

Damage Management Options for Invasive Rose-Ringed Parakeets



Rose-ringed parakeets (*Psittacula krameri*, RRPA) are an invasive species in Hawaii. An integrated pest management strategy that involves the use of both lethal and non-lethal tools and techniques is the most effective way to reduce RRPA damage. RRPA are quick to adapt to non-lethal tools, thus the successful use of such tools requires combining multiple techniques and changing or moving them regularly. Lethal removal of birds in damage situations may only provide temporary relief. To achieve long-term population and damage reductions, a broad, coordinated and sustained lethal removal effort is required.

Lethal Control for RRPA Causing Damage (Table 1)

As RRPA populations grow and spread, damage will become more severe and abundant. Kaua'i residents should be aware that a successful effort to reduce invasive parakeet damage requires the lethal removal of birds. A coordinated, sustained, and science-guided campaign will help achieve population reduction in an effective, efficient, and humane manner. Only public support for a state- or county-run RRPA lethal removal program will reduce damage for everyone over the long term. In the meantime, the use of non-lethal management tools may help reduce localized damage.

Protecting Crops from RRPA Feeding Damage (Table 2)

RRPA negatively impact seed crops (e.g., corn, sunflower, and soybeans) as well as fruit crops (e.g., lychee, mangos, longan, guava, rambutan, papaya, and passion fruit). RRPA damage corn by feeding on the tassel, ear, and the tender and milky cob stages up to maturity. Damage to tree fruit is greater at the top of the trees compared to the side and bottom branches. RRPA eat both ripe and unripe fruit, and often discard partially-eaten food.

Protecting Property from RRPA Roosting Damage (Table 3)

Large, nighttime roosts in urban areas result in noise complaints and unsanitary conditions that may increase disease risk to people. RRPA remove leaves on roost trees (e.g., royal palms) and eat the flowers of native and ornamental plants.

Table 1. Options for RRPA lethal removal at foraging and roosting sites (suggested methods in gray).

TOOL OR METHOD	Description	NOTES
Shooting	Lethal removal by firearm	Shotguns for incoming birds and air rifles for precise removal while perched in crop or tree at foraging sites; air rifles for precise removal while perched in roost tree (Note: depredation permit required)
Traps & Hand Nets	Capture with baited live-traps or spring-loaded traps on ground or platform; hand-held nets	Traps not practical in roosting areas or foraging areas with preferred crops or where bait is not enticing; long-handled hand nets not practical for foraging birds but effective at capturing birds at accessible roosting locations (e.g., low fronds) (Note: depredation permit required)
Toxicants	Lethally control pest birds with toxic bait	No toxicants available for RRPA
Predators	Use falconry or provide predator habitat to attract natural predators	Falconry is expensive and labor-intensive; promoting predators not practical in Hawai'i with limited native predators and not wanting to promote invasive predators

* Fertility control is another option for reducing RRPA populations by limiting fertility and reproduction. Diazacon has shown to be effective on RRPA in captive studies. However, its use on Kaua'i is limited by the inability to establish Diazacon baiting stations because of abundant alternative food sources.

LEGAL ASPECTS: RRPA are non-native and not protected by the United States Migratory Bird Treaty Act (MBTA). RRPA are not federally listed as an injurious species under the US Lacey Act (18 U.S.C. 42), but RRPA are listed by the State of Hawai'i (Department of Land and Natural Resources [DLNR]). This designation prohibits the release, transport, or export of RRPA, with importation restricted by the Hawai'i State Department of Agriculture. All wild birds including introduced species are protected under Hawaii Revised Statutes (HRS183D and HAR124), thus a nuisance wildlife control permit obtained through the Hawai'i DLNR is necessary to lethally take RRPA. All state and local regulations for firearm discharge must be followed. Various avian repellents are registered by the US EPA and State of Hawaii with label specifications for a variety of pest birds and habitats.

DISCLAIMER: Wildlife can threaten the health and safety of you and others in the area. Use of damage prevention and control methods may pose risks to humans, pets, livestock, other non-target animals, and the environment. Be aware of risks and take steps to reduce or eliminate those risks. Some methods this document may not be legal, permitted, or appropriate in your area. Check with personnel from your state wildlife agency and local officials to determine if methods are acceptable and allowed. Mention of any products or brand names does not constitute endorsement, nor does omission constitute criticism.

Table 2. Options for reducing RRPAs damage at agricultural **foraging sites** (suggested methods in gray).

TOOL OR METHOD	Description	NOTES
Modify Crop & Habitat	Reduce habitat suitability; alter agricultural timing, siting, spacing, and crop varieties; manage habitat surrounding crop fields; provide alternative forage (e.g., lure crops)	Grow crops away from flight lines, loafing sites, and night roosts; eliminate early and late-maturing crops in same locality; use large plots; reduce space between plots (damage greater at field edges); advance harvest date; remove RRPAs loafing areas near crops; delay disking or destruction of unused crop; plant lure crop in extra tillable space and do not harass birds in lure crop
Netting & Wires	Enclose crops/trees using temporary or permanent netting or overhead wires	Netting offers complete exclusion; can be expensive and labor intensive; RRPAs move through overhead wires thus requires narrow openings & teepee design over trees
Bagging Crops	Place bags over fruiting body during damage window period	Offers exclusion when alternative food is available; inexpensive; moderately labor intensive; reduce duration of bagging to limit insects and mold
Lasers	Shine lasers (automated or hand-held) over the top of the crop	Acts as frightening device; labor intensive (hand-held) or expensive (automated units); lasers are potential eye hazard
Visual Deterrents	Deploy effigies (dead RRPAs, predator models, hawk eyes) or novel objects (reflective, wind-propelled objects or mobile drones)	Varied results depending on flock, landscape, and deployment strategy; more effective if used in combination with auditory deterrents and reinforced with negative stimulus (shooting); drones can reach inaccessible areas
Auditory Deterrents	Deploy loud noises (pyrotechnics, cannons); bioacoustics (RRPA-specific distress/alarm calls, predator noises), or sound to mask bird communication (sonic nets)	Habituation occurs faster with loud blasts than bioacoustics that mimic natural threats; reduce habituation by switching, combining, and moving devices; sonic nets effective if alternative food and natural predators present
Methyl anthranilate	Spray chemical repellent to act as irritant	Foliar application at harvest is available; effective field application strategies depend on crop; temporary effects

Table 3. Options for reducing RRPAs damage at urban **roosting sites** (suggested methods in gray).

TOOL OR METHOD	Description	NOTES
Modify Habitat	Reduce habitat suitability/reduce perch space; replace landscaping; net roost trees	Trim roost trees (e.g., royal palms) realizing excessive trimming weakens trees; use alternative landscaping and native plants (e.g., loulou palm); netting not practical for every tree and not visually pleasing to humans
Lasers	Shine lasers (automated or hand-held) at the roost tree or incoming birds	Acts as frightening device; labor intensive (hand-held) or expensive (automated units); lasers are potential eye hazard
Water Spray	Use water spray to cause birds to leave roost	May reduce appeal of roosting space; does not harm vegetation; labor intensive unless system installed
Visual Deterrents	Deploy effigies (dead RRPAs, predator models, scarecrows, hawk eyes) or novel objects (reflective, wind-propelled objects, or drones)	Varied results depending on flock, landscape, and deployment strategy; more effective if reinforced with negative stimulus; auditory deterrents not practical in urban areas (noise pollution); drone use not allowed over crowds, thus limited applicability in urban areas
Methyl anthranilate	Spray chemical repellent to act as irritant	Fogging applications available but include restrictions near water; not practical around human activity (odor pollution)