

Wild Game Meats and Fish

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Deer & elk: new consideration: Chronic Wasting Disease (CWD)

- Transmissible spongiform encephalopathy
- Found in free-ranging mule deer, white-tailed deer & elk in NE Colorado, SW Wyoming, W Nebraska & Saskatchewan
- Also in captive elk herds in South Dakota, Montana, Oklahoma, Colorado, Nebraska & Saskatchewan



Chronic Wasting Disease (CWD)

- Damages portions of the brain & causes progressive loss of body condition, behavioral changes, excessive salivation & death
- A type of prion protein has been found in the brains of affected animals is believed to be the cause
- So far no transmission to humans



Precautions against CWD

- Don't shoot, handle or eat any wild animal that appears sick
- Wear rubber gloves when field dressing & processing animals
- Ask commercial processors to handle animals individually so meat from different animals won't commingle



Precautions against CWD

- Minimize handling brain or spinal tissues & fluids
- Bone out carcasses or at least avoid eating brain, spinal cord, eyes, spleen & lymph nodes
- Do not eat meat from any animal that tests positive for CWD



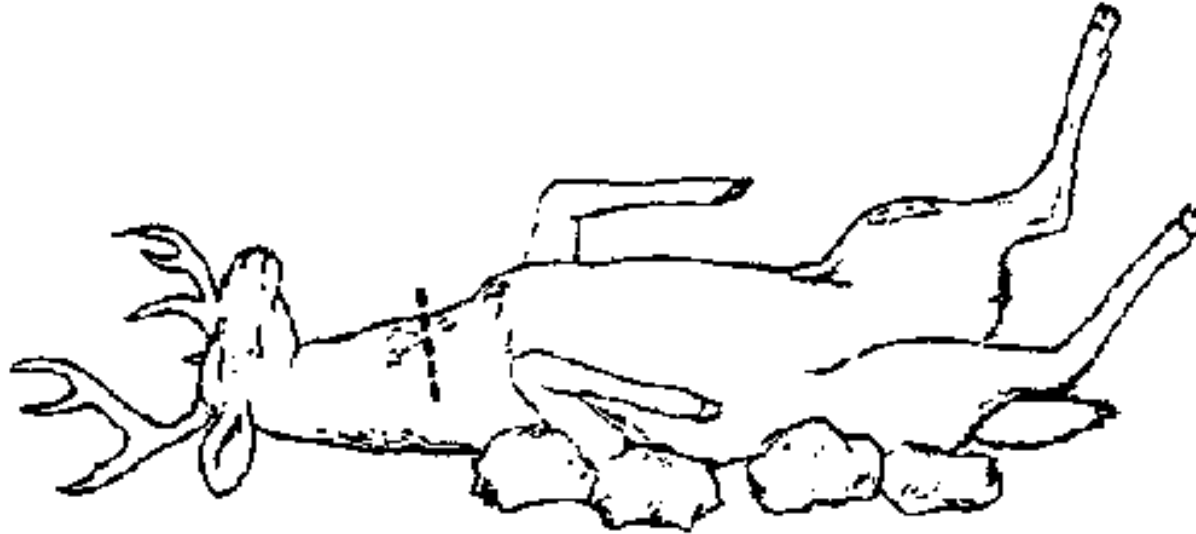
Care in the field

- Be prepared for the hunt
- Abide by game regulations for hunting, transporting & storing game
- Bleed, field dress & cool carcasses promptly
- Keep carcasses clean



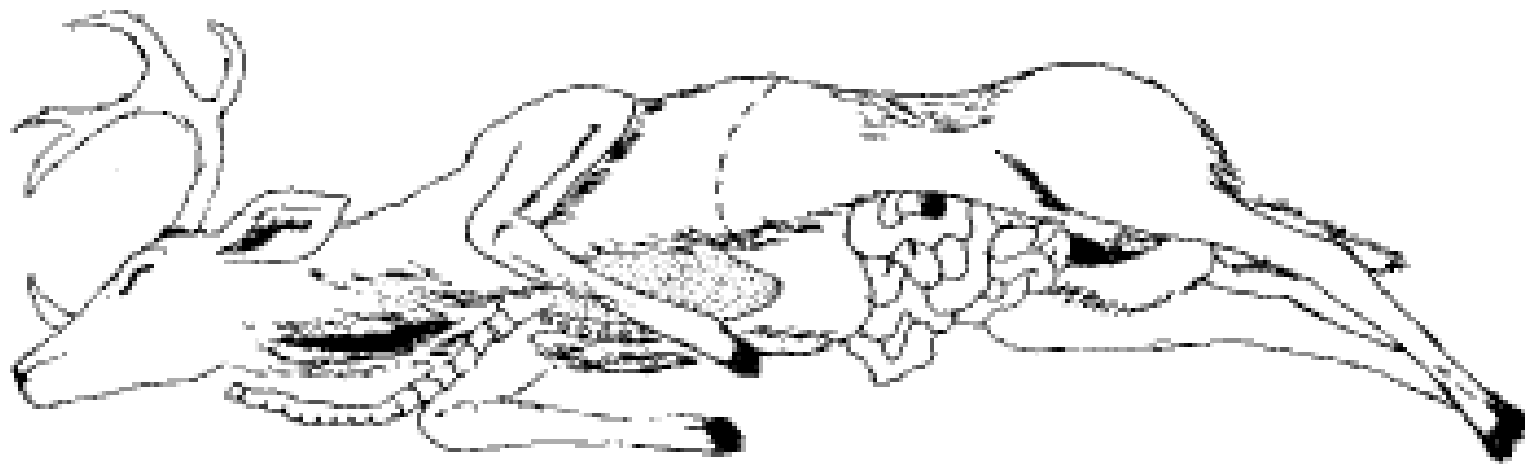
Field dressing

- Wear rubber gloves
- Place animal on its back with front end elevated & spread the hind legs.



Field dressing

- Cut along midline of belly from breastbone to anus



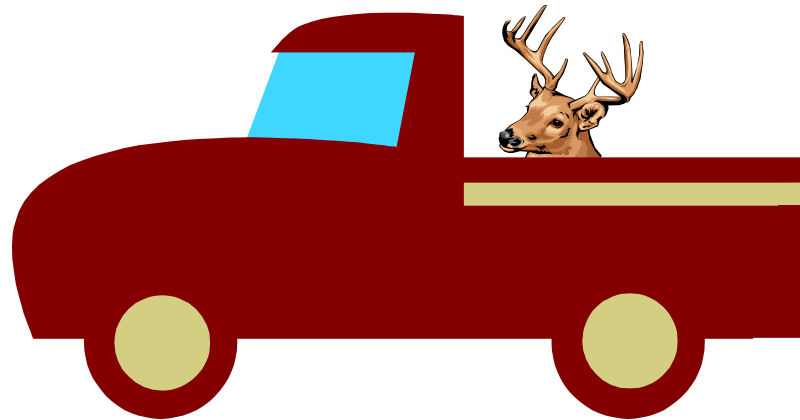
Field dressing (continued)

- Cut diaphragm free from rib cage by cutting through white tissue near rib cage
- Reach forward to cut windpipe, gullet & blood vessels at base of throat
- Pull lungs, heart & guts out of animal



Care in transport & processing

- Keep carcass clean & cool during transport



Process commercially or at home

- Keep carcass cool until it reaches the locker plant
 - Out of direct sunlight & allow air circulation
- If processing your own game:
 - Don't cross-contaminate
 - Wash knife, hands & cutting board often with warm, soapy water
 - Wear rubber gloves

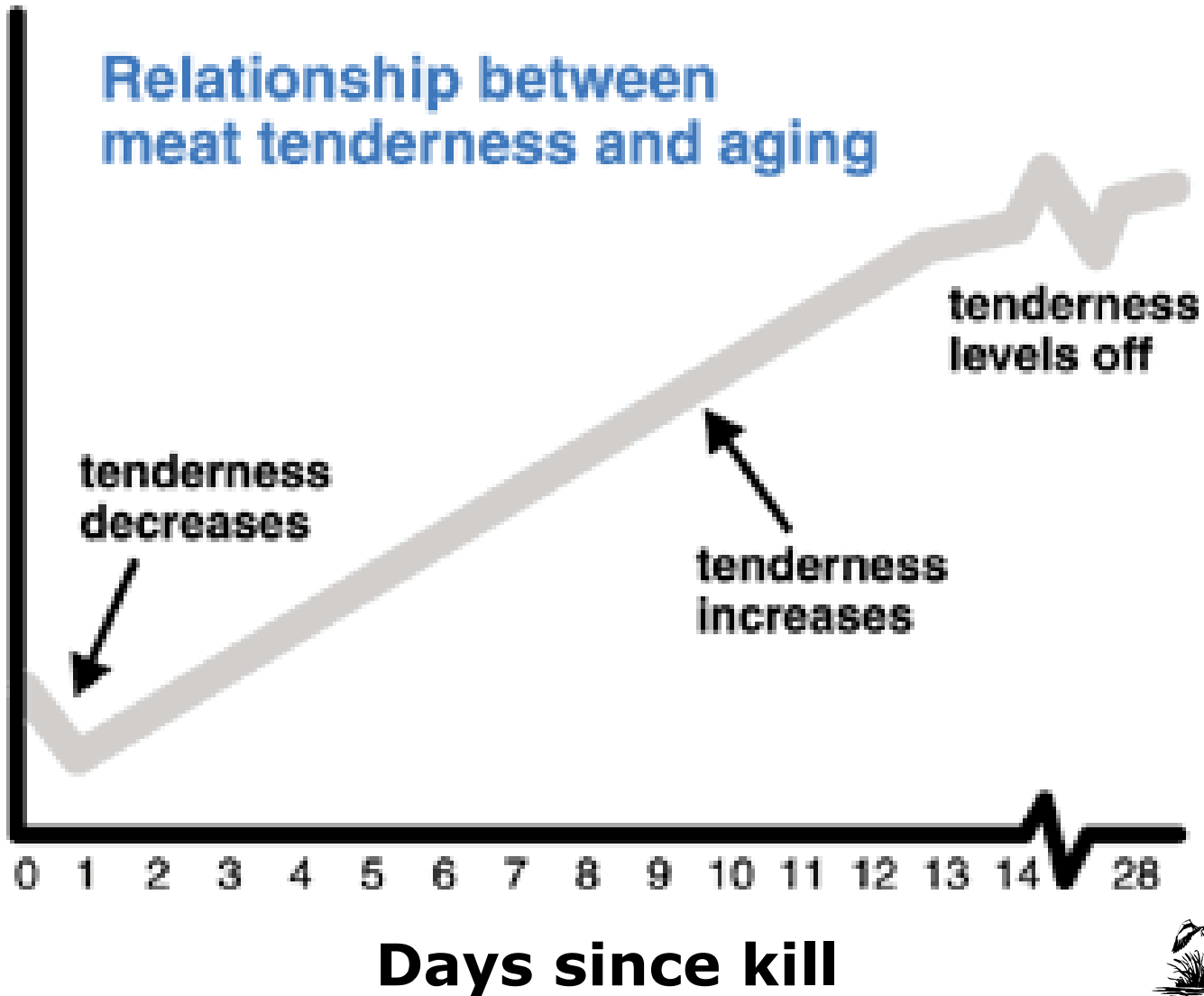


Aging meat

- Practice of holding carcasses or cuts of meat at temperatures of 34° to 37° F for 10 to 14 days
 - Allows enzymes in meat to break down some complex proteins
- Meat often more tender & flavorful



Relationship between meat tenderness and aging



Aging meat

- Not recommended for carcasses with little or no fat covering
 - May dry out during aging
- Leave hide on & maintain proper temperature
 - If no proper cooler space, spoilage or dehydration may result
- Aging 2 to 3 days is sufficient
- If grinding meat, aging not needed



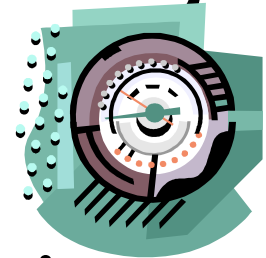
Care in the kitchen

- For immediate use, store meat in refrigerator and use within 2 or 3 days
- Keep raw meat and cooked meat separate to prevent cross-contamination



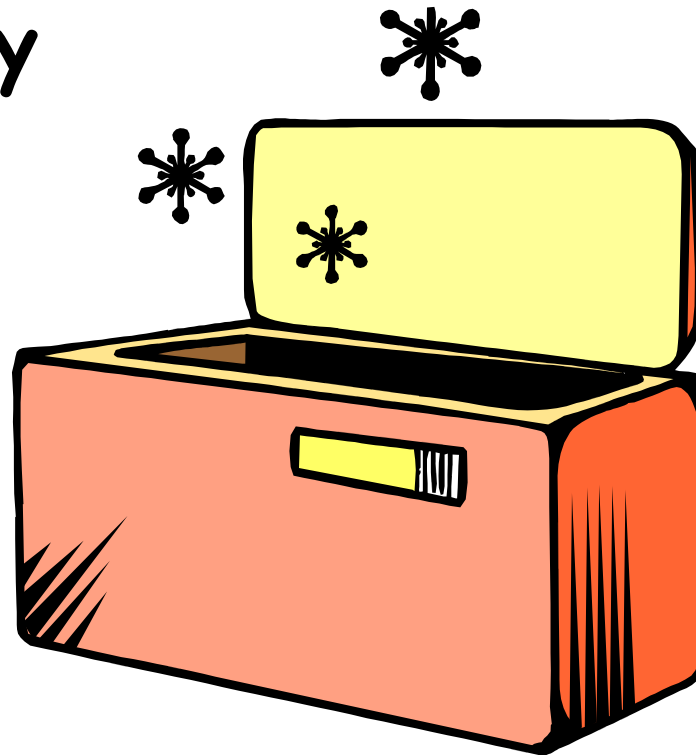
Best Advice for freezing

- Freeze foods quickly
 - Set freezer temperature at -10° F at least 24 hours ahead of freezing large quantities of fresh food
 - Spread packages out around freezer, until frozen, then stack
- Hold at 0° F for best quality



Freezing game meat

- Freezing does not improve quality
- Freeze quickly



Freezer burn

- Moisture loss = freezer burn
 - Food becomes darker, tough & dry
 - Safe to eat but very low quality
 - Not reversible



Packaging materials: good qualities

- Moisture-vapor resistant
 - Prevents transfer of moisture & air in & out of package
- Durable & leak-proof
- Does not become brittle & crack
- Resistant to oil, grease, water
- Prevents absorption of “off” flavors or odors
- Easy to seal & label



Rigid packaging containers

- Types
 - Plastic freezer containers
 - Wide-mouth canning/freezing jars
- Good for liquids & soft, juicy, or liquid-packed foods (stew, chili)
- May be reusable
- Hold shape & store upright



Non-rigid freezer containers

- Types
 - Bags
 - Wrappings: plastic, heavy-duty foil, laminated paper
 - Vacuum sealed bags
- Good for firm, non-juicy foods



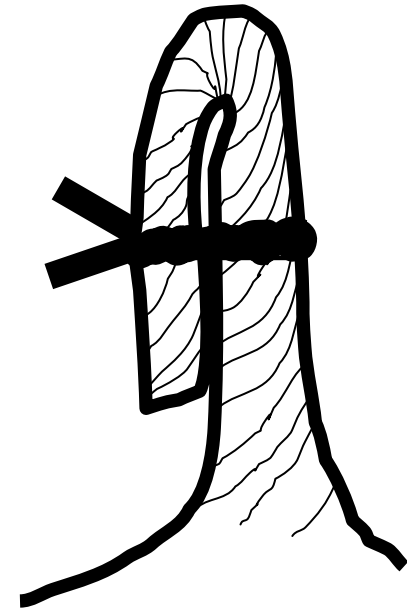
Packing foods to be frozen

- Pack food tightly to avoid:
 - Trapped air (oxygen)
 - Wasted space
- Most foods need headspace (room to expand) at top, except:
 - Uneven vegetables like broccoli, asparagus
 - Bony pieces of meat
 - Tray-packed foods
 - Breads



Packing foods to be frozen

- Press all air from bagged foods
 - Except for headspace
 - Seal non-zippered bags:
 - Twist loose top, fold top down over itself (gooseneck), secure with twist-tie, rubber band or string



Use tight lids on rigid containers

- Keep sealing edges clean, dry
 - Trapped food or liquids in sealing area freezes, expands, loosens seal
- Use freezer tape over seams of looser-fitting covers



Labels

- Name of product
- Added ingredients
- Form of food: halves, whole, ground, etc.
- Packaging date
- Number of servings or amount



Freezing guidelines

- Freeze foods at 0°F or lower
 - 24 hours before freezing large amounts set at -10°F or lower
- Freeze immediately after prep.
- Do not overload freezer with unfrozen food
 - Freeze amount that will freeze in 24 hours (2-3 pounds/cubic foot)



Freezing guidelines, cont.

- Place unfrozen foods in contact with surfaces & in coldest parts of freezer
- Leave space around packages so cold air can circulate
- When packages are frozen, organize freezer into types of food



Freezing guidelines, cont.

- Arrange frozen foods so foods frozen longer can be used first
- Keep frozen foods inventory up to date
- Check thermometer periodically



Must use pressure canner to process wild game meats

- Improperly canned meat can kill
- Follow tested recipe exactly
- Make sure canner is working properly
 - Test dial gauge
 - Check rubber seals
- Adjust for altitude



Thaw & cook correctly

- Thaw frozen meat in refrigerator or microwave
 - If thawed in microwave cook immediately
- Cook game meats thoroughly
 - To internal temperature of at least 165°F



Make it tender

- Big game animals usually exercise more than domestic so may be drier & less tender
 - Moist heat methods may result in a better product
 - Chops and steaks may be pan fried or broiled



Make it flavorful

- Distinctive flavor mainly due to fat
 - To reduce gamey flavor, trim fat from meat
 - May add other sources of fat to maintain juiciness of meat
 - Can use spices or marinades to mask gamey flavor
 - Always marinate in refrigerator



Game birds

- Fat & calorie content varies with age & species
- May become contaminated with bacteria or gastric juices if improperly handled
 - Off-flavors & odors may develop & risk of foodborne illness increases



West Nile Virus (WNV)

- Little evidence of public getting WNV from handling or eating infected birds
- Use common sense precautions:
 - Wear latex/rubber gloves to field dress & clean
 - Don't harvest or eat sick or abnormal acting birds
 - Cook to internal temperature of at least 165°F
- Hunters exposed to mosquitoes should apply insect repellents according to label instructions to clothing & skin



Care in field & transport

- Abide by game regulations for hunting, transporting & storage
- Field dress birds promptly
- Cool carcasses quickly to retain flavor & maintain quality
- Keep birds cool during transport



Care in processing & storage

- Don't cross-contaminate during processing
- Birds generally do not require aging
- For immediate use, birds should be refrigerated at 40°F or lower & used within 3 days
- For long-term storage, freeze whole cleaned carcasses or individual parts at 0°F or lower up to 1 year



Preparing game birds

- Thaw in refrigerator or microwave
- Age determines cooking method
 - Older birds need moist heat (braising, stewing)
 - Can use dry heat for younger birds
 - Baking, frying, grilling
- Always cook to internal temperature of at least 165°F
 - Use meat thermometer



Fish: Care on the water

- Keep fish alive as long as possible—very perishable
- During winter keep fish covered to prevent freezing & drying out
- Check for signs of disease &/or parasites
- Fish in safe waters



Cleaning & storing fish

- Clean & cool fish as soon as possible
 - Time & heat can rob freshness & flavor
- Clean knife after each use, don't cross-contaminate
- Store cleaned, fresh fish in refrig. at 40°F or lower in covered container & use within 2 days
- Cleaned fish may be frozen whole or as fillets



Preparation of fish

- Don't cross-contaminate
- Thaw in refrigerator, microwave or under cold running water
 - Food defrosted in microwave should be cooked immediately
- Cook until flakes with fork
 - Undercooking can be risky, overcooking can result in an unpalatable product
- Fish is generally low in fat & very tender
 - Cooking methods that develop flavor are preferred
 - Broiling, baking, frying



Preserving fish

- Freezing is best for fresh Oklahoma-caught fish
- Canning better with higher fat fish like salmon
 - Must use a pressure canner, follow test & reliable directions exactly, adjust for altitude



Cooking game meats & fish

- To remove “gamey” flavor, soak in 1 tablespoon salt or 1 cup vinegar/quart cold water
 - Use enough to cover game completely & soak overnight in refrigerator
 - Discard soaking solution before cooking
- Trim any visible fat from wild game
 - Where gamey flavor can reside



Cooking game meats & fish

- Roast tender cuts of venison and game birds (if skinned), covered with oil soaked cheesecloth or strips of bacon to prevent the meat from drying out, on rack in shallow pan at 325°F
- Cook whole game birds to minimum internal temperature of 165°F
 - Check in innermost part of thigh & wing & thickest part of breast



Food safety issues

- Follow food safety practices



Leftovers

- Discard any food left out at room temperature for more than 2 hours
 - 1 hour if temperature was above 90°F
- Divide large amounts into shallow containers for quicker cooling in refrigerator
- Use leftovers within 3-4 days or freeze
 - Will keep frozen 3 to 6 months



Reheating leftovers

- Reheat foods containing meat or poultry to internal temperature of at least 165°F
- Reheat sauces, soups, gravies to boiling
- To reheat in oven, set temperature no lower than 325°F
- Reheating in slow cookers & chafing dishes is NOT recommended
- In microwave, cover & rotate food for even heating
- Allow standing time before checking temp.



Sources of information

- North Dakota State University Cooperative Extension Service
- National Center for Home Food Preservation
- Food Safety & Inspection Service, USDA
- Partnership for Food Safety Education
- Oklahoma Department of Wildlife Conservation



