

OPINION ARTICLE

An Inconvenient Truth: Targeted TNR Enjoys a Track Record Unmatched by Lethal Methods for Managing Free-Roaming Cats

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Historically, ‘stray’ cats have made up a considerable share of a shelter’s feline intake, with some agencies reporting figures exceeding 95%.^{1,2} More recent data reflect a significant reduction. However, the majority of cats entering a shelter are still typically classified as ‘stray’.^a Although providing positive outcomes for these cats remains a challenge in some US communities, the shift toward targeted trap-neuter-return (TNR) programs in recent decades has produced impressive results in others.^{3–7}

Nevertheless, the authors of a recently published commentary in *Biological Invasions* argue that ‘local, state, and national government agencies must ban (with enforcement) outdoor cat feeding sites and end TNR as a purported population management tool’.⁸ Lepczyk et al. claim that this step is critical for ‘successfully controlling free-roaming cat populations’,⁸ although they provide no evidence that a TNR ban would achieve this objective.

Opposition to TNR from members of the conservation community is nothing new. In 2010, some of the same authors published a letter in *Conservation Biology* calling on members of the ‘wildlife and conservation communities ... to challenge policies that are put forth to allow or promote feral cat colonies and TNR’.⁹ Since the article’s publication, various members of the conservation community have done exactly that,^b on at least one occasion

suggesting publicly that people should take matters into their own hands by poisoning cats.^c

But even if one sets aside for the moment the ethics of killing a steady influx of healthy animals,¹⁰ its well documented impact on shelter staff,^{11–14} and the implications for policymakers reliant on public support,^{15,16} one struggles to imagine a feasible alternative to TNR. Put more bluntly: *If not TNR, then what?* The indiscriminate killing of healthy cats has been the default ‘management’ approach for more than 100 years in the US^d despite the lack of any evidence that it has been effective. During 1985 alone, an estimated 7.8–12.9 million cats were killed in shelters.¹⁷ In fact, there is a growing body of empirical evidence suggesting that attempts to manage free-roaming domestic cat populations using lethal methods are often counterproductive.

Eradication campaigns

Efforts to eradicate cats have proven successful only on relatively small oceanic islands, and even these have been known to backfire. This has been demonstrated with both mathematical modeling^{18,19} and empirical evidence.²⁰ On uninhabited Marion Island, the largest island from which cats have been eradicated (290 km²), a 19-year campaign exterminated an estimated 2,100–3,400 cats, using feline panleukopenia, poisoning, hunting, trapping, and dogs.²¹ Some seabird species rebounded quickly²² while others did not, due largely to a rapid increase in the island’s population of mice.^{23,24} There are now plans in place to eradicate

a. BFAS. *The State of U.S. Animal Sheltering, 2022*. Best Friends Animal Society; 2023. Accessed Jul 2, 2023. https://network.bestfriends.org/sites/default/files/2023-06/National%20Shelter%20Data%20Set%202023_updated_6.12.2023.pdf

b. Fenwick GH. House Cats: The Destructive Invasive Species Purring on Your Lap. *The Baltimore Sun*; 2013. Accessed Sep 3, 2023. <https://www.baltimoresun.com/opinion/op-ed/bs-ed-cats-20130225-story.html>

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c. Williams T. Trap, Neuter, Return Programs Make Feral-Cat Problem Worse. *Orlando Sentinel*. 2013. Accessed Sep 2, 2023. <https://www.orlandosentinel.com/2013/03/14/trap-neuter-return-programs-make-feral-cat-problem-worse/>

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the mice in 2024,^e some 50 years after the island's first cats were killed. A similar scenario played out on Australia's Macquarie Island (127 km²).²⁵⁻²⁷

In the US, eradication campaigns are rarely proposed with any seriousness. However, Hawaii House Bill 1987, proposed during the 2022 legislative session, sought to empower the state's Department of Land and Natural Resources and Invasive Species Council to: 'Eliminate the feral cat population on the islands of Kauai, Maui, and Hawaii by December 31, 2025'.^f Following extensive testimony—the vast majority of which was in strong opposition—HB 1987 failed to make it out of its first committee hearing.

Removal efforts

Far more common than calls for complete eradication are calls for lethal removal, either as organized culling or, more often, the indiscriminate killing of cats deemed a threat of some kind (e.g. public health, nuisance). While HB 1987 aimed to exterminate cats from three of the Hawaiian Islands, its intent for Oahu was more modest: a 50% population reduction by December 31, 2025.^g But lethal removal of domestic cats—be it to protect public health or wildlife, or in response to nuisance complaints—has often proven ineffective, too. Researchers working in Tasmania, for example, found that 'low-level *ad hoc* culling of feral cats' was ineffective at reducing their numbers and might actually lead to population *increases* due to 'influxes of new [adult] individuals after dominant resident cats were removed'.²⁸ Research into more intensive removal efforts, on New Caledonia, found that despite the removal of 36 cats (44% of the estimated population across 10.6 km²) in 38 days, 'no meaningful differences in the relative abundance and density of feral cats were observed' just 3 months later.²⁹ Although the removal of cats by animal services agencies (e.g. in response to nuisance complaints) is rarely, if ever, accompanied by such detailed follow-up inquiries, the evidence suggests that such efforts are no more successful at achieving meaningful population reductions. Indeed, in many cases, targeted sterilization efforts were undertaken in response to the failure of long-standing removal policies and practices.³⁰⁻³⁴

In light of the well-documented failures of eradication and lethal removal efforts, it is not difficult to appreciate the benefits of TNR; the bar is that low.

e. Cooper J. *Raising the Alarm: Mice Continue to Attack and Kill Threatened Wandering Albatrosses on South Africa's Marion Island*. Mouse-Free Marion Project. 2022. Accessed Aug 11, 2022. <https://mousefreemarion.org/raising-the-alarm-mice-continue-to-attack-and-kill-threatened-wandering-albatrosses-on-south-africas-marion-island/>

f. Branco PP, Hashem MJ, Ilagan G. *Relating to Invasive Species*. 2022. Accessed Aug 10, 2022. https://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=HB&billnumber=1987&year=2022

g. Branco PP, Hashem MJ, Ilagan G. *Relating to Invasive Species*. 2022. Accessed Aug 10, 2022. https://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=HB&billnumber=1987&year=2022

Opposition to TNR

Obviously, opposition to TNR is not lethal control in the same direct and immediate way that eradication campaigns or removal efforts are. However, impeding TNR efforts or banning it outright does generally lead to lethal consequences.^{35,36,h}

Recent computer modeling suggests that, although lethal removal 'offers the largest and fastest reduction in [free-roaming cat] numbers, if consistently performed at a high intensity, its cost-effectiveness relies on killing cats rather than adopting them, and doing so at levels higher than those typically performed in communities'.³⁷ And, as the previous examples illustrate, lethal removal lacking the requisite intensity, and sustained over time, tends to be ineffective.^{28,29} TNR, by contrast, was shown in the modeling to be 'a viable and potentially more cost-effective approach if performed at higher intensities over a sufficient duration'.³⁷ Empirical evidence has borne this out, with targeted TNR programs yielding impressive population reductions,^{5,32,38-43} in addition to equally impressive reductions in feline admissions and shelter killing.^{3,4,7,44} And, unlike lethal removal, TNR enjoys broad public support.¹⁵ Moreover, by returning cats to the neighborhoods where they originated, TNR mitigates some of the inequities common to traditional sheltering practices—especially in historically marginalized communities^{45,46}—and recognizes the strong bond community cat caregivers have with the cats in their care.^{47,48}

Nevertheless, opposition to TNR persists in many forms. A 2008 lawsuit against the City of Los Angeles resulted in an injunction (lifted in 2020) that not only suspended the City's TNR program but prevented any City employee from discussing such programs—or even referring residents to resources available through local non-profits.ⁱ In 2016, the New York Office of Parks, Recreation and Historic Preservation settled a lawsuit by agreeing to remove 23 cats who had been part of a long-running TNR program^j at Jones Beach State Park.^k We're unaware of any evidence that these legal disputes accomplished their stated objectives of protecting birds and other wildlife. Indeed, the available evidence suggests

h. Muller JLA. *s Proposed No-Kill Policy Raises Hackles on Both Sides*. *SoCal Connected*. 2013. Accessed Sep 3, 2023. <https://www.kcet.org/shows/social-connected/clip/l-a-s-proposed-no-kill-policy-raises-hackles-on-both-sides>

i. Yoshino K. *A Catfight Over Neutering Program*. *Los Angeles Times*. 2010. Accessed Sep 3, 2023. <https://www.latimes.com/local/la-me-feral-cats17-2010jan17-story.html>

n.a. Editorial: *Let L.A.'s feral cats get neutered and die out*. *The Los Angeles Times*. Published 2020. Accessed Aug 5, 2023. <https://www.latimes.com/opinion/story/2020-12-20/editorial-feral-cats-neutered-tnr>

j. Foderaro LW. *At a Long Island Beach, Human Tempers Flare Over Claws and Feathers*. *The New York Times*. 2015. Accessed May 31, 2023. <https://www.nytimes.com/2015/04/18/nyregion/a-battle-over-cats-and-birds-on-a-long-island-beach.html>

k. Larkin E. *NY Agrees to Remove 23 Feral Cats from Jones Beach*. *Courthouse News Service*. 2018. Accessed Aug 5, 2023. <https://www.courthousenews.com/ny-agrees-to-remove-23-feral-cats-from-jones-beach/>

that this, too, likely backfired. Data obtained from Los Angeles Animal Services show that the agency's intake of young kittens increased significantly while the injunction was in place, from 8,818 in 2010 to more 13,000 in 2019.^l

Undermining TNR funding is another obvious way to oppose its implementation. In 2018, Hawaii's Department of Land and Natural Resources testified in opposition to Honolulu's proposed \$300,000 budget allocation for sterilizing 'feral' cats. In part because the agency offered no alternative, the funding was approved unanimously.^m Others have taken a slightly different approach to 'defund' TNR efforts, by insisting that any such efforts include 'adaptive management based on rigorous monitoring'.⁴⁹ Although regular censuses of the free-roaming cat population can provide invaluable data to measure a program's effectiveness, animal shelters rarely have the necessary expertise or the funding to hire those who do. (We are unaware of similar demands to assess the effectiveness of lethal removal, which raises questions about how serious this concern for tracking program effectiveness really is.)

Perhaps the most common way to undermine TNR efforts, though, is through feeding bans, policy interventions based on the idea that the cats will disperse in the absence of resources. As with eradication and removal campaigns, though, the impacts are likely to be counterproductive since the regular feeding of free-roaming cats is critical to the success of TNR programs. It is far easier to trap cats living closer to humans—and likely being fed, whether intentionally or not—than cats living in more rural or less disturbed areas, where such resources are likely to be less plentiful.^{38,50,51} And resource-rich urban areas are where an estimated 75% of free-roaming cats in the US are found.⁵² In addition, feeding cats presumed to be stray is a common activity (10–26%, depending on the survey) across the US,^{4,53–55} making enforcement of feeding bans a challenge.ⁿ It is worth noting, too, the studies showing that regularly fed free-roaming cats are less likely to kill wildlife than their unfed conspecifics.^{56,57}

Conclusion

To dismiss TNR as an 'ineffective, but politically convenient, policy option', as Lepczyk et al.⁸ have done, is no doubt easier if one ignores the growing body of available evidence to the contrary. Indeed, even for them such

evidence proved difficult to ignore entirely; the authors' only example of effective population reduction is a city-wide TNR program.⁵⁸ As the evidence presented here makes clear, efforts to manage free-roaming cat populations using lethal methods are often misguided and counterproductive—as are efforts to undermine TNR programs. However inconvenient, it is nevertheless true.

Obviously, efforts to undermine TNR are detrimental to the welfare of cats, very likely leading to a significant increase in the killing of healthy cats as their population rises.^{59,60} And, given the available evidence, there's little reason to think such efforts would benefit wildlife or public health.⁶¹ On the contrary, the available evidence quite clearly suggests that targeted TNR is often the only feasible option for improving cat welfare, reducing free-roaming cat populations—and, by extension—protecting wildlife and public health.

Author credit statement

Peter J. Wolf: conceptualization and writing; G. Robert Weedon: conceptualization and review.

Conflict of interest statement

In recognition of JSMCAH policy and our ethical obligations as researchers, the authors acknowledge that one of us (PJW) is employed by a national animal welfare organization that promotes TNR and RTF programs. The other (GRW) has worked extensively in high-quality, high-volume spay/neuter (HQHVSN) clinics, and trains other surgeons in HQHVSN techniques, mostly in support of TNR and RTF programs.

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