

Iconic or ironic? A review of “An examination of an iconic trap-neuter-return program: The Newburyport, Massachusetts case study”

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Abstract. Conservation biologists must be prepared to counter misleading information presented in meetings, newspaper and magazine articles, television and radio, social media and, increasingly, scientific journals. For example, feral cat advocates are demanding that communities adopt no-kill policies and the practice known as trap-neuter-return (TNR). A recent journal article claiming success for a long-term TNR program is highly cited despite being badly flawed because advocates of free-ranging cats believe the article proves that TNR is an effective method. The biases of its authors, the amateurish nature of Newburyport’s TNR program, and the authors’ slapdash analysis of the “case study” are all good reasons to question just how “iconic” this program was.

Introduction

Policy decisions for feral cat (*Felis domesticus*) management are influenced by the public, which can be influenced by disinformation campaigns aimed at local, state and federal decision-makers (Loss and Marra 2018). People who support free-ranging cats often ignore, downplay or dismiss scientific studies that objectively assess the adverse impacts of outdoor cats on wildlife, public health and the cats themselves (Longcore et al. 2009, Lepczyk et al. 2010).

Some scientists (Loss and Marra 2018, Loss et al. 2018) have compared these disinformation campaigns to the obfuscation and denialism engendered by proposals to regulate serious threats to public health such as DDT, cigarette smoking, and climate change. In their perspective, prominent advocates of free-ranging cats, like Alley Cat Allies and Peter Wolf’s Vox Felina blog, are “merchants of doubt” tantamount to the industries and special interests who repeatedly questioned consensus among the scientific community to prolong public controversy and hamstring necessary policy changes for decades.

One of the first decisions faced by an organization or government agency that intends to manage free-ranging cats is whether or not to kill unadoptable cats. If these cats are not euthanized, their accumulating numbers can soon become expensive to maintain in enclosures. For those reasons, and because many proponents believe cats are natural predators that belong in the wild (Peterson et al. 2012), no-kill proponents support a management strategy known as trap-neuter-return (TNR). Under TNR, feral, stray and abandoned cats are captured, sterilized, and released outdoors, often at the place of capture.

Conservation biologists have pointed out the paucity of scientific studies that demonstrate TNR’s efficacy in reducing numbers of free-ranging cats (Longcore et al. 2009, Lepczyk et al. 2010). Additionally, even sterilized and well-fed outdoor cats continue to kill and transmit diseases to wildlife.

TNR proponents have dismissed studies that demonstrate or attempt to estimate the environmental impacts of free-ranging cats as inaccurate and biased in meetings,

newspaper and magazine articles, television and radio, and social media. More recently, to further their agenda, TNR advocates have begun to publish studies in scientific journals. Scientists may judge the merits of this research based on accepted professional standards. However, policy makers and the public are often unable to assess the objectivity and quality of a scientific article or are inclined to accept any finding that validates a pro-cat perspective. Thus, conservation biologists must be prepared to defend their findings in professional forums (sensu Loss et al. 2018) and counter disinformation published in scientific journals as well as in public meetings and on social media.

The authors

Confirmation bias is the tendency to search for or interpret information in a way that confirms one's preconceptions or biases. An outstanding example of confirmation bias is "An examination of an iconic trap-neuter-return program: The Newburyport, Massachusetts case study," an article published in 2017 by the scientific journal *Animals* (Spehar and Wolf 2017). This was also a cynical attempt to invoke science in the defense of outdoor cats and the practice known as TNR.

The biases of its authors, the amateurish nature of Newburyport's TNR program, and the authors' slapdash analysis of the "case study" are all good reasons to question just how "iconic" this effort was.

One of the authors, Peter Wolf, is a graphic designer who has become one of the chief cheerleaders for feral cats through his blog *Vox Felina*. He routinely skewers scientific studies that don't conform to his preconceived notions (Kelly 2012) or, as he puts it, "the flawed science promoted by many TNR opponents" (Wolf 2015). He unabashedly promotes TNR. He denies and scoffs at concerns over the significant environmental impacts from subsidizing feral cats in the wild. It goes without saying that he disapproves of the American Bird Conservancy's (ABC) *Cats Indoors!* campaign (Wolf 2016a).

Having little background in science, Wolf mocks all attempts to objectively understand and explain the impacts of feral cats on wildlife and human health. He likes to put the word "science" in quotation marks or call it "junk" science (Wolf 2013c, Wolf 2013d). That's because, to him, science is merely a means to promote an agenda, as in "ABC's leadership decided long ago that science has little to do with the pursuit of knowledge; it's a tool for advancing their agenda" (Wolf 2013b).

So it was with great interest that I read a recent article in a scientific journal written by Wolf and another TNR advocate whereby they purported to use the scientific method to advance their agenda (Spehar and Wolf 2017).

But their numbers don't add up

According to the authors, the Newburyport case study was a huge success, "renowned for having eliminated hundreds of free-roaming cats from the Newburyport; [sic] Massachusetts waterfront" and "achiev[ing] its original goal of 100% sterilization of resident cats and zero kitten births along the river."

But did it really? That conclusion should rely on population estimates before and after the program achieved its goal. Spehar and Wolf admitted at least 20 times in the article that critical information was lacking in their analysis, in particular estimates of the number of feral and stray cats residing in the project area.

Referring to TNR programs in general, two scientists who support TNR cautioned that “management strategies and tactics cannot be legitimately evaluated or optimized without collecting monitoring data” (Boone and Slater 2014). No one involved in the “iconic” Newburyport “case study” conducted an objective population survey before, during or after the 25-year-long project.

Spehar and Wolf’s estimate of 300 cats in 1992, at the beginning of the TNR effort conducted by the Merrimack River Feline Rescue Society (MRFRS), is based on the recollections of two volunteer cat trappers. The volunteers’ estimates are plus-or-minus 100 cats. Harking back a quarter century, one volunteer thought there were about 300 cats, while the second named source claimed there were 300-400 cats. According to another estimate presented by Spehar and Wolf, “hundreds” of cats resided in the project area based on “tribal knowledge” of Newburyport residents. I’ve never heard the term “tribal knowledge” applied as the sole justification for an objective estimate. Inexplicably, Wolf declined to use a lower estimate of 200-300 cats he had cited in a laudatory commentary he had written only five months earlier for National Geographic’s Changing Planet (Wolf 2017). Similarly, Spehar and Wolf (2017) failed to cite Stacy LeBaron, a former president of MRFRS, who claimed in 2002 that only 200 feral cats inhabited the entire town of Newburyport when the TNR program was initiated (Slater and Shain 2005). Not just the relatively small project area, the entire town.

Why did Spehar and Wolf settle on an initial population of 300 cats? Presumably because a “solid” number makes it seem like they know what they are talking about, and 300 cats provided a relatively high baseline number for measuring success.

And how many cats were left after the “successful” TNR program ran its course? Again, we don’t know. The last feral cat ear-tipped by volunteers supposedly died in 2009. Spehar and Wolf claimed that “the central waterfront has remained free of resident feral and stray cats” since 2009 and cited one of the program volunteers who boasted that “we don’t have any known strays down there.” These claims were contradicted by the fiscal year 2016 annual report of the MRFRS, which stated that “the 300 cats originally living on the waterfront have today dwindled to just a handful.”

And, once again, in a parody of objective science, Spehar and Wolf contradict themselves by admitting that eight years after the “last” cat died volunteers still maintain a feeding station and receive calls about free-ranging cats in the project area. The authors accept current claims by TNR volunteers that “most of the calls we get from the downtown Newburyport area are [for] owned cats that people see outside and assume are in trouble—when really, they are indoor-outdoor [pet] cats.” How do they know?

Success seems to have been achieved by redefining any remaining or newly arrived feral and stray cats as “indoor-outdoor” cats. No estimate is provided for the number of “indoor-outdoor” cats still roaming the project area. Clearly, free-ranging cats of unspecified age and reproductive status still populate the project area, and the

“original goal of 100% sterilization of resident cats and zero kitten births along the river” has not been met.

Wolf has mocked scientific estimates of feral cat populations by others, while acknowledging objective estimates are hard work. In a 2013 Vox Felina blog post panning the ABC’s Cats Indoor! campaign, Wolf wrote “none of these estimates can actually be traced to a [national] survey of the population of unowned cats” (Wolf 2013a). In his TNR Fact Sheet No. 1, published on Vox Felina, he admitted that “It’s extraordinarily difficult to estimate the number of free-roaming cats” (Wolf 2012).

Estimating the number of free-roaming cats in a relatively small and defined project area such as this one, however, is not all that challenging according to many recent scientific articles available on the Internet (Boone and Slater 2014, Boone 2015, Elizondo and Loss 2016, Forsythe et al. 2005, Flockhart et al. 2016, Mitchell and Balogh 2007, Schmidt et al. 2007, Hand 2019). Spehar and Wolf would know that if they had done their research and exerted any serious effort.

Instead of objective data, the authors rely heavily on personal communications. Not surprisingly, 38 of 41 (93%) personal communications were obtained from MRFRS members, mostly its founders and directors (this tally does not include 3 “personal communications” from agencies that addressed record-keeping requirements). The founders and directors of a controversial program are the most likely to suffer from confirmation bias, or have other personal or financial reasons for claiming success. As you might expect by now, almost all of the personal communications supported TNR. A research project that relies almost solely on personal communications and presents only the recollections of true believers is almost certainly not unbiased.

Can’t get their “facts” straight

Spehar and Wolf cited an estimate that “one-third” of the original 300 cats were adopted and “two-thirds” were returned to where they were captured. Once again, these figures are unacceptably vague. And who knows how accurate they are. At a conference presentation in 2002 Becky Robinson, National Director of Alley Cat Allies, one of Spehar and Wolf’s supporters, claimed the opposite: that two-thirds of the original cats were kittens or “tame” cats that were adopted or returned to homes. According to Robinson, only one-third of the cats were returned to the project area.

From the cats returned to the area, 6-10 cats from two colonies were captured and placed in an outdoor facility in the late 1990s. The remaining cats in these two colonies (totaling “over 20”) were adopted. In 2004, volunteer caretakers adopted 15 elderly cats. Later in Spehar and Wolf’s article we learn that 5-10% of the original cats (i.e., 15-30 cats if we accept their population estimate) were not adopted or released, they were euthanized. A volunteer estimated 20-25 cats were euthanized over the life of the program. Thus, of the 200 or so cats that Spehar and Wolf reported had been returned to the area (or was it 100?), as many as 75 cats were subsequently removed from the population by adoption and euthanasia.

What happened to the “R” in TNR?

The TNR feeding stations undoubtedly attracted other stray and abandoned cats, and kittens were being born during the early years of the project. But Spehar and Wolf’s

numbers don't add up there either. Volunteers estimated about 40 "newly arrived cats" from abandonment and immigration during the 25-year duration of the project.

That seems low. The 0.76 km² project area is surrounded by a town with 16,324 residents (1990 population). According to the American Veterinary Medical Association calculator, a town that size has over 4,000 pet cats (AVMA undated), many of which are allowed to roam outside. In addition, a conservative estimate for the number of stray and feral cats in a community is one for every 10 residents (Levy et al. 2014). In other words, Newburyport may have been inhabited by as many as 5,000-6,000 pet, stray and feral cats.

There is nothing to stop those cats from strolling downtown, then or now. Were they accounted for? Are all new arrivals considered "indoor-outdoor" cats instead of free-ranging cats?

Nothing seems to add up. Spehar and Wolf reported that "it took approximately 2.5 years [note once again their meaningless pretence at precision] for MRFRS volunteers to trap and sterilize what was judged to have been all of the cats who lived on the waterfront at the program's inception." Yet, a year later, in December 1995, "about 200 cats continued to reside" on the waterfront.

Spehar and Wolf claim that "kitten births were at most an incidental contributor to the population of free-roaming cats after initiation of the TNR program"; however "a number of litters of kittens were born prior to completion of sterilization efforts" and two litters (with a total of six kittens) were born as late as 1998, six years after the program was initiated.

Furthermore, volunteers had no way of measuring the number of feral or stray cats giving birth to kittens in Newburyport neighborhoods outside of the project area. As these kittens dispersed, some surely found their way into the project area where 14 feeding stations were provisioned several times each day.

The longer you read this article, the less you know. The authors neglect to account for mortalities, lumping all population reductions as "attrition." Spehar and Wolf would have us believe that the 200 or so cats that were sterilized and returned to the area, supplemented by "about 40" immigrants or abandoned cats and an "incidental" number of kittens, slowly died of old age over the course of 17 years (1992-2009).

If so, this would be a highly unusual population of feral cats. The annual mortality rate for free-ranging cats in Chicago is about 30% (Gehrt et al. 2013). Jessup (2004) reported that mortality rates for feral cats can be up to 80% per year. Normand and Urbanek (2017) found the annual survival rate for 31 exurban feral cats (a small sample) was 0.86, but even at this relatively high survival rate, the population should decline about 15% annually (without new arrivals). Nevertheless, Spehar and Wolf neglected to report any deaths from disease or accidents, such as vehicle collisions, which are common in urban areas.

They claim to be independent researchers

In one of his blog posts, Wolf posed the question “When does collaboration cross the line into research misconduct?” (Wolf 2016b). Good question. I’m sure he didn’t mean to apply this standard to his own research.

Spehar and Wolf are both outspoken advocates for TNR and work for organizations whose primary mission is to promote and sponsor TNR and no-kill sanctuaries for cats.

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In the article Spehar called himself an “independent researcher,” however he obtained a Master of Science degree in Animal Policy and Advocacy from Humane Society University in 2015. He has been a TNR volunteer since 2003, a writer for Mercy for Animals since 2015, a senior district leader for the HSUS since 2013, and cofounded the Together Initiative for Ohio’s Community Cats in 2016. All of these organizations support and advocate for TNR, and this article appears to be an extension of that advocacy. How can Spehar claim to be an “independent researcher” when he was educated by and works for one of the funding sponsors?

Wolf holds a bachelor’s degree in mechanical engineering and a master’s degree in industrial design. In his spare time he is the “Cat Initiatives Analyst” for Best Friends Animal Society, and he has worked for Maddie’s Fund®. He has taught university courses in qualitative research methods. “Qualitative,” not quantitative. His overwhelmingly non-scientific aptitude and experience regarding cats appears to stem from owning as many as 10 cats and feeding and advocating for outdoor cats (Kelly 2012).

Accepting funding from a special interest organization is not necessarily a sign that the research will be biased. However, these authors seem to have crossed a line, admitting in the article that the funding sponsors “provided general guidance for the design of the study and were periodically apprised of project status during data collection, analysis, and interpretation; and the writing of the manuscript.” Funding organizations don’t normally exercise that level of control. Unless, of course, they hope to influence the outcome.

Wolf (2010, 2011) lambasted an assessment of TNR by Longcore et al. (2009) as “... choosing instead to present as ‘evidence’ figures known to be, at best, highly speculative—and more often, misleading, deceptive, and erroneous.”

That’s Wolf’s opinion. He thinks estimating the size of a feral cat population is “extraordinarily difficult” because he’s never tried it. And yet he’s never met an estimate of feral cat populations he can’t find fault in. Except his own. Does he actually believe that the reported initial estimates of 200-300, 300, 300-400, and “hundreds” of feral cats in his “case study” aren’t speculative? Highly speculative? At best?

Wolf and Spehar wrote this article not because they believe in the scientific method, but to feed the pretence that science validates TNR. It’s a fig leaf for TNR proponents who have no reliable scientific sources to support their grandiose claims of success. That’s

why Wolf posted the article on the Vox Felina Facebook page the same day it was published online. He obviously wrote the article because, in his own words, he wanted “to give TNR supporters some desperately needed resources for debating the issue” (Kelly 2012).

Spehar’s organization, The Together Initiative for Ohio’s Community Cats, waited a full four days after the article was published online before ballyhooing its “in-depth account and analysis” (The Together Initiative 2017).

The scientific journal *Animals* bears some responsibility for whitewashing this article in the name of science. Although the editors required the authors to acknowledge the sponsorship and funding of feral cat advocacy organizations, Spehar was allowed to claim he was an independent researcher. A quick Google search would have exposed that fraud.

Peer review is the gold standard in publishing scientific research. *Animals* assures its authors and readers that it “takes the responsibility to enforce a rigorous peer review” (MDPI undated). Nonetheless, the manuscript was initially received on 14 October and accepted on 26 October 2017. Twelve days is not enough time to identify and engage two or more reviewers with scientific expertise in the subject matter and expect them to review the manuscript carefully, to send editorial comments back to the authors and expect the authors to correct errors (or offer reasons why they won’t), and to conduct a final edit – unless, of course, the article was nearly perfect when it arrived on the editor’s desk. For all the reasons I’ve presented above, the article was not and is not acceptable from any objective perspective. The journal published the article on 31 October 2017, little over two weeks from when the manuscript first landed on the editor’s desk.

Any article that repeatedly trumpets the fact that its conclusions are based on insufficient data is a poor candidate for publishing in a scientific journal. It’s not surprising that, according to a November 1, 2017, post on its Facebook page, the Merrimack River Feline Rescue Society believes the journal *Animals* is published by the Best Friends Animal Society.

The rose-tinged cloud of truthiness

Spehar and Wolf (2017) has already been touted as evidence that TNR works in ongoing efforts to influence policy makers. For example, the “iconic” article was promoted on Wolf’s and Spehar’s websites, and on the websites of sponsoring organizations (Maddie’s Fund® 2018, Best Friends Animal Society 2018, 2019; HSUS 2019*b*) in the form of advice and literature reviews. It has been featured in podcasts (The Community Cat Podcast 2018). It was picked up by Faunalytics, a nonprofit research organization dedicated to helping animal advocates. In one Faunalytics review, Tyler (2018*a*) claimed that “by gathering so much information and piecing together the best possible description of a pioneering and still-controversial animal welfare practice, the researchers present a strong case for its implementation.” In another review, Orzechowski (2018) cited Tyler (2018*a*) as if she had written Spehar and Wolf (2017): “After all, for all the concerns around TNR in more urban contexts, study after study seem to support its efficacy.” The second study mentioned in that quote was another poorly designed and implemented study authored by Spehar and Wolf (2018) that was also reviewed by Tyler (2018*b*). According to *Animals*, both of the articles by

Spehar and Wolf (2017, 2018) were among the top 10 cited papers in their journal in the past two years.

More recently, Spehar and Wolf (2017) has been cited by another scientific article promoting TNR (Boone et al. 2019), which has methodological problems of its own. While it purported to model the effectiveness of TNR, removal, and “culling,” the analysis used very different rates of removal that clearly favored TNR and removal over the lethal option. Removal (their professed most effective method) and “culling” (their professed least effective method) should have had much the same effect if identical free-ranging cat populations were subjected to identical treatments.

Combating misinformation requires a better understanding of the types of misinformation and the most effective responses to each type. McCright and Dunlap (2017) have graphed types of misinformation on two axes. One axis – informal/formal – relates to style of delivery and audience. The other axis – realism/constructivism – describes whether the “speaker” respects or disrespects facts. Most pro-cat literature and informal communications fall into the informal realism quadrant, which the researchers have called “truthiness” and may be characterized as a belief that “‘facts’ and ‘reality’ are things people feel – rather than know – to be true” (McCright and Dunlap 2017). Misinformation that pretends to use facts in a formal setting is better described as formal realism. McCright and Dunlap (2017) have labeled this type of misinformation “systemic lies” because they “employ some of the language and trappings of science and authoritative expertise” using money and resources from industry and foundations “to ignore, suppress, obfuscate, and cherry-pick scientists and their research to deny the reality and seriousness” of a controversial issue. Articles like Spehar and Wolf (2017) that are submitted to scientific journals as if they were actual, unbiased research would likely fall into this category.

A person reading Spehar and Wolf (2017) should easily recognize that it isn’t unbiased research because the title promises a lot but the authors admit at least 20 times that they don’t have enough data to make valid conclusions. But most free-ranging cat advocates won’t read the article, they’ll see it in a list of scientific articles that support TNR or read blogs by or listen to other like-minded individuals who assure them the project is proof that TNR can be successful.

McCright and Dunlap (2017) suggested that the combination of two or more types of misinformation is even more challenging to combat than one type. Spehar and Wolf have decided the truthiness expressed by the public in non-scientific forums could use some support from systemic lies and correctly anticipated that their systemic lies would be amplified through the rose-tinged cloud of truthiness until the synergy of disinformation overwhelms policy makers’ will to resist.

What are we to make of this article?

If project sponsors and volunteers are to be believed, the Newburyport TNR project seems to have achieved some success (albeit unmeasurable and incomplete) in reducing the number of feral and stray cats in the project area. But TNR doesn’t seem to be the primary cause.

TNR involves trapping, neutering and returning cats to the capture locations. TNR is unlikely to ever succeed on its own merits in a community setting because cat owners

keep abandoning reproductively intact pets, or allowing them to roam freely. In fact, some have suggested that TNR programs encourage abandonment because irresponsible cat owners believe that their pets will be fed and cared for by others (Castillo and Clarke 2003, Urseny 2012).

Although removing cats – either lethally or by adoption – is not a function of TNR, advocates have promoted removal, primarily through adoption, as a supplementary tactic. In Newburyport, as in many other examples, removing cats appears to be the major factor in reducing the cat population, not TNR.

From one-third to two-thirds of the cats initially captured were adopted out. Some cats were euthanized. Many, perhaps most, of the remaining cats were also ultimately adopted or placed in a permanent shelter, which was created the year after TNR was initiated. The shelter became a well-publicized alternative for dropping off unwanted pet cats and kittens. Thus, providing the shelter was a critical component.

As was the publicity the program generated. Rather than abandoning cats to an uncertain fate in the streets, cat owners could drop them off at the shelter, where volunteers did their best to find new homes. Peer pressure among cat owners, and between cat owners and other residents, seems to have created an environment where it was more socially acceptable to take unwanted cats to the shelter than to abandon them. Modeling the effect of population control methods on feral cat populations suggests that reducing the rate of abandonment is one of the most effective methods for reducing their abundance (Lohr et al. 2012).

Additionally, urban renewal in the early years of the project significantly reduced shelter and edible garbage for cats, particularly dumpsters associated with numerous restaurants. The authors were “unclear what impact, if any, such changes had,” but it seems likely that after urban renewal feral cat numbers would have plummeted without resorting to TNR. Ironically, the feeding stations maintained by volunteer caretakers replaced garbage as a food source for outdoor cats, thereby prolonging the problem.

Rather than practicing TNR, which returns cats to the streets and encourages abandonment, the combination of removal, a highly publicized and well-run shelter for cats, and peer pressure resulted in what superficially appears to have been a significant reduction in the number of feral and free-roaming cats.

Cleaning up anthropogenic sources of outdoor food, such as garbage and pet food, is also an achievable strategy for reducing feral cat numbers, especially if the practice of feeding wildlife or outdoor cats is prohibited. Many people feed stray and feral cats outdoors, either intentionally or negligently (Lord 2008, HSUS 2019a). Because garbage and pet food often attracts wildlife and undesirable pests (Hawkins et al. 2004), such as mice and rats, outdoor feeding is already restricted in many states and communities.

Thus, the effort and expense of TNR is unnecessary. Most communities have the wherewithal to remove garbage and cats from the streets and provide shelter until most of the cats can be adopted. Alternatively, instead of wasting time and money and prolonging the problem by capturing, sterilizing and feeding outdoor cats, volunteers could run the shelter and adoption program.

The few remaining sick or unadoptable cats could be kept in an expensive permanent shelter, which seems to be the preference of some communities (Urseny 2008, 2010, 2012), or euthanized. However, an ordinance or policy that relies on removal first and euthanasia as a final solution is the most likely to discourage abandonment, encourage voluntary sterilization, and create a market for rescued cats. Additional local ordinances – e.g., mandatory cat licensing and ID, mandatory cat sterilization, a limit to the number of cats in a household, a requirement that pet stores sell only rescued cats – would almost certainly make the program more effective.

There is little hope that professional standards and rational rebuttals can stem the modern trend toward truthiness. It is too easily promulgated by social media and the echo chamber of selective news feeds. However, scientists and public officials must guard against the proliferation of systemic lies that are being used to change public policy by reinforcing and amplifying confirmation bias.

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