Rat Control and Prevention in Waterfront Communities

Integrated Pest Management for

Preventing invasive rats from threatening human health, damaging property and infrastructure, and destroying native wildlife

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Rats as Invasive Species

• The rat the “third most successful mammal in the world” after man and mouse

• Estimated annual rat control costs nationwide (1990s) was $100 million

• Focusing on Norway rat

• Roof rat in some Alaska ports
Rats Continue to Spread Diseases

Rats, and their parasites, can spread:

- Bubonic Plague
- Leptospirosis
- Rat bite fever
- Salmonellosis
- Typhus
- and other bacterial and viral infections

14,000 bites/yr in U.S.
Rats cause fires by gnawing wires…

They also cause other kinds of damage to infrastructure and vessels.
Rats destroy native wildlife, especially nesting seabirds
There are many ways invasive rodents can reach new locations ...

Particularly “rat spills” from sunken or grounded ships and “hitch-hiking” rats off
• Fish processors
• Cargo ships
• Military vessels
• Fishing vessels

Even passenger and research ships
...and aircraft
DISTRIBUTION OF INTRODUCED RATS

- Cities, towns, and villages with known breeding populations of rats.

- Islands with rats
Components of AKRAT Outreach

• Raise awareness of the invasive rat problem
• Develop a port facilities rat control manual
• Enlist participation of port managers, facilities operators, vessel owners, staff, neighbors, and the general public
• Help entities develop Integrated Pest Management programs
• Follow up, evaluate results, modify as needed
The state has published a Rat Control Action Plan

Wildlife and Humans at Risk:
A Plan for Returning Alaska to its Rat-Free State

By E.I. Fritts
Alaska Department of Fish and Game
Division of Wildlife Conservation

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1.4.1 World-class Wildlife Resources at Risk
In 2007 the Board of Game passed a regulation

- 5AAC 92.141. Transport, harboring, or release of live Muridae rodents prohibited.
  
- (a) It is unlawful for the owner or operator of a vessel, vehicle, aircraft, structure being translocated, or other means of conveyance to knowingly or unknowingly harbor live Muridae rodents, or to enter Alaska (including Alaskan waters) while knowingly or unknowingly harboring live Muridae rodents.

- (b) It is unlawful for an individual to release to the wild any live Muridae rodent.

- (c) It is unlawful for the owner or operator of a facility to knowingly or unknowingly harbor live Muridae rodents. The owner or operator of a harbor, port, airport, or food processing facility in which live Muridae rodents have been found shall develop and implement a ongoing rodent response and eradication or control plan.
Also, under previously existing law…

It is illegal to intentionally feed “deleterious exotic wildlife”, or to negligently leave human food, pet food, or garbage in a manner that attracts these animals.
Prevention, Control, Eradication

- **Prevention** – prevent arrival, establishment
- **Control** – keep populations down, suppress their ability to reproduce
  - also called “management”
- **Eradication** – complete destruction - extermination.
Integrated Pest Management
“Ecological approach to pest management”

• Emphasizes prevention
• Inspection and monitoring
• Record-keeping
• Relies on minimal use of pesticides
IPM

• Eliminate sources of food and water
  “Sanitation is pest control”
• Eliminate harborage - shelter and concealment
• Deny access to buildings and other places or nesting, travel, feeding
• Control pest numbers, where necessary, with traps, pesticides
IPM Starts with a Thorough Inspection

- Signs of rats
- Sources of food
- Harborage
- Travel Routes
- Access points
A rat hole...

That is, a rat burrow

(not currently in use)
Tragedy in the field –
rat-gnawed box of candy
Sanitation is key

- Use rodent-proof trash containers
- Remove trash frequently, preferably in evening
- Pick up litter, clean up spilled food, edibles
- Deny access to fish processing, cleaning sites
- Remove sources of natural food
Some sanitation issues are obvious, others less so.
This style of dumpster is relatively rat-proof
This cleaning station doesn’t offer much to rats
Fish plants pose special challenges

Cleanliness and tidiness discourage rats
Harborage: eliminate unnecessary clutter, which provides habitats where rats can:
• Travel while concealed
• Hide from predators
• Feed
• Make nests and reproduce
Rat heaven
Even an orderly site can be good rat habitat
Deny pests access to buildings and other sources of shelter and warmth

- Keep doors closed
- Apply rodent-proof weather stripping
- Plug and fill holes or cover with screen
- Stuff bronze wool or mesh around wiring chases, utility conduits
- Use metal flashing or trip strips to reinforce door edges, building skirting
Plug holes in buildings
Install metal kick plates on doors
Rats can chew through wood
Put screens over windows and other openings.
Bay doors should be kept closed, should fit snugly, and have metal bottoms to prevent rat entry.
Rodents like straight lines.
Interrupt travel corridors with barriers and traps or bait boxes
They don’t like exposed open spaces
They’re vulnerable to predators
Vessels should be protected like shore facilities:

Sanitation
Harborage
Lethal removal

(never throw a live rat overboard)
Deny rats the use of nets, pots and lines as a place to hide, feet and breed.

Overhaul or shake out gear before loading.
Hand out rodent prevention kits to ships, boats
Rat Control –
What Works and What Doesn’t
Many methods of controlling rats are proposed. Not all are effective at controlling established populations, or preventing infestations.

“Well, heaven knows what it is or where it came from—just get rid of it. But save that cheese first.”
Snap traps

Several designs, some easier, safer to set

Baited and unbaited styles

Standard and “easy-set”

Many ways to deploy them
Snap Traps

- Placement is critical. Set along runways, travel routes, near food sources
- Baited and un-baited.
- Variety of baits good
- “Pre-bait” or chum the area
- Secure bait to trigger,
  - secure trap in place
- Deploy many traps, close together
Glue traps or trays

- Limited effectiveness on adult rats
- Good for “indexing” or surveying for the presence of rats and other pests
“Bait stations” most effective for control
Second generation anti-coagulants
About anticoagulant baits

- Come in blocks, pellets, meal, watering, tracking
- Kill by causing internal bleeding
- Takes 5-10 days on average
- Rats don’t know they’re sick, continue normal daily routines
- Usually die in their burrows
- Not considered to cause pain, distress
- Secondary poisoning unlikely
- Contain bittering agent
- Relatively safe around people, pets, non-target wildlife (except for watering and tracking powder)
Baits secured on metal rod
Bait is gone.

Note green droppings
Pesticide Tips

• Determine whether a certified applicator is required.
• Use the right formula, and form of bait.
• Read the label. Use only as per label.
• Place baits only in high-use areas.
• Keep baits out of reach of pets, kids, and non-target wildlife.
• Check often for signs of consumption, spoilage, bait scattering, other effects.
• Keep records, report results.
Rubber gloves to handle, remove dead rats
Record locations, catches, baits and other data
Designing and Managing a Rat Control Program

- Written project plan
- Interagency coordination
- Training
- Public information and public involvement
- Clear agreements and standards for users
- Well-defined scheduling
- Rigorous data collection and recording
- Measurable criteria for success
- Process for adapting and modifying
- Commitment to long-term control and monitoring
Three Phases of a Control Program

• Start-up
  – Informing participants, getting buy-in
  – Defining roles
  – Program design

• Operational

• Follow-up
  - Reviewing records for signs of success
  - Evaluating, re-shaping program
Rat prevention database will document work, allow analysis of program

Location stations by type. Station with rat territory area.
Outreach and Community Involvement

- Pro-active
- Concise, factual and positive messages
- Be responsive to complaints
Sailing for the Pribilofs?  
Don't Be XXX-RATed

FREE RAT PREVENTION KITS!
Infested vessels will be evicted. Please do your part to protect public sanitation, wildlife, and the seafood industry. Install a prevention kit! For free kit and information contact:

Pribilof Islands Stewardship Program  
(907) 546-3190
St. Paul Traditional Government  
(907) 546-2641

Warning

Keep A Rat Free Ship!

Protect Your Health
Rats, mice, and their fleas can spread diseases, including the plague, salmonellosis, leptospirosis, tuberculosis, and rat bite fever. Rodents also cause secondary damage by leaving behind droppings each day and by spreading urine to mark territory. They usually die and rot in cramped, dark piles producing bad odors which are difficult to remove.

Protect Your Ship and Cargo
Rodents cause harm by chewing on electrical wires. Their front teeth grow continuously so they must chew to keep them short and sharp. They will chew on almost anything. They also create hydraulics leaks, shred materials for nests, and eat and contaminate food.

Protect our Environment
Exotic rodents pose threats to the environment, particularly to Alaska’s islands. If introduced to new areas, they destroy habitat, kill wildlife, and may infect wild rats with disease.

Don't let your ship carry rodents to new places where they could get off in freight, gear, garbage, or by skipper.

Qualifying vessels may get a free rodent prevention kit  
Harbor Master's Office

This program funded by the National Fish & Wildlife Foundation in cooperation with the U.S. Fish and Wildlife Service, The Marine Conservation Institute, and the community of St. Paul and St. George of the Bering Island.
Get Political

State law singles out facilities

One way to engage whole community is to get a local ordinance

An ordinance can protect the community from vessels or other sources that may introduce rats.
ST. PAUL RODENT ORDINANCE  CCO 9.6

Rodent Control

(a) The council finds that control of rodents on St. Paul Island is critical to preservation of bird species which inhabit the island and that introduction of rodents to the island could cause catastrophic irreversible impacts on the bird populations.

(b) **Prevention Program** - All structures and the land surrounding them which are used for commercial purposes to store food, and/or which produce food wastes, fish processing wastes, or other waste products which might be a food source of any rodent shall maintain a rat prevention program that will include general sanitation monitoring and a trap, sticky board and/or bait station program.

(c) **Vessels** - All vessels utilizing any other food source for rodents. Where there is evidence of rodents, a vessel shall be evicted from the Port of Anchorage jurisdiction.

(d) **Food Source Control** - Any business or activity that produces or stores fish processing wastes or other products that may be food sources of any rodent shall store such products in metal cans, steel drums, or dumpsters.

(e) **Inspections** - Any commercially used structures or vessels in waterways may be inspected at any time to ensure compliance with this ordinance. In addition, in the event of receipt by the City of any evidence that a structure or vessel may be infested with rodents, the
Rat Free Island

No Rat Infested Ships Allowed

St. Paul Ordinance 94-02
1993 – 2008 > 1,000,000 Trap Nights
Steps to Community Action

1. Form a community rat action committee
2. Select a coordinator
3. Assign participant responsibilities
4. Establish contact with the port committee
5. Hold public meeting, draft an action plan
6. Get out P.R. on the plan
7. Establish timeline, process for review
8. Proceed with implementation
To get more information on control of invasive rats:

- Check www.stoprats.org
Suggestions?

• Do you have ideas about reaching and persuading facilities owners and managers, neighboring businesses, and the public?

• Do you know other proven methods for controlling rats?

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