Waste Management in Bear Country

A guide to controlling foraging at trash sites by black bears.

Minnesota's black bears eat a large variety of foods. When natural foods such as nuts, meat, berries, insects and tender vegetation are scarce they will attempt to eat anything that resembles food in smell, taste or appearance. Bears can become a nuisance as they visit homes, resorts, campgrounds and restaurants in search of food. They will usually return regularly once they find a food source. An unsightly mess is left in the wake of their foraging when the source of food is a refuse container or dumpster.

To help reduce bear problems:

- **Never Feed Bears.** They will associate people with food and may become a problem.
- Move trash cans and dumpsters away from public areas.
- Pick up garbage and fish remains every evening.
- Wash trash cans and dumpsters frequently.

If problems persist:

- Use bear-proof trash cans and dumpsters.
- Install an energized fence system around trash collection points.

Bear-Proof Storage

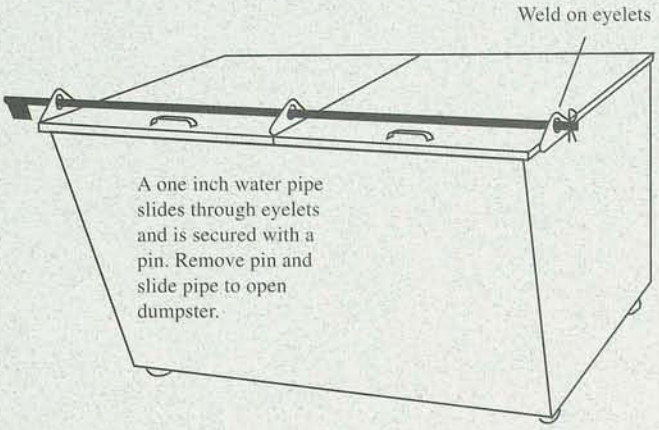
Problems with foraging bears are not unique to Minnesota. The need for bear-proof storage containers, whether to protect food or to manage waste, has created a demand for commercial products. Several companies have responded by developing products to meet various needs.

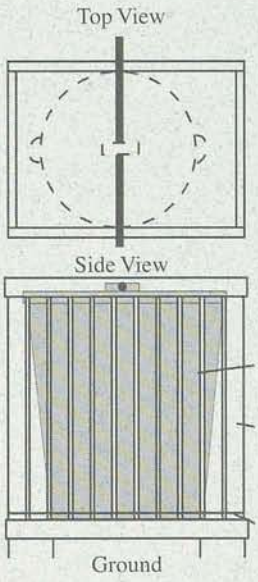
- Backpackers cache provides storage for smaller quantities of food.
- Storage Lockers for picnic areas and camp grounds provide storage for coolers and larger food items.
- Residential containers that protect standard trash cans are suitable for homes, resorts and camp grounds.
- Units designed for bag collection of trash are suitable for recreational areas. Combination waste /recycling lids are available.
- Bear-proof dumpsters serve larger collection points such as resorts, campgrounds and apartments.
- Modular systems are available for urban and rural refuse collection, transfer and storage stations.
- When possible alter existing containers to be bear-proof.

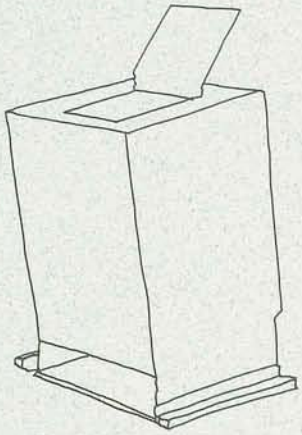
Work with your local refuse collection company prior to any container modification to be sure it is acceptable. Coordinate refuse collection times to minimize opportunities for bear foraging.

Bear-proof Containers

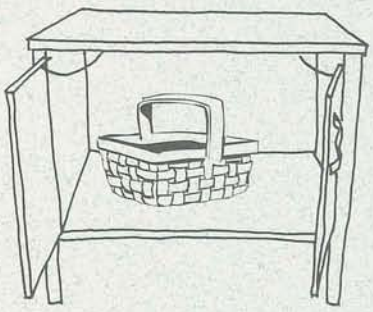
Simple modifications can result in bear-proof containers. Dumpster lids must be steel, not plastic.







Commercial receptacle for trash bags



Commercial storage locker

Bear-Proof Container Sources

Wasteco Mfg.
926 East Industrial Dr.
Dickenson, ND 58601
(701) 225-7000
dumpsters, front & rear

Garcia Machine
14097 Ave 272
Visalia, CA 93292
(209) 732-3785
(209) 732-1509 FAX
backpackers cache

Kois Bros. Equip Co., Inc.
5200 Colorado Blvd.
Commerce City, CO 80022
303 298-7370
dumpsters, refuse containers

Western Systems & Fabrication
2403 N. University Rd.
Spokane, WA 99206
(800) 456-7886
(509) 922-1300
(509) 922-1302 FAX

McClintock Metal
455 Harter Avenue
Woodland, CA 95776
800 350-3588
refuse containers, food storage lockers, residential containers, waste transfer and storage system

Rayfo Co.
15629 Clayton Avenue
Rosemount, MN 55068
(651) 437-4441
(651) 437-2272 FAX
dumpster lids

Fence Design

Check local fencing ordinances before constructing an energized fence. They are prohibited in some municipalities.

A basic fence design is shown in Figure 1. The four critical components of an effective energized fence are: 1) a high voltage, low impedance energizer capable of delivering a minimum of 5,000 volts under all conditions, 2) an adequate electrical grounding system, 3) proper wire and post spacing, and 4) monitoring the fence with a voltmeter, to determine maintenance needs.

1. Energizer

- A high voltage, low impedance energizer delivers a short (0.0003 second), painful, but safe shock to bears. The short pulse will not set fire to vegetation contacting the wires, nor will it injure humans or animals when properly installed.
- Energizers may be powered by a 6 or 12- volt battery, D-cell alkaline batteries, or 110-volt AC current. Deep cycle marine or gel cell batteries are recommended for 12-volt energizers.
- Energizers should be located within the enclosure or protected in a nearby building.
- Batteries must be insulated from the ground. Set them on a board or platform.
- The fence must always be energized. The energizer and grounding system should be installed and operational prior to installing posts and wire. All fence wires should be energized.
- Insulated underground cable may be buried as a lead out wire from the energizer to the fence and from the energizer to the ground rods. Remember, the shocking power of the fence deters the bear. The posts and wires are the delivery system. The fence is not a physical barrier, so it will not be effective unless it is constantly energized.

2. Grounding

- Use a minimum of three, 6 foot ground rods. Additional or longer ground rods may be necessary on sandy soils or during dry conditions. Ground rods should be driven into the ground so that approximately 3 inches remain above the surface. Connect the ground rods to the ground terminal of the energizer with wire.
- Ground rods should be galvanized steel; avoid copper.
- Ground rods should be placed at least 10 feet apart.

3. Wire and Posts

- Fiberglass, plastic, or wooden posts with insulators are recommended for the posts. (Steel posts with insulators leak voltage and should not be used.)
- Seventeen gauge, smooth steel wire, polywire or light gauge steel cable may be used. Many operators prefer steel cable. Polywire is not as durable as steel wire or cable. Do not use barbed wire.
- Wire tension is adjusted by handpulling and held with knots on the end. Spring-type gate handles can also serve to maintain tension. Small tension springs are used with light gauge steel cable.
- Place in-line posts 10 feet apart. It is important to maintain the wire spacing illustrated in Figure 1.
- If skunks or raccoons are also a problem, add an extra energized wire 4 inches above the ground.
- Corner posts may be 4 inch diameter, 8 foot long pressure treated wood or 7 to 8 foot long 1 1/4" fiberglass rod. Place the wide end of wooden posts into the ground. Angle corner posts slightly away from the corner. In light or sandy soil, longer corner posts or anchor post may be necessary. You will need about 4 feet of post above the ground.
- Use high density plastic or porcelain insulators with wooden corner posts. Avoid wraparound and tube insulators.

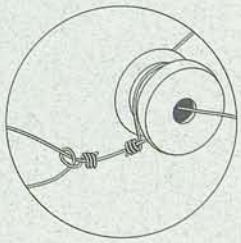
4. Voltmeter

- A voltmeter is critical for monitoring voltage and trouble shooting. Voltmeters are available from energized fence manufacturers.

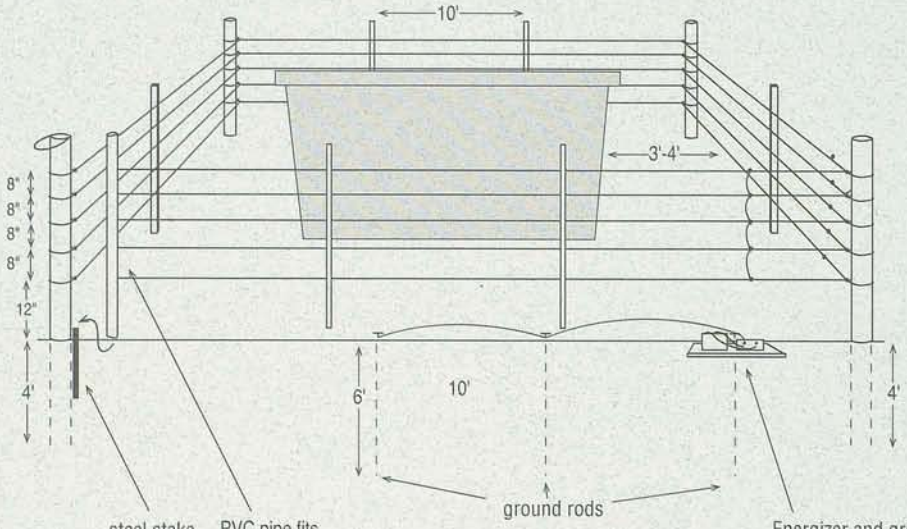
Figure 1.

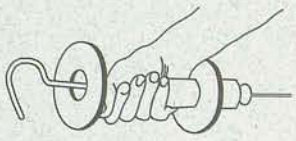
Illustration of Energized Fence—Modified New York Design

(not to scale)



Porcelain insulators are "wire tied" to the corner posts.





Spring-type gate handles can also be used for individual wires.

Materials list and price estimate (1999) for a 20' by 30' energized enclosure to exclude bear:

Quantity	Source	Description	Unit Cost	Total Cost
1	G	Energizer (at least 1.0 joule)	95.00	95.00
3	G	6' galvanized ground rods with clamps	9.00	27.00
1	G	Digital voltmeter	60.00	60.00
4	F	8' x 4" round treated posts	7.00	28.00
½ lb.	F	Galvanized fence staples	0.50	0.50
125'	F	12 or 14 gauge steel wire to attach porcelain insulators to wood posts		4.00
20	G	Porcelain doughnut insulators	0.30	6.00
165'	G	14 gauge insulated underground cable	35.00	35.00
6	F	⅜" x 48" fiberrod posts	0.80	4.80
36	F	⅜" post clips	0.25	9.00
4	G	Fence warning signs	2.00	8.00
1	G	Poly wire (655'roll)	32.00	32.00
1	F	¾" x 36" steel stake	4.00	4.00
1	F	1¼" x 4" schedule 80 pvc	4.00	4.00

Source: G-Energized fence supplier F-Farm supply store

Estimated total cost $317.20

Other Considerations

Baiting the wire is not recommended since it may attract bears. Spring loaded gate handles may serve as the entrance to the dumpster area. Gate width can be customized to each operator's needs. Some operators prefer more than one gate. All wires may be attached to a single fiberglass or plastic rod so all wires can be opened simultaneously.

Locate dumpsters at least 3 feet inside the fence and away from over-hanging trees.

Maintenance

Monitor voltage weekly. Charge or change batteries every 3 to 4 weeks. Some energizers are equipped with solar panels to recharge the battery. Vegetation must not contact the fence. Mowing, weed whipping, herbicides or soil sterilants may be used to control vegetation on an 18-inch wide strip under the fence. Apply herbicides according to label instructions.

Fences around dumpsters that are only used during the summer should be taken down during winter months to reduce wear. The corner posts may be left in the ground over winter.

Ear tags used by cattle farmers to control face flies may be placed in the energizer to reduce ant nest building.

With proper care, fences should last 10 or more years.

If you have questions or need further information contact your local DNR wildlife manager.

Safety

Safety is a primary concern when using energized fencing systems. The property owner is responsible for protecting others from injury. Post energized fence warning signs. Install an energizer that is listed with a qualified electrical testing laboratory and **do not** alter the energizer. Always follow the manufacturer's safety recommendations.

Fence Material Sources

La Crescent Farm & Orchard Supply
Box 143
La Crescent, MN 55947
(507) 895-2103

Midwest Fence
5201 St. Paul Rd.
Medford, MN 55049
(507) 451-8657

Common Sense Fence
1421 2nd Ave NE,
Stewartville, MN 55976
(507) 533-6076
(800) 533-1680

Premier Fence Systems
Box 89
Washington, IA 52353
(800) 282-6631

K-Fence Systems
RR 1 Box 195
Zumbro Falls, MN 55991
(506) 753-2943

Eikmeier Livestock Systems
Rt. 4 box 204
Pipestone, MN 56164
(605) 997-2022

Diversified Wildlife Services
1304 Burgwald Road SE
Brainerd, MN 56401
(218) 764-3318

Waconia Farm Supply
801 S. Hwy. 284
Waconia, MN 55387
(612) 442-2126
(888) 741-3276

David McIver
RR1 Box 201
Farwell, MN 56327
(320) 283-5776

Deutchlander Fencing
Dave Deutchlander
Rt 4
Pine City, MN 55063
(320) 629-2744