ground level. Use only untreated lumber for the cribbing.*
- *Construct the pit so water drains away from the opening and not into the pit. Use the excavated soil to berm up around the pit.*

Abandon the pit properly when solids are within two feet of the ground level or when use of the pit is permanently discontinued

- *Remove any structure erected over the pit.*
- *Apply lime to the pit.*
- *Cover with a minimum of two feet of compacted soil. More cover may be needed to adequately cover the pit.*
- *Contour the soil so there is a mound that will ensure drainage away from the pit and to allow settling of the soil.*
- *Mark the pit location so that future owners avoid digging a new pit into a previously abandoned pit.*

Noise Management

Kennel noise is a significant health and safety issue for both dogs and humans. Scientific researchers have recorded sound levels in kennels as high as 120 dB, and continuous sounds levels in the range of 100 - 108 dB.[19] This is well in excess of safe noise level standards established by the United States Occupational Safety and Health Administration. Mushers and sled dog kennel operators should consider the reasons why dogs bark excessively and develop a plan to address those issues.

Recommendations:

Because dogs housed together bark less than those housed individually, your dogs should be confined in a manner that allows them to interact with at least one kennel mate.[19] All of the confinement methods described in this guideline can accommodate this recommendation.

Control exposure to circumstances that stimulate barking in your kennel. Nearly all sled dogs can be expected to bark during feeding and when hooking up or loading a team for a training run. These controllable events should be timed so that the noise generated by excited dogs does not interfere with your neighbors sleep patterns. This is particularly important if your neighbors are night-shift workers.

Mushers or operators of sled dog kennels located close to roads or trails may consider installing privacy fences or other barriers to restrict the visual stimulation of pedestrians, other dogs or moving vehicles that can trigger barking. Visual barriers may also help prevent your dogs' barking from bothering grazing livestock or wildlife on neighboring properties.

Some experienced scientific researchers and subject matter experts feel the most effective means of reducing the frequency and intensity of barking is to simply spend time with your dogs. Incorporating play, petting and one-on-one behavior training sessions are all associated with lower sound levels in the kennel environment.[21, 22]

Other enrichment methods that can help reduce nuisance barking are discussed under the heading Environmental Enrichment, below.

Environmental Enrichment

It is the responsibility of the musher or kennel operator to provide safe, congenial and species-appropriate opportunities to have pleasurable experiences

Environmental enrichment enhances the quality of animal care by increasing behavioral diversity, reducing the frequency of abnormal behaviors, increasing the range or number of normal behavior patterns, increasing positive utilization of the environment, and increasing the ability of the animal to cope with challenges in a more normal way. [23, 24]

There is strong scientific evidence that environmental enrichment may be one of the most important things mushers can do to meet the psychological as well as physical needs of our dogs.[9. 25. 26] The Mush with P.R.I.D.E. Guidelines Committee plans to write an entire chapter on the topic for these guidelines in the near future. In the meantime, the following recommendations can be used to enrich the lives of your own dogs.

Recommendations:
Occupational enrichment is one of the best, and most natural, forms of enrichment we can provide working dogs. Taking your dogs on frequent training and conditioning runs provides both physical and mental exercise and exposes them to the unique sights and scents of the trail. Other forms of occupational enrichment useful during the off-season include participation on other dog sports, such as agility, flyball, or dock-diving. Sporting breeds popular with many mushers may also excel at (or at least enjoy the physical and mental challenges of) field trials. Many pure-breed mushers also participate in dog shows and obedience competitions.

Social enrichment refers to providing opportunities to interact with other dogs and with human caretakers. Some forms of social enrichment such as confining dogs in a manner that allows interaction with at least one other kennel mate. Other options for social enrichment include walking dogs, allowing dogs to interact in supervised play groups, and participating in obedience classes. Training and practicing simple cues such as "sit", "down" or "stay" have been shown to be particularly enriching for dogs and even human-socialized wolves kept in captivity.[27]

Physical enrichment involves the complexity and quality of the dogs' living space. Some forms of physical enrichment already discussed in this guideline include providing flat-roofed doghouses dogs can use as raised platforms, access to outdoors through pens or paddocks attached to kennel buildings, and providing dogs with doghouses in which they can hide if frightened or stressed. Other practical physical enrichment methods can be as simple as housing dogs on a soil, sand or gravel substrate in which they can dig and providing toys they can manipulate,

Sensory enrichment engages the different senses of dogs, such as sight, sound and smell. Outdoor kennels in rural or remote settings allow the dogs to see, hear and smell wildlife as well as other natural stimuli in the environment. In suburban or urban settings the dogs can nonetheless respond to interesting movement, sounds and odors in their own environment. Olfactory enrichment can be achieved by introducing interesting odors into the dogs environment, such as spritzing perfume or cologne while walking through the kennel. One researcher reported that the placement of lavender-scented cloths in kennels had a calming effect, reducing the amount of barking and other activity.[28]

Feeding enrichment encourages dogs to perform natural foraging and feeding behavior with the use of food as a reward. Feeding enrichment can be as simple as scattering a dog's ration in his or her confinement rather than placing it in a bowl. Puzzle feeders can also be used to provide feeding enrichment.

References:

[1] In-home Confinement Survey: Mush with P.R.I.D.E. Members Only FaceBook Group: https://www.facebook.com/groups/306545956800002/permalink/315281752593089/: accessed 9-15-2019

[2] Sled Dog Confinement Poll; Mush with P.R.I.D.E. public FaceBook Group; https://www.facebook.com/groups/398468697352924/permalink/530525397480586/ ;accessed 7-30-2019.

[3] Houpt K, Reynolds A, Erb H, Sung W, Golden G, Yeon W; "A Comparison of Tethering and Pen Confinement of Dogs." *Journal of Applied Animal Welfare Science*, vol 4, no 4, 2001: 257-270

[4] Starinksy, Lord and Heron; "Escape Rates and Biting Histories of Dogs Confined to their Owner's Property through the use of Various Containment Methods."; Journal of the American Veterinary Medical Association, Vol 250, no 3, February 2017

[5] Moriah Hurt, Courtney Daigle, and Candace Croney: Promoting the Welfare of Kenneled Dogs - Space Allocations and Exercise: Purdue College of Veterinary Medicine: February 2015.

[6] Normando, S., Contiero, B., Marchesini, G., Ricci, R., 2014. Effects of space allowance on the behaviour of long-term housed shelter dogs. Behavioural Processes 103, 306-314.

[7] Paolo Dalla Villa, Shanis Barnard, Elisa Di Fede, Michele Podaliri, Luca Candeloro, Antonio Di Nardo, Carlo Siracusa & James A. Serpell. *Behavioural and physiological responses of shelter dogs to long-term confinement. Veterinaria Italiana* 2013, **49** (2), 231-241. doi: 10.12834/VetIt.2013.492.231.241,

[8] Moriah Hurt, Courtney Daigle, and Candace Croney, Purdue College of Veterinary Medicine. Promoting the Welfare of Kenneled Dogs: Space Allocations and Exercise. Purdue University Center of Animal Welfare Science. 2015.

[9] Hubrecht RC 1993. A comparison of social and environmental enrichment methods for laboratory housed dogs. Applied Animal Behaviour Science 37: 345-361.

[10] Candace C. Croney, Courtney L. Daigle, Moriah Hurt and Judith L. Stella. (2015) Effects of Flooring on Animal Health and Well-Being: Implications for Kenneled Dogs. Purdue of College of Veterinary Medicine. White Paper VA-4-W.

[11] Hurt, Moriah J., "Evaluating the physical welfare of dogs in commercial breeding facilities in the United States" (2016). Open Access theses. 967. https://docs.lib.purdue.edu/open_access_theses/967.

[12] Musher Substrate poll. Mush with P.R.I.D.E. Members-Only FaceBook Group. https://www.facebook.com/groups/306545956800002/permalink/32201605525 2992/. accessed 10-4-2019.

[13] Randi I. Krontveit, DVM; Ane Nødtvedt, DVM, PhD; Bente K. Sævik, DVM, PhD; Erik Ropstad, DVM, PhD; Cathrine Trangerud, DVM, PhD. Housing- and exercise-related risk factors associated with the development of hip dysplasia as determined by radiographic evaluation in a prospective cohort of Newfoundlands, Labrador Retrievers, Leonbergers, and Irish Wolfhounds in Norway. AJVR, Vol 73, No. 6, June 2012

[14] Emily Weiss*, Shannon Gramann, C. Victor Spain, Margaret Slater. Goodbye to a Good Friend: An Exploration of the Re-Homing of Cats and Dogs in the U.S.; Open Journal of Animal Sciences, 2015, 5, 435-456. Published Online October 2015 in SciRes. http://www.scirp.org/journal/ojas. http://dx.doi.org/10.4236/ojas.2015. 54046. Accessed 9-25-2019.

[15] USDA Natural Resources Conservation Service. Composting Dog Waste. (PDF) ftp://ftp-fc.sc.egov.usda.gov/AK/Publications/dogwastecomposting2.pdf. Accessed 6-5-2019.

[16] Snohomish County, Wa. Preventing Pollution from Pet Waste. https://snohomishcountywa.gov/3366/Pet-Waste. Accessed 10-7-19.

[17] AVMA. Companion Animal Care Guidelines. https://www.avma.org/KB/ Policies/Pages/Companion-Animal-Care-Guidelines.aspx. Accessed 10-8-2019.

[18] Sandra Newbury, Mary K. Blinn, Philip A. Bushby, Cynthia Barker Cox, Julie D. Dinnage, Brenda Grif n, Kate F. Hurley, Natalie Isaza, Wes Jones, Lila Miller, Jeanette O'Quin, Gary J. Patronek, Martha Smith-Blackmore, Miranda Spindel. Guidelines for Standards of Care in Animal Shelters. Association of Shelter Veterinarians. 2010.

[19] Petra A. Mertens & J. Unshelm (1996) Effects of Group and Individual Housing on the Behavior of Kennelled Dogs in Animal Shelters, Anthrozoös, 9:1, 40-51, DOI: 10.2752/089279396787001662

[20] Scheifele, P., Martin, D., Clark, J. G., Kemper, D., Wells, J. 2012. Effect of kennel noise on hearing in dogs. American Journal of Veterinary Research, 73(4), 482-489.

[21] Moriah Hurt, Courtney Daigle, and Candace Croney: 2015. Promoting the Welfare of Kenneled Dogs:Environmental Considerations. Center for Animal Welfare Science. Purdue College of Veterinary Medicine.

[22] McConnell, Patricia. Canine Behavior and Acoustics in Shelters and Kennels. The Other Side of the Leash. https://www.patriciamcconnell.com/theotherendoftheleash/canine-behavior-and-acoustics-in-shelters-and-kennels. Accessed 10/11/19.

[23] Newberry, R.C., 1995. Environmental Enrichment: Increasing the Biological Relevance of Captive Environments. Applied Animal Behaviour Science 44, 229-243.

[24] Tarou, L.R., Bashaw, M.J., 2007. Maximizing the effectiveness of environmental enrichment: Sugges- tions from the experimental analysis of behavior. Applied Animal Behaviour Science 102, 189-204.

[25] Hughes, H. C., & Campbell, S. A. (1989). Effect of Primary Enclosure Size and Human Contact. In J. Mench & L. Krulisch (Eds.), Canine research environment (pp. 66–73). Bethesda, MD: Scientists Center for Animal Welfare.

[26] Morgan Garvey, Judith Stella and Candace Croney. 2016. Implementing Environmental Enrichment for Dogs. Center for Animal Welfare Science. Department of Comparative Pathobiology, College of Veterinary Medicine, Purdue University.

[27] Vasconcellos AdS, Virányi Z, Range F, Ades C, Scheidegger JK, Möstl E, et al. (2016) Training Reduces Stress in Human-Socialised Wolves to the Same Degree as in Dogs. PLoS ONE 11(9): e0162389. doi:10.1371/journal.pone.0162389

[28] Wells, D.L., 2009. Sensory stimulation as environmental enrichment for captive animals: A review. Applied Animal Behaviour Science 118, 1–11.

[29] Snohomish County Public Works. (2018) Safe Pet Waste Disposal Methods & Frequently Asked Questions. https://snohomishcountywa.gov › View › PetWaste_Outreach_FAQs_2018.

[30] Alaska Department of Environmental Conservation. (updated 3-29-2019) Pit Privy Design and Operation. https://dec.alaska.gov/water/wastewater/ engi

Edition 3, adopted October, 2009

Chapter 2: Feeding and Watering

Choosing Feeds

Sled dog sports today include a wide variety of dog breeds and sizes doing different activities in almost every kind of climate. There is no single perfect diet that will meet the requirements of every sled dog under every condition. The ideal diet for a dog depends on the dog's genetic makeup, age, physical state, training regimen, environment and the food sources that are available.

Sled dog diets usually consist of commercial dry food, meat-based food, or a combination of the two. Dry foods are convenient to feed and store, requiring only a cool, clean, dry location. Fresh meat products require refrigeration or freezing. Feeds marked with an expiration date should be consumed prior to that date to provide maximal nutritional value.

Meat feeds are extremely palatable to dogs. They may help maintain hydration because they contain up to 75% water by weight. High-quality meat-based feeds are readily available in all but the most remote locations.

Commercial dry food provides vitamins, minerals and carbohydrates. Some mushers prefer to mix their own meat ration and add some commercial dry food to it as a source of vitamins, minerals, and carbohydrates. If you choose this route, be sure to enlist the help of an experienced musher or nutritionist, as it is not always easy to balance a ration this way. Recently a few commercial dry products designed to be fed as supplements with meat have become available. These products are enriched with vitamins and minerals and help take some--but not all--of the guesswork out of feeding a non-commercial meat-based diet.

When choosing a product or combination of products to feed your dogs, remember that a sled dog's nutrient requirements change significantly depending on age, environment, and physiological state. You may wish to choose different products that will meet your dogs' requirements for each of these situations, or you may choose a feed that will act as a base that can be supplemented as necessary. In either case, choose a product that is relatively high in fat (15% minimum), relatively high in protein (25% minimum), fresh, and of the highest quality available. Poor quality commercial pet foods do not provide adequate nutrition to meet the needs of working sled dogs.

Determining a Working Dog's Dietary Needs

The best way to monitor your dog's body condition status is to run your hands over him or her. Perform this examination at least every two or three days. (In extreme conditions, it is important to keep an even closer eye on a sled dog's weight.) The ribs, spine, and hip bones should not be buried under an inch of fat, nor should they protrude. Rather, they should be easy to feel.

A well-conditioned sled dog should be lean and muscular—neither skinny nor obese. (See Appendix). If you are unsure of what the ideal appearance and feel of your individual dogs should be, solicit advice from an experienced musher or veterinarian. Take every opportunity to feel and look at dogs from other kennels that are doing well in your particular mushing discipline.

Formulas and tables on dog food labels will give you a place to start, but they should not be relied upon for long-term feeding guidelines. There is too much variation in metabolism among dogs, their working environments and their various levels of performance to rely on "average" requirement guidelines. Most mushers agree that it is crucial to monitor your dogs' weight and body condition with your hands.

Meeting the Changing Demands of Training

Maintaining a dog’s optimal weight requires frequent adjustments to the amount of food he or she is given. When you begin training and each time you increase the workload, your dogs will require more food. During cold or wet weather they will need more food just to maintain their normal body temperature. One of the most difficult times of year to maintain a dog's body weight is during the fall when the weather is often cold and wet and training miles are increasing. During such periods, anticipate your dogs' increasing nutritional needs and begin feeding them more before they start to lose weight. During the most demanding times, a sprint dog may require two to three times more food than during the offseason; a long-distance racing dog may require three to six times its offseason requirement.

Feeding During the Off Season

Recent research indicates that dogs that continue to receive high-quality rations through the off- season are better prepared to resume training because their bodies are more able to mobilize and burn fat during exercise. It also takes several weeks for a dog's metabolism to adapt to a high fat diet. The drawback of feeding premium dog food year-round is that it can be easy for dogs to become overweight in the offseason; watch your dogs closely and adjust their portions as necessary.

Life Stages

Dogs also have different nutrient requirements during pregnancy, lactation, growth, and old age and their diet and food intake must be adjusted accordingly during these times.

Pregnancy and Lactation: A female should be maintained on a performance type ration throughout pregnancy and lactation. She can be fed at maintenance levels for the first four weeks; however, from the fifth to the ninth week, her intake should be increased by 10 percent each week so that when she whelps, she is getting about 1 1/2 times what she was eating in the maintenance state. As a rule of thumb, her food intake should be increased by 30 percent of maintenance for each puppy she is nursing. Thus, if she only has one puppy, she should be fed 130 percent of maintenance. These suggestions are just guidelines-; remember to run your hands over her regularly and adjust her food intake as needed. A lactating dog should be neither skinny nor obese.

Puppies: Puppies usually weigh between 10 and 14 ounces at birth and should gain weight every day after their third day of life. Weight gain is an excellent way to monitor the nutritional and overall health status of a litter of pups. Slow or negative puppy weight gain can be the first noticeable sign of a health problem with the mother or pups, and supplemental feedings may be required. Enlist the help of a veterinarian or an experienced musher the first time you attempt to raise orphan pups or even supplement nursing ones.

Puppies can begin to eat solid food at three weeks of age. Puppy food or a high-quality performance food with a small kibble size is recommended for at least the first four months of their lives. A flat pie pan with soaked dry food or a meat ration is a good way to entice them to start eating. As they walk through the food, they will get bits of food on their paws, lick them, and realize it is something good to eat. Over the next three to four weeks, they will consume more food, so they can usually be weaned between six and seven weeks of age. Before, during, and after weaning, be sure that less assertive pups are maintaining a normal rate of growth. Since there is no standard rate, compare the growth rate of the less assertive pups and their littermates.

After four months of age, pups should be fed a premium food at a rate that keeps them in optimal body condition but not so much that they become fat or grow too fast. (Maximum growth rate of 2 1/2 pounds per week for huskies, 3 to 3 1/2 pounds per week for larger Northern breeds).

Older dogs: The aged dog may have a slightly decreased ability to digest and absorb nutrients. It may also take an older dog longer to move a meal through its gastrointestinal tract. Most olderdogs will do well on the same ration as younger dogs in the offseason. Occasionally, a dog will have trouble digesting all the fat in this ration or may become constipated. If so, try feeding a diet lower in fat or higher in fiber. When in doubt, ask your veterinarian about specific diet regimes and supplements for your geriatric dogs.

Water:

Water is the most essential part of a feeding regime. While deficiencies in protein, fat, vitamins, or minerals will affect a dog's health, it may take days or months before such problems are noticeable. In contrast, dehydration affects an animal's health immediately and in extreme cases can even lead to death within hours if left untreated.

A dog gains water by drinking it directly, by eating foods that contain water, and by generating water through metabolism. Water is lost each day through urine, feces, and water vapor in the breath. Anything that increases a dog's daily water loss will increase its daily requirement. Dogs also lose a significant amount of water through panting when the weather is warm. Exercise leads to increased water loss not only through the breath, but also through the stool and urine. A dog's water requirement may double if it participates in open-class sprint racing and increase three to five-fold if it participates in long-distance racing. Medical problems such as diarrhea and vomiting also increase water loss.

It is difficult to know exactly how much water each dog requires. Understanding how environment, training, and illness may affect the dog’s hydration needs allows you to anticipate these changes and offer your dogs more water when they need it. During warm weather it is best to have clean, fresh water available at all times. When the temperature drops below freezing, water consumption can be encouraged by offering warm, baited water. The bait can come from any source that will increase palatability such as dry food, meat or cooked fish. The bait should mix well in water and must not be spoiled or soured.

About 1 1/2 quarts of water should be offered two to three hours before training. Some dogs will not drink this amount all at once but will readily consume several smaller portions offered within a short period of time. Small amounts (about a pint) can be offered immediately after exercise to help cool the dogs down followed by more water (about a quart) after they have completely cooled down. Offering 1 to 1 1/2 quarts of baited water before feeding or mixed in with a dog’s food can further encourage water intake.

These recommendations are a starting point and should be adjusted according to the needs of your dogs. Monitor your dogs' hydration status by observing their hunger for snow and by examining their skin and gums. In a well-hydrated dog, the tent made by lifting up the skin on the shoulder blades should disappear within one to two seconds and the white spot made by pressing on a pink area of the gums should disappear in one second or less. If either of these processes takes longer, the dog is probably dehydrated and in need of fluids.

Monitoring Your Dogs

These guidelines are intended to help you begin your feeding and watering programs. The best feedback on how well you're doing will come from the dogs themselves. Watch them carefully and learn as much as you can from experienced mushers who you respect. Proper dog nutrition is a blend of science and art. It's easy to get a brain-full of science by reading books and articles on the subject, but you can only develop the actual skills with hands-on practice. So keep your eyes and ears open, and go have fun with your dogs!

Chapter 3: Training and Conditioning

Planning Your Dogs' Training and Conditioning Regimen

Many training principles are specific to the type of activity in which your dogs will be involved. Other variables include climate, terrain, age of the dog, breed of the dog, etc. All forms of mushing, with all the different variables, are wonderful ways of forming a close bond with your dogs.

In general, training can be separated into two categories: education and physical conditioning. When you are planning your training schedule, consider your goals and your dogs' abilities. Simply counting miles, for instance, can be deceptive. The type of conditions that the dogs encounter are important too, i.e. steep hills, trail breaking in heavy snow, extreme temperatures or wind. New mushers should consult books and experienced mushers for help, but also use common sense. Think about what your dogs have been trained to do and do not allow them to get carried away in their enthusiasm to run. Never ask your dogs to do more than you are reasonably certain they can accomplish.

Educating Your Sled Dogs

Anything you do repeatedly with a dog is educational. Be sure you want your dogs to learn what you are teaching. Think about the signals you are giving your dogs, and don’t send mixed messages. For example, if you want your dogs to pass well, don't stop and chat with the neighbor every time you pass. Doing so trains your dogs to stop at every pass.

It is important that you never lose your temper with your dogs. Try to train them in a calm, consistent manner. If one method is not working, try another. For example, if a dog is not pulling well in a large team, reduce the size of the team and put that dog in wheel position for a week. If a dog continually plays with the dog next to it while running, run that dog alone for a few weeks. Remember that repetition is a great teacher. If your leader is not taking gees/haws well, go out with a very small team and work on commands. Always praise the dogs enthusiastically when they are doing what you want.

Recent research has proven that dogs learn much more readily with positive, reward-based methods than with methods that rely primarily on punishment. Positive methods also result in a closer bond between musher and team, and are much less likely to cause unwanted fearfulness or human-directed aggression in sled dogs.

A reward is anything that increases the likelihood that a behavior will be repeated. The value of a reward is determined by the dog, rather than the handler. Just because you think something should be rewarding doesn't necessarily mean your dog will agree. A food treat is only a reward if the dog is willing to repeat the behavior in order to earn another.

Most sled dogs place high value on tasty food treats and on running, but there are exceptions. If your dog doesn't respond to one type of reward, switch to something the dog is more willing to work for such as chance to play with a favorite toy. If your dog does not place a high value on running you may want to reconsider its suitability as a sled dog. You may both be happier if the dog becomes someone's pet.

In addition to the cues used while mushing, training traditional 'obedience' cues is a great way to help socialize your dogs and provide psychological stimulation. Formal training classes expose your dog to new situations and introduce a positive image of sled dogs and mushers to the general public. The learning process will help your mushing training continue smoothly during the working season and the day-by-day, step-by-step progress will keep your dogs active during their offseason. Different dogs will enjoy different activities, but each dog needs individual attention.

Physical conditioning.

Do not expect your dogs to do more than they are ready for. Watch each individual. Dogs work as a team but they have individual needs and abilities. Don't be afraid to be conservative and don't worry about how far other mushers are taking their dogs. Never push a dog to go any farther or faster than it is capable of going.

Have fun and build relationships with your dogs. Small teams are better for training. Depending on your preference and the size of your kennel, training teams might include only three dogs or as many as six to ten. Dogs can only run at their own pace and must never be pulled, whether by mechanical or other means.

Summer/Warm Season Training

Dogs needs some form of physical exercise all year long. As long as your dogs are in good health, light training in the summer is fun and beneficial. Equipment options include a bicycle, cart, dog walker, ATV, or a leash. For some dogs and mushers, running a few dogs loose may be an option. It is important to always use proper harness sizes and gang line lengths. Always check each dog for foot problems or injuries after each run.

If you mush dogs in the summer, ensure they are well-hydrated before and after each run. Wetting them down beforehand with a hose or with creek or lake water can be effective. It is best to exercise sled dogs during the coolest time of the day, but even then you must watch carefully for signs of overheating. Signs of heat stress include heavy panting with an open trachea, gait change, wobbly legs and vomiting.

If you are concerned that a dog might have heat stress, remove the dog from the team and carry it in your sled or vehicle. If you need to cool a dog down during summer, wet it with cool water. During winter, pack its body in snow. During and after cooling, continue to monitor its temperature with a rectal thermometer. Dogs routinely have temperatures of 103 to 106 degrees F while running (normal is 101 to 102 degrees F). Recheck the temperature every fifteen to thirty minutes as the dog cools. If the dog's temperature is still not normal after you have attempted to cool the dog, call your veterinarian. This could indicate a serious problem.

Fall Training

Most mushers like to start on some kind of wheeled rig before the snow comes. Make sure the rig has good brakes to slow the dogs down and that there is some type of parking brake. ATV's are widely used because they give the musher complete control over the dogs' speed, and they steer more easily than a cart. They also have lights, which provide safety in darkness, especially along roads, and they make noise that warns wildlife of the team's approach. A speedometer is convenient on any type of training vehicle.

Start your fall training season with small, easily controlled teams and short runs, perhaps only 1/4 to 3 miles in length. Early season runs may require frequent rest stops. Decrease the number of rest stops and gradually increase mileage in subsequent runs as the dogs get stronger and fitter. If you have run the same distance over repeated training sessions and the dogs are finishing strong and happy, it is time to move up to the next level. In early fall training, don't push the speed too much. The dogs' muscles are not well-toned yet and it is easy to injure them. The goal of early training is to build up the dog's muscle structure to prevent injury later in the season.

Any training schedule must include rest days to allow time to build muscle. You might run a dog every other day, or run two days followed by a day off. Water (or broth) your dogs when you return from a run, and check for worn pads, especially if they are running on gravel or pavement.

Winter Training

Once you are working on snow, continue to build slowly to the distance and speed of your choice. Always check each dog's feet and provide plenty of water or broth. It is not good enough to let them bite snow for their fluids.
Not all injuries are easy to detect. A dog does not always show a substantial limp, so watch carefully for subtle signs. If a dog seems weaker or slower one day than the previous week, it might be due to injury or illness. A back can be injured without causing a limp, or a dog can be so excited to run that it will not show any signs of injury while running. You may be able to detect problems by observing the dog at home.

Detecting injuries or illnesses early can keep your team healthy and working all season, and can save money on veterinarian fees. Check each dog over carefully at least once a week. Knowing each dog's "healthy" condition will make it easy to detect changes. Consult with your veterinarian or another expert if you suspect problems.

Booties should be used to prevent injuries on rough trails, including when snow crystals are abrasive in severely cold weather. If your dogs' feet develop any signs of worn pads or soreness, use booties on those feet until the problem is completely healed. You might consider not running the dog at all for a short while, depending on the severity of the problem. Be sure the booties fit well. A bootie that is too large flops around, picks up snowballs, and makes it difficult for the dog to run normally. A bootie that is too small can constrict the foot and be uncomfortable.

Be sure to check booties regularly. A bootie with a hole in it can cause more problems than no bootie at all. Also, pick off all snow and ice balls around the tops of the booties frequently, as these frozen clumps can cause severe chafing. If your dog has dewclaws, watch for signs of wear around them. Remember that booties are not a cure-all for every foot problem. Consult your veterinarian or an experienced musher for more advice.

In extremely cold or windy conditions, dogs can get frostbitten on some body parts. On a male, watch the sheath of the penis and the scrotum. On a female, watch the nipples, flanks, and vulva. Be extra careful with any female that whelped over the summer. Her nipples are usually somewhat enlarged throughout the winter, making them more susceptible to problems. Special dog jackets, belly pads, and fur sheath protectors are available and can help prevent cold-related injuries. Contact a mushing equipment company or other local mushers for ideas. Remember that males and females have very different problems, and the same equipment does not always suit all dogs.

Dog Fights

Minor spats and squabbles are relatively common among dogs, but serious dogfights are dangerous for both dogs and mushers. Dogs should be taught at a young age that fighting is unacceptable. It is essential to stop a dogfight before a dog is injured or killed. Fighting dogs must be separated and restrained, but be extremely cautious when handling highly aroused or aggressive dogs. In the heat of the battle, the dog may redirect its attack to you, inflicting serious wounds. Mushers have been severely bitten while breaking up fights and care should be taken when intervening.

Long-distance racing:

Before you consider running a long-distance race for the first time, evaluate your skills carefully. You must be good at winter camping with dogs, starting campfires at -50 degrees F with a strong wind blowing, applying first aid to dogs and yourself or another musher should you get caught between checkpoints, etc. You must have advanced skills in handling however many dogs you choose to start the race with. (In your first race, it is better to start with fewer dogs. A smaller team is easier to control and means fewer dogs to feed and care for.) You must also be an expert in feeding and foot care during high mileage situations. The time to learn these skills is during training, not out on the race trail.

In general, to run a thousand-mile sled dog race, you should have at least 1,500 miles of training on each dog. These miles should be accrued in no less than a six - month period. To run in a 200 to 500 mile race, you should have at least 750 miles of training on each dog. These miles should be put on in no less than a four month period. Much of the training should duplicate your proposed racing situation, with weight in the sled, some four to six hour runs, camping trips etc. It is inadvisable to run any dogs under 18 months old in a thousand mile race. The ability of each dog in the team should be fairly equal so that no one dog is being pushed too hard. Teach your dogs to eat, drink and sleep in harness before you race them. Feed them the same diet that they will race with, at least during the latter stages of training.

Sprint racing:

To create a quality team, sprint racers use the same training and conditioning techniques as those used for other types of mushing. Distance and speed should be built up slowly on a schedule determined by your dogs' progressive conditioning and willingness. It is better to err on the conservative side than to risk hurting a dog physically or mentally by demanding more than it is ready for.

While speed may be the primary objective in sprint racing, not every training run should be at “race pace.” To prevent injuries in the fall, dogs should be physically conditioned with slower working runs before you allow them to run fast. Throughout the race season, vary your training speeds and your dogs will be more willing to go fast when asked.

Proper manners and well-behaved dogs are a must for a top-performing sprint team. Even the quickest stop for a tangle or problem dog is a major disadvantage in a race. Take the time required to teach your dogs the necessary behavioral skills. Some sprint mushers simply concentrate on maintaining enthusiasm in their team, but a well-behaved and enthusiastic team is possible and should be the ultimate goal.

Recreational mushing:

Training a recreational team can be extremely rewarding and satisfying. It can also be extremely expensive, both in time and money. Keep your priorities straight, share the work among family members, and have fun!

Before you begin, decide whether you want a dog team for your family to enjoy and consider everyone's goals for the team. If you have small children, you may want to select dogs that are small and gentle so the kids are comfortable with them. Some older, well-trained retired dogs from another team may be perfect for you, and they can help train younger dogs.

Make your dog time quality time for your family. Chart the accomplishments of each dog. In the summer, you might have a weekly dog show to demonstrate each dog's new tricks. Having a small number of dogs allows you to give each individual lots of attention. The dogs will learn that they have fun with you, and they will be eager to please. Seeing your dogs thrive on this special attention, watching your family share the responsibilities, experiencing the magic of bonding with animals and the satisfaction of a job well done are ample rewards.

In winter, plan methods of training and goals for your team with family members. Listen, talk, encourage, and reward. Have fun and don't be afraid to ask other mushers for help. Practice "whoa" and "come haw" repeatedly, until the dogs respond easily; this will give the less experienced members of your family a better sense of security. You may want to work with the dogs on a leash, rewarding them for correct behavior.

Take a family member with you on the sled. A less experienced passenger can help out and learn what you ask of the dogs. Make sure your passenger is comfortable. After the dogs have settled down, let your passenger drive the team on a safe stretch of trail. Always train with small, controllable teams. Gradually increase your distance over the winter. Explore new trails. This gives your dogs experience in different conditions: breaking trail, running into open water and on ice, and turning around. Take a picnic along. Stop along the trail and build a campfire.

Your family might enjoy working toward taking the team on an overnight trip, either camping out or staying in a remote cabin. This could be a spring celebration after a winter's training. Remember that you don't have to go a thousand miles. Plan according to the abilities and desires of your family and the endurance built up by your dogs.

Skijoring:

Skijoring is one of the simplest forms of dog driving, but common sense, patience, and general training principles still apply. Stay within your dog's capabilities for weight load, speed, and distance. Be aware that some dogs (including experienced sled dogs) can be quite frightened by the strangeness of the skis, and a dog may need extra time and lots of positive reinforcement before it will accept being followed by them. Avoid running into your dog with your skis or ski poles at all costs.

Proper equipment is important both for your own safety and for the comfort of your dog. Use a wide skijoring belt (at least 3 inches wide across the back) and a releasable skijoring line at least 7 ft long. Longer lines (up to about 15 or 20 ft) work well for recreational skijoring and hilly terrain. Shorter lines give better control and are favored for racing. Be sure the line is long enough to prevent the tips of your skis from hitting the dog. A line with a shock (bungee) cord incorporated into it will absorb the stress of sudden starts and stops, a benefit to both you and your dog. Use a properly fitted, standard X-back or H-back mushing harness. Weight pulling harnesses are not recommended.

A wide variety of dog breeds have been used successfully for skijoring. If you skijor with a non-- Northern breed, watch carefully for foot problems. Some breeds of dogs, especially those with silky coats, are particularly prone to ice balls. Booties may be necessary in some cases. Also, a shorthaired dog may need a dog coat and/or a sleeping pad in very cold weather or when camping out.

Weight pulling:

A weight pull dog should be strong, sound, in good health and have a desire to please. Before a dog is entered in a weight pull competition, it should have at least basic training and be in good physical shape. A dog that is in poor condition might pull beyond its physical abilities simply because it wants to please or because of the excitement of the activity. Avoid heavy pulling until your dog is in top shape.

Conditioning can be accomplished in various ways: running in a team, running alongside a bicycle, skijoring, or pulling a tire. Perhaps the best method is for your dog to pull a tire with increasingly heavy loads. Be very careful to increase the loads gradually. This is important for mental as well as physical conditioning. A dog must know that when it is commanded to pull, the load will move. Many factors influence the ease with which a dog can pull: weight of the load, snow depth and conditions, and temperature. As you train, adjust the load downward if your dog has difficulty starting the load. It is important to condition the cardiovascular system as well as the building muscle. This is done by alternating days of pulling heavy and light loads.

You can't begin too early to train your dog to pull. Even a young puppy can have fun wearing a harness and pulling an empty box around. Use this time to teach some basic commands, such as those to pull, whoa, and perhaps gee and haw, as well as to sit, lie down, and stay. Be careful not to let the box bump into the dog or let the dragging noise frighten it. Gradually increase the weight the dog pulls and progress from a piece of firewood to a 12 inch tire, for instance. Give the command to pull, let the dog pull a short distance and lavish it with praise. Make it fun. Your dog will pull for sheer enjoyment and because it pleases you. Be sure to let your dog know that you appreciate its effort.

Dogs should not be entered into competition until they are at least a year old; large breeds should wait until a year and a half. This gives them time to reach skeletal maturity. When the time comes to enter a weight pull competition, your dog will know what is expected and will be ready to do it well.

Winter transportation:

Some mushers use their teams for traveling cross-country, doing fieldwork for their jobs, freighting supplies, running trap lines, and general winter transportation. Training these teams may focus on building endurance and strength and on mushing in severe weather conditions. It is critical that the dogs learn to whoa, wait in harness, and find old trails in drifts. They need to learn to follow along behind their musher when he or she is breaking trail on snowshoes, and they should learn to ignore animals caught in traps. These abilities come by working with small teams, day after day.

Mushers who depend on their dogs for winter transportation often have a very close relationship with their teams. The trust and appreciation that develops after many hours, many days, and many seasons together create a team that seems able to go anywhere and do anything. This is not magic. It is simply the result of clear communication, mutual respect and consistent, repetitive reinforcement.

Chapter 4: Basic Health Care

Veterinary Care:

Develop a good working relationship with your veterinarian. He or she will be a valuable source of information on current dog care practices as well as providing other services as needed. As the dog's owner, you can often perform routine procedures yourself but will also have to obtain professional care on occasion. The science of veterinary medicine is evolving; frequent contact with your veterinarian will help you stay informed about the latest changes in veterinary sciences. Many veterinarians also benefit from contact with mushers. Mushers bring a new dimension to animal health care professionals. Having regular contact with a vet also serves to present a positive image of dogsledding to the public.

Record Keeping

Record keeping is an essential part of any kennel operation and is a requirement for P.R.I.D.E. kennel certification. Often, your veterinary clinic keeps records of office visits and professional vaccinations, but most care and medical treatments are given by the musher. Keeping track of medications, vaccinations, illnesses and general health will allow you to identify health trends. Records can include breeding cycles, on and off season weight fluctuations and training and performance distances and times.

Adult Dogs

Daily care: Monitor each dog's appetite and water intake as well as its fecal and urine output. These changes, as well as changes in behavior, are frequently the first signs of a health problem. Running your hands over the dogs daily will allow you to recognize abnormal conditions.

Monthly care: Trim nails and groom each dog. If a dog is shedding, grooming keeps its skin and coat healthy. Administer heartworm preventives and external parasite control medications (for fleas, lice, ticks, etc) if needed.

Three to six month care: Work out a deworming program for your dogs with your veterinarian. The type of dewormer and frequency of administration will depend on the type and species of intestinal parasites in your area.

Yearly: Consult with your team's veterinarian to develop an appropriate vaccination schedule for your dogs based on the health problems common to your region and the demands of your race schedule or mushing goals. If you live in an area where professional veterinary care is not available, contact your state, provincial or national veterinary medical association for information to help you develop your own vaccination schedule. Also, consult the rules of races you may wish to run with your team. Many race-giving organizations (RGOs) specify vaccinations that dogs in their events must have received.

During the late summer of each year you should perform a thorough physical exam on each dog in the kennel. If you find any problems, you will have time to treat them before fall. (See Yearly and Pre-purchase Exam section below for guidelines.)

Consider having an annual veterinary house call to your kennel. This is one way of becoming a P.R.I.D.E. certified kennel. An annual kennel visit is a great way to have vaccinations administered and have all your dogs examined without transporting every dog in the kennel to the vet office. This is a great time to discuss each dog's specific needs with your vet, allowing every dog to reach his or her greatest potential.

Some veterinarians have backgrounds and training in large animal care but rarely get out in the field anymore. Your request for a kennel visit may become something they look forward to.

Basic Health Examination

The following guidelines are basic elements of a physical health examination for dogs. They can also be used when considering the acquisition of a new dog for your kennel or for a pre-season health assessment. Some of these elements should be performed daily or even both before and after running. (Elements marked with an asterisk (*) should be performed daily.)

General attitude*: A dog should be alert and interested in its surroundings.

Weight and coat*: A dog should be lean but not thin. It should have a healthy, shiny coat and skin that is a light pink with no raw areas or excessive flaking. Run your hand over the dog's whole body, checking for lumps, bumps and sores. A dog that is underweight/overweight or with an unhealthy coat may be showing signs of conditions such as hypothyroidism, parasitism (internal parasites such as worms or coccidia, or external parasites such as lice, fleas, or mange mites), malabsorption syndrome (an inability to absorb nutrients), or another ailment. However, keep in mind that all dogs do not always look their best. Even a beautiful coat looks rough during shedding, and a female will shed after she has pups.

Eyes*: The eyes should be clear, without excessive tearing, redness, or a gray or blue haziness on the cornea. The pupils should be symmetrical.

Ears*: The ears should be clean inside without a waxy or pussy discharge and without a foul odor.

Nose*: There should be no nasal discharge, raw areas, or dry, crusty buildup around the nostrils.

Mouth: The mouth and teeth should be clean without any strong odors or excessive tartar buildup. The gums should be pink without infection along the teeth gum border. Check for broken teeth or an uneven bite. Dental disorders may contribute to poor appetite, poor attitude, or chronic infection.

Respiration: A dog's normal heart rate is 100 to 130 beats per minute, and its respiratory rate should be about 22 breaths per minute. These may both be elevated in an excited dog, and both will be hard to evaluate in a panting dog. Listen for coughing, wheezing or other abnormal respiratory sounds.

Chest: The chest should expand and contract symmetrically. There should be no pain or tenderness when the dog's ribs are gently pressed. Use a stethoscope to listen over the lungs. Lung sounds should be equal from side to side with no abnormal noises. Because chest injuries can result in massive internal bleeding and respiratory system compromise, a veterinarian should evaluate any significant chest injury.

Abdomen: The abdomen should be symmetrical and not distended. The abdominal wall should be pliable when gently pressed toward the spine. A painful, tender, distended abdomen may be a sign of a potentially fatal problem that requires the intervention of a veterinarian.

Muscles and bones*: Check the dog for symmetry. Compare the muscles and joints of the two hind legs and of the two front legs. Swelling on the foot may be an indication of an old metacarpal fracture. Swollen wrists may be a sign of arthritis. Asymmetrical muscle masses may indicate lameness or an unequal use of limbs.

Feet*: Check the feet for signs of injury or excessive licking between the pads (mahogany, discolored hair). Examine the nails and dewclaws and trim when necessary.

Rectum: Check the rectum for open sores, growths or excessive swelling.

Veterinary considerations when acquiring a new dog.

Females to be used for breeding: Dogs intended for breeding deserve special consideration. Before purchasing a female, be sure to ask the following: Has she had regular heat cycles? Has she ever been on medications to delay or postpone heat cycles? Has she ever had a pregnancy terminated? Has she ever had pups? If so, what kind of mother is she?

Examine the mammary glands for swelling; mammary tumors are not uncommon in older intact females. Examine her nipples for signs of frostbite. Severely frozen nipples are not functional. Examine the vulva for growths, swelling, or discharge.

Males to be used for breeding: Make sure that a male that might be used for breeding has two normal sized testicles. Check for excessive prepucial discharge. Ask if the dog has ever sired a litter. Has he ever had any medications? Anabolic steroids, for example, will reduce fertility. Low thyroid levels will decrease fertility in males as well as females. Brucellosis is a sexually transmitted disease that should be tested for if it is a problem in your area. (Some countries make a brucellosis test an entrance requirement.)

Other considerations: Before introducing a new dog into your yard, make sure that it is current on vaccinations and has recently been dewormed. Check the dog closely for lice, mange, and fleas. If you are buying a dog with parasites, isolate him/her from the others until the issue has been resolved.

Chapter 5: Keeping Your Kennel The Right Size

Determining Your Needs

Any trainable dog can be a sled dog, depending on what you want to do with it. A musher must use appropriate care when asking any dog to work. A team of beagles can pull a sled, but they couldn't break trail in deep snow. A team of 30 lb border collies might pull well, but they should be outfitted with booties to protect their long-haired feet. A team of poodles can make good sled dogs but it isn't wise to ask them to camp out in severe weather.

Some dogs have a head start for some types of mushing. Northern breeds evolved specifically as sled dogs and they have physical adaptations that keep them comfortable in very cold weather. Thousands of years of selective breeding have given them a strong instinct to run and pull.

When deciding how many dogs you should own, consider how much money and time you can dedicate to your team, what your zoning laws and living situation will allow, and what it will take to do the type of mushing you want. There are different types of sled dogs and you will need fewer dogs if all of the dogs you own are suitable for what you want to do. If you keep fewer dogs, your costs will be lower, and you can give more attention and better care to the ones you have. Keep your kennel the size you can care for properly. Don’t let numbers increase to the point that neither you nor the dogs are happy.

Preventing Breeding

The most effective method for preventing dogs from breeding is to spay or neuter all dogs you do not intend to breed. Spaying (ovariohysterectomy) or neutering (castration) are good options for dealing with heat cycles and for preventing unwanted litters. Sterilization can also make it easier to run females and males together, and can save money by reducing dogfights, health problems, and food requirements. Spaying and neutering can save a tremendous amount of frustration, energy and money in the long run. One unwanted litter or one serious dogfight is much more expensive than the cost of the surgery.

Some mushers are under the false impression that spaying or neutering will reduce the drive of the racing sled dog, but this is not the case. (Zink 2005) Many top long-distance and sprint mushers have successfully run neutered and spayed dogs in their racing teams with no decrease in performance. And, many races have been lost by having a bitch come into heat at an inopportune time. The only reason to not neuter or spay a dog is the desire to breed the dog.

Some veterinarians who specialize in canine athletes recommend spaying or neutering athletic dogs including working sled dogs any time after 14 months of age. Dogs sterilized prior to puberty seem to run a higher risk of injuries to bones and joints, to some types of cancers and to some behavioral problems, including fearfulness and aggression. (Zink)

If you own any female dogs that aren't spayed, you must have at least one heat pen. It should be capable of containing all dogs in season comfortably and securely at the same time. To be effective your heat pen should be either tall enough or roofed over so that dogs can't get in or out. Even if all of your male dogs are secured and under control, the heat pen is necessary to prevent breeding with stray dogs. (See The Dog Yard and Housing section for details on heat pen design.)

If you suspect a bitch has been accidentally bred, consult with your veterinarian as soon as possible. Your vet may be able to perform tests to determine whether or not she is actually pregnant. If she is pregnant you may abort the pregnancy and prevent future mishaps by having the vet spay the dog. If you strongly feel you want to breed her in the future, treatments are available to terminate pregnancy if given within a few days of breeding. Abortions can cause complications and aren't a substitute for prevention. Consult your veterinarian for details.

What to Do with Dogs You Don't Want to Keep

It is unfair to the dogs to own more than you can handle. Any musher only has so much time, space, and money, and those are divided by the number of dogs in the yard. Sled dogs are born to run and should not be kept on their chains all their lives. Don't keep them if you don't have the time to exercise them. Review your needs, honestly evaluate the dogs you already have and then decide the best course of action.

The most difficult part of owning dogs is figuring out what to do with the ones you can't keep. You might be able to sell your extra dogs, but don’t assume so. The market is very limited except for sellers with top-notch kennel records or dogs from rare and highly desirable bloodlines. If you do sell dogs, be honest and try to make the right matches. Be sure that the new owner will care for the dog properly. Consider giving trial and return periods as a means to encourage adoption. Occasionally contacting and being available to assist new owners in the care of your old dog is a great way to maintain a positive relationship with the new owner and let you maintain a lifelong connection to the dog.

Another option is to give surplus dogs away to interested, reliable people. Consider recreational or junior mushers, skijorers, mushers competing in a different mushing discipline or less demanding classes, or pet owners looking for a companion. Be sure to fit the dog to the right person. Many sled dogs are challenging pets; some have an instinct to roam or kill livestock and are often more independent than some pet owners expect. Keep in mind that dogs that have been properly cared for and socialized have the best chances to be placed. Since a dog that is not good enough to keep is probably not good enough to breed, consider having the dog spayed or neutered before giving it away, or requiring that the person taking the dog have the operation performed.

If you are unable to find new homes for unwanted dogs you may be able to relinquish your surplus dogs to a sled dog rescue organization. Some sled dog rescue groups specialize in pure- bred dogs such as Siberian huskies or Alaskan malamutes, and others are willing to accept Alaskan huskies and other mixed breeds. A group that specializes in sled dogs will generally have a better chance of placing your working dogs in an appropriate home than a government operated animal shelter. Such shelters should only be considered for dire and/or emergency situations.

If you must relinquish your dogs to an animal control agency be aware that any dog not adopted within a limited time period will probably be euthanized no matter how friendly or well-socialized the dog is. Sled dogs are often misidentified as non-adoptable or overly aggressive by some shelters and can be euthanized immediately based on local ordinances or requirements. Your dog's chances of survival are much greater if you take responsibility for finding it a new home yourself.

Acquiring Dogs

It is important that you determine your mushing goals before acquiring even a single sled dog. Once your mushing goal is firmly established acquire only those dogs with physical and behavioral attributes that will help you achieve that goal. This will prevent you from acquiring unsuitable dogs that will need to be re-homed later.

Leasing or borrowing dogs may be an option if you aren't sure how committed you are or if you need extra dogs for only one race or one season. Shop carefully, as there are many options. Ensure your lease or loan agreement is clear about who is financially responsible for illnesses or injuries, and remember that borrowed dogs need the same responsible care as the ones you own. Another option is to volunteer to "foster" rescued sled dogs for a sled dog rescue organizations.

When you are ready to establish your own kennel, keep your mushing goal in mind. If your goal is to win sled dog races, it isn't enough to buy the best dogs you can afford. Instead, you must afford the best dogs you can buy. Today's sled dog races are extremely competitive. Only teams made up of exceptional dogs can win consistently.

Mushers with more modest goals have a much wider range of options. Experienced sled dogs suitable for a variety of mushing disciplines are frequently available through sled dog rescue organizations or from other mushers in your area who have surplus dogs that need to be re- homed. There are very good dogs available but you have to make sure the dogs you get are the right dogs for you. Don't make the assumption that a dog from a well-known kennel or bloodline will meet your needs. Evaluate the individual dog in relation to your goals. For help in evaluating the health of the dog you are considering acquiring, see the Basic Health Care: Basic Health Examination section.

Another option for building a team is raising puppies yourself if you have the time and energy for this process. Good dogs are easier and probably less expensive to buy than to raise. However, raising puppies is a fulfilling experience if you can afford to do it and have homes for each of the puppies. Breeding sled dogs should be viewed as a way to produce better dogs, not just more dogs.

If you do decide to breed dogs, remember that in less than six months you will have essentially full grown dogs, each needing a house and chain or a pen of its own. For Alaskan huskies, plan on more than six pups per litter. A litter can easily be as many as ten or as few as one. Two litters can therefore produce as many as twenty new dogs!

Before you breed dogs you must do two things: (1) Make a realistic plan for what you will do with every pup that is born. (2) Ensure that the dogs you breed have all the essential characteristics you want. If you don't have the right dogs, buy a good female, buy the service of a good stud, or offer to raise pups for a musher who has high quality dogs. Never breed dogs with any physical or behavioral defects. Undesirable attributes are as likely to be inherited by their offspring as the traits you wish to perpetuate.

Remember that good genes are responsible for only a portion of the final result. Raising excellent sled dogs requires excellent physical care, mental and physical conditioning, socialization and training. The more time you spend with your puppies the better sled dogs they will be.

Both male and female dogs become fertile at six to 12 months of age. The average interval between estrus cycles is about six months, but it varies widely. Some females to come into heat every three to four months, others only once a year. Although a female may be bred in her first heat, many breeders prefer not to because it interrupts her growth and because young dogs can be poor mothers. It is also a good idea not to breed very young dogs so that you can be sure they have the traits you want. Older dogs can be bred, but fertility generally declines after about 10 years of age. Be cautious about breeding females over six years old that have not been bred for two or three years, as they more frequently have problems with whelping.

Be sure the female is adequately vaccinated and wormed before breeding. Be sure to disinfect the puppy pen, doghouse and whelping box before the pups arrive. Pups are usually born 60 to 65 days after the breeding. An experienced veterinarian can often tell if a dog is pregnant by palpating the abdomen 21 to 28 days after breeding. For more information, consult your veterinarian.

A pregnant female will need progressively more food starting the last three weeks of her pregnancy. The female should be in good condition and weight, Do not allow her to become obese, as this can cause trouble during whelping. See the Feeding and Watering section for more information.

References:

Zink,C.,"Early Spay-Neuter Considerations for the Canine Athlete One Veterinarian's Opinion",Canine Sports Productions,
http://www.caninesports.com/SpayNeuter.html, 2005

Chapter 6: Whelping and Raising Puppies

Whelping and Puppy Pen

Give the female all the advantages possible so she can produce a healthy litter. She needs an extra large house in which she can easily stand up and turn around. She should have extra room all around her when she lies down so she won't lie on the pups or be restricted during whelping. The whelping house should be equipped with a hinged or removable roof to make it easier to access the mother and pups.

Most litters should be planned to arrive during the spring, summer, or fall so the outside temperature is not too cold at birth. If you decide to have a winter litter you may have to plan on having the female inside a building where it is at least above freezing. Whelping can take place outside at lower temperatures but extreme caution should be used, especially with a female whelping for the first time or under exceptionally harsh weather conditions.

Summer temperatures above 70 degrees F can also be dangerous for the puppies. During their first few weeks of life puppies cannot regulate body temperature. Mosquitoes can also be a very serious problem for pups born during summer. You may need to whelp and raise the puppies inside your home if you have a bad mosquito problem or high temperatures.

Keep the whelping pen clean and dry. Many pathogens that are lethal to puppies are soil borne. In areas where such pathogens are known to exist it is important to maintain a level of pathogen protection. Basic hand-washing before and after handling both mother and offspring will go a long way. Other practices such as shoe and boot pans placed outside of the whelping pen will also prevent various pathogens infecting the puppies. A boot brush and a solution made up of one part household bleach and 10 parts water will reduce the risk of introducing soil borne organisms into the puppy pen.

A whelping box provides a nest or den in which the female can whelp and begin raising her litter. It should be large enough to allow the female to stretch out without lying on or disturbing her puppies. It should be tall enough to contain the puppies but allow the mom to leave them when she desires.

The whelping box should be placed in a larger enclosure or pen either indoors or out as a primary containment for both the mom and puppies, but also isolate them from other dogs. Puppy pens should be a minimum of 100 square feet. If birds of prey might be a threat the pen should have a roof. Rawhide or hard rubber chews and balls are nice extras for the puppies' enjoyment. Ramps, tunnels and bridges provide mental stimulation. Be sure all additions are of sizes and made of materials that are safe for the puppies and mother.

The puppy pen needs to be cleaned at least once a day, or more often as needed. Whelping boxes need little bedding since the mother does most of the cleaning. If the puppies are reared in warmer months a smooth wooden floor will suffice.

Weaning and Feeding Puppies

Puppies should be offered gruel of ground and soaked kibble beginning at three weeks of age to supplement what they receive via nursing. Puppy food or a performance diet is recommended. Puppies under four months should be fed two to three times per day or free fed. Puppies should be fed enough to keep them fleshed out and to ensure they have enough energy to grow, but they should not be allowed to become obese. (See Feeding and Watering section.)

Weaning

Mothers will usually wean puppies themselves when the pups are between four and a half and eight weeks old. If you wish to remove the mother from her pups at this time, you can. Ideally puppies should remain with the mother for the entire eight weeks. Emergency health situations may require early separation, but this should only be done under the direction of your veterinarian. If the pups are removed while the mother is still lactating the mother will need to be dried off. If the mammaries become firm, swollen, or red, consult your veterinarian.

Many mushers choose to leave the mother with the pups until the pups are individually tethered or penned. If the mother is still enjoying the pups and playing with them, this can be a good source of education for the puppies.

Reintroduce the mother to mushing slowly. She needs time to recover from nursing the pups. Short runs of 2 to 3 miles with the team are fine. Protect her enlarged nipples from cold weather for the whole season after whelping.

Puppies need to stay in the litter for at least eight weeks to ensure normal psychological development. During the fourth through sixth week, a puppy learns basic social behavior for dogs. If a puppy is removed from its family before six weeks it may have behavioral problems as an adult. When you rehome a pup, make sure you provide copies of all vaccination and deworming records to the new owner and caution him or her to change the pup's food slowly.

Puppy Health Care

Day 1: Examine each puppy for abnormalities. Check the mouth for cleft palate. Make sure that all puppies are nursing, as it is important for the puppies to receive the mother's colostrum, which flows for only a few days. If you have any questions or problems, call your veterinarian right away.

Day 2: Remove dewclaws, if there are any, from both the front and rear paws. This prevents trouble with booties later on and prevents the dewclaws from getting caught on something and damaged. Have your veterinarian perform this procedure, or have a veterinarian or an experienced musher show you how to do it yourself.

Three to four weeks: Deworm with the product recommended by your veterinarian. Continue deworming the puppies and mother on a schedule recommended by your veterinarian.

Eight weeks: Vaccinate with a combination vaccine that is recommended in your area. These may include distemper, parvovirus, and adenovirus. Work with your veterinarian to develop a vaccination program to meet the specific needs of your team.

Rearing

Just as children have formative years, puppies have formative months. Puppies need lots of human attention early. The more you put into your pups, the more you will get out of them as adults. Play with them at least a little every day so they don't become shy of people. Try to familiarize your puppies with as many different situations as possible by taking them on walks, bringing them inside, having children play with them, exposing them to crowds etc.

The most important time to develop a trusting, positive relationship with a pup is between its third to 16th weeks of life. Many people mistakenly believe that good genetics are all that are needed to produce a good sled dog. Without the proper care and training, a puppy with great potential can become a complete failure as a sled dog or pet. The following are some benchmarks in a puppy's development:

One to three weeks: During their first weeks of life, handle each puppy two or three times a day. Weigh them to ensure that no negative changes are occurring. Pet them and talk to them. Their relationships to humans can start from the day they are born.

Three to sixteen weeks: Introduce the puppies to as many unique experiences as possible. Between six and eight weeks is a particularly critical time for socialization with people. They can learn their names, learn to come when called, and develop a strong bond with humans during this stage of their development.

Four to six months: If tethering is the method of confinement this is the time to introduce them to this experience. Put a collar on each puppy and in the months following frequently check the collar’s tightness and adjust it as the puppy grows. Place them on individual tethers.

Five to eight months: Harness training is most easily done during this stage of the puppies' development. Many methods are used: putting one or two pups in a small team with adults, or putting one adult leader with all the rest of the pups. Either way, the teams should be small (three to seven dogs), and the runs should be short (perhaps 1/2 to 3 miles). It is best not to have a steep down slope, icy trail or open water on the puppies' first few runs in harness. It is easy to scare a puppy. The most important thing is to let the pups have fun. Mushing will be an important part of their lives and it should always be a positive experience. Puppies should never be dragged along or pulled by a machine; they should always be going forward on their own accord and have the option to stop if they become frightened or tired.

Some puppies will have a natural instinct to pull the first time they are harnessed. Other puppies will be overwhelmed by being tugged by the neck while at the same time running next to another dog. To avoid this, you might want to connect a pup and a reliable lead dog with a neckline and let them run around for a few minutes. Be sure to do this away from the dog yard to avoid tangles. Repeat the experience a few days before running the pup in the team. This helps a puppy to learn to jump over the ropes and accustoms it to the neckline. Be careful to match compatible dogs, and be ready to jump high when they come toward you at full speed.

Eight to twelve months: It is important to get the pups out often in harness so that they learn all the basics of mushing while they are young: not getting tangled in the traces, pulling hard, urinating and defecating on the run, not chewing harnesses and gang lines, how to cross ice and water, how to pull on hills, forward and whoa commands, how to pass other teams, and most importantly, to have fun with their owner out on the trail. All of these are easiest and best learned when they are young.

Twelve months: At this point, a dog has attained its basic size, although depending on the breed and genetic background, many dogs continue to fill out until about two and a half years old. Also remember that although a dog is one year old and looks mature, it is not mentally mature yet and still needs much more time to develop before it can be expected to behave and perform like an adult.

Everything you would like to teach your dog (in addition to mushing) is also best done at an early age. At 4 to 12 months, their minds are open and responsive. For example, if they will spend a lot of time inside as adults or if they need to be obedience trained, put in the effort training them while they are young and make each experience positive and educational.

Chapter 7: Geriatric Dogs and End of Life Issues

When planning your mushing kennel it is important to recognize that, like humans, sled dogs grow old and eventually die. It is important that the musher have a plan for dealing with the special issues presented by geriatric dogs. As a dog matures beyond his or her physical prime you must decide whether to keep the dog for the remainder of his or her life, or find an appropriate new 'retirement' home for the dog.

Most sled dogs start showing physical signs of aging at around seven years of age, though there are plenty of exceptions to this rule of thumb. The first sign that many racing mushers see is that the dog is no longer able to run as fast or as far as his or her younger teammates. Competitive sled dog racers who do not want to support older, slower dogs should consider finding the dog a new home while it is still in good physical condition.

Gifts of older dogs in good physical condition are often greatly appreciated by junior mushers, beginners and mushers competing in less demanding disciplines or classes. You may also considering placing a retired dog into a home as a pet. Be sure the dog and the new owner are a good fit. Many sled dogs can be challenging pets; some have an instinct to roam or kill livestock and are often more independent than expected. Keep in mind that dogs that have been properly cared for and socialized have the best chances to be placed. Since a dog that is not good enough to keep is probably not good enough to breed, consider having the dog spayed or neutered before giving it away, or requiring that the new owner have the operation performed.

Many mushers prefer to keep their geriatric dogs and care for them until the end of their natural lives. Older dogs are especially valuable for helping train puppies and young dogs.

Housing Considerations for Geriatric Sled Dogs:

Older dogs often do not cope well with sudden changes in their environment. If you plan to keep your older dogs as house pets or change your confinement method, make the transition gradually, bringing the dog into the new environment for short visits and gradually increasing the amount of time until the dog becomes comfortable in his or her new setting.

Older dogs are often less tolerant of weather extremes than younger dogs. They may require additional bedding or even an insulated doghouse to be comfortable during cold weather. During warm weather, ensure that older dogs have easy access to shade and fresh, clean water.

Like younger dogs, geriatric dogs require adequate space and mental stimulation. (See the Dog Yard and Housing section.)

Feeding Considerations for Geriatric Sled Dogs:

As your aging dog's metabolic rate and general activity levels decrease, he or she will require less food to maintain a healthy body. Most older dogs will do well on the same ration you feed your younger dogs during the offseason. Occasionally a dog will have trouble digesting all the fat in this ration or may become constipated on it. If this occurs, try feeding a diet lower in fat or higher in fiber, respectively. It is important that you not allow your geriatric dog to get too fat. Obesity is the most common cause of major health problems in dogs, including kidney and liver diseases, diabetes and arthritis.

Monitor older dogs' weight just as you do younger dogs, and adjust the volume of feed accordingly. Consult a veterinarian if you have concerns or questions.

Health and Husbandry Issues of Geriatric Sled Dogs:

Geriatric dogs lose muscle mass and tone, long bones such as those in their legs become brittle, and arthritis frequently sets in. Providing your geriatric sled dogs opportunities for frequent short, slower runs with other older dogs or with puppy teams can help the geriatric dogs maintain a higher degree of flexibility, mobility and fun as they age.

Geriatric dogs are more prone to infectious and chronic diseases than young dogs. Work with your veterinarian to determine an appropriate vaccination schedule for your older dogs and consult with him or her if you notice any changes in the dog's behavior, activity level or appearance. Be especially alert for any of the following signs of disease in geriatric sled dogs:

- Sustained significant increase in water consumption or urination
- Weight loss.
- Significant decrease in appetite or failure to eat for more than two consecutive days.
- Significant increase in appetite
- Repeated vomiting
- Diarrhea that persists more than two days.
- Lameness that lasts for more than three or four days.

- Lumps or masses in or under the skin.
- Open sores or multiple scabs in the skin, especially if they seem to be getting larger or worse.
- Hair loss, especially if accompanied by scratching.
- Persistent coughing or gagging.
- Excessive panting .
- Sudden collapse or weakness.
- Inability to chew dry food.
- Seizures, convulsions or sudden changes in behavior.

Many of the diseases associated with aging can be easily diagnosed and treated, providing comfort in the dog's senior years.

End of Life Considerations for Sled Dogs:
Injuries and illnesses can threaten dogs quality of life. Whether your dog is injured during the prime of life or debilitated due to the diseases of old age you may have to decide whether or not to euthanize your dog.

Animal care experts agree that it is appropriate to humanely kill a dog rather than to prolong suffering. There are no hard and fast rules regarding when it is or is not appropriate to do so. Here are some considerations you can use to help make your own decision:

- Is professional veterinary care available in your community?
- Can you afford to pay for the necessary veterinary care?
- How likely is your dog to recover from the problem?
- Is your dog in pain? If so, can the pain be effectively controlled?
- Is your dog able to eat and digest enough food to remain properly nourished?
- Is your dog mobile enough to move around its housing area?
- Is your dog able to breathe without difficulty?
- Does your dog behave as though s/he still enjoys living?

Once you have considered the above, establish a euthanasia baseline condition. These are best established before the animal reaches the euthanasia threshold. It is much easier to establish these before human emotion becomes the deciding factor. It can be stated as simply as: When the dog is not longer able to..., then we will euthanize it. It is very easy to change this threshold as a dog approaches it. Experience has shown that as one "quality of life" measurement goes by, another threshold is established and so on. When this happens, it is only avoiding the inevitable.

Whenever possible, animal control shelters or veterinarians should be used to perform euthanasia as necessary. In isolated rural areas where such facilities are not available you must still make sure your dog is killed humanely, with no suffering. Consult a veterinarian or animal control officer for advice.

In some regions local or state/provincial laws or regulations regulate body disposal. Many veterinarians and animal control shelters can cremate the body for you at little or no cost. If the law permits and you wish to bury your dog's body at your home or kennel it is recommended you place the body in a heavy duty plastic bag encased in a secure receptacle such as a wooden or metal box. You should bury the body under at least 3 ft of earth to prevent other animals from digging at the gravesite.

Appendix

Courtesy Nestlé Purina