

## **“One Billion Birds:”**

***Disputing the guess of Rich Stallcup as presented by Nico Dauphiné and Robert J. Cooper in their article included in the “Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics”***

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“One billion songbirds, that's the number (feral cats) take in a year's time,” said [Jeanette] Vreeland [Acting Chair of the New Jersey Fish & Game Council]. “That's very much our concern. Everyone loves songbirds.”<sup>1</sup>

Feral cats in the U.S. kill one billion songbirds a year? Where did that number come from? A check of the minutes of the New Jersey Fish & Game Council turned up the answer: Partners in Flight. In the “Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics” (October 2009) there is an article by Nico Dauphiné and Robert J. Cooper that attempts to address the impact of free-ranging domestic cats on birds in the United States.<sup>2</sup> Of course, the estimate of Partners in Flight refers to all birds, not just songbirds, but perhaps that is a misunderstanding on the part of Acting Chairwoman Vreeland.

**Summary: the work of Dauphiné and Cooper as it relates to the presentation of the cumulative predation of cats on birds is sadly lacking in any science or scientific method. “Data” and scientific studies are misrepresented, and the estimate of “one billion birds,” is, in fact, another misrepresentation, as it is admittedly a guess by its author. It is not an estimate that uses any scientific methodology (and is not presented as such by the author himself), and the guess is based on nothing more than generalized supposition as opposed to any research at all.**

How do Dauphiné and Cooper arrive at the “one billion birds” estimate? The authors begin with the number of pet cats in the United States: according to the American Pet Products Association 2007-2008 survey (2008), there are approximately 88 million pet cats in the U.S.<sup>3</sup> To estimate the percentage of these cats that roam, Dauphiné and Cooper cite an article by Linda Winter (2004) published in the Journal of the American Veterinary Medical Association (JAVMA) where she states “A 1997 nationwide random telephone survey indicated that 66% of cat owners let their cats outdoors some or all of the time.”<sup>4</sup> The 1997 survey cited by Linda Winter in the JAVMA article was commissioned by the American Bird Conservancy (ABC Birds, of which she is the Director of their Cats Indoors! campaign). The results of this 1997 survey were published in an article, “Human attitudes and behavior regarding cats,”<sup>5</sup> hosted on the ABC Birds’ website. This “nationally-representative” study indicates that 35% of cats are kept indoors all of the time and that 31% “keep them indoors mostly with some outside access.” Thus on the basis of the ABC Birds’ commissioned survey, it appears that just 34% of cats should be considered “free-ranging,” not 65%. Dauphiné and Cooper apparently did not refer to the article cited by Winter in JAVMA, and Linda Winter in her JAVMA article appears to have misquoted the ABC commissioned study. Importantly, the estimate of 34% of pet cats that are allowed to roam is in-line with the much more recent results of a survey published in JAVMA (2008) conducted by Linda Lord, Assistant Professor of Veterinary Preventative Medicine at Ohio State University, that indicates 40% of cat owners allow their pets to roam.<sup>6</sup>

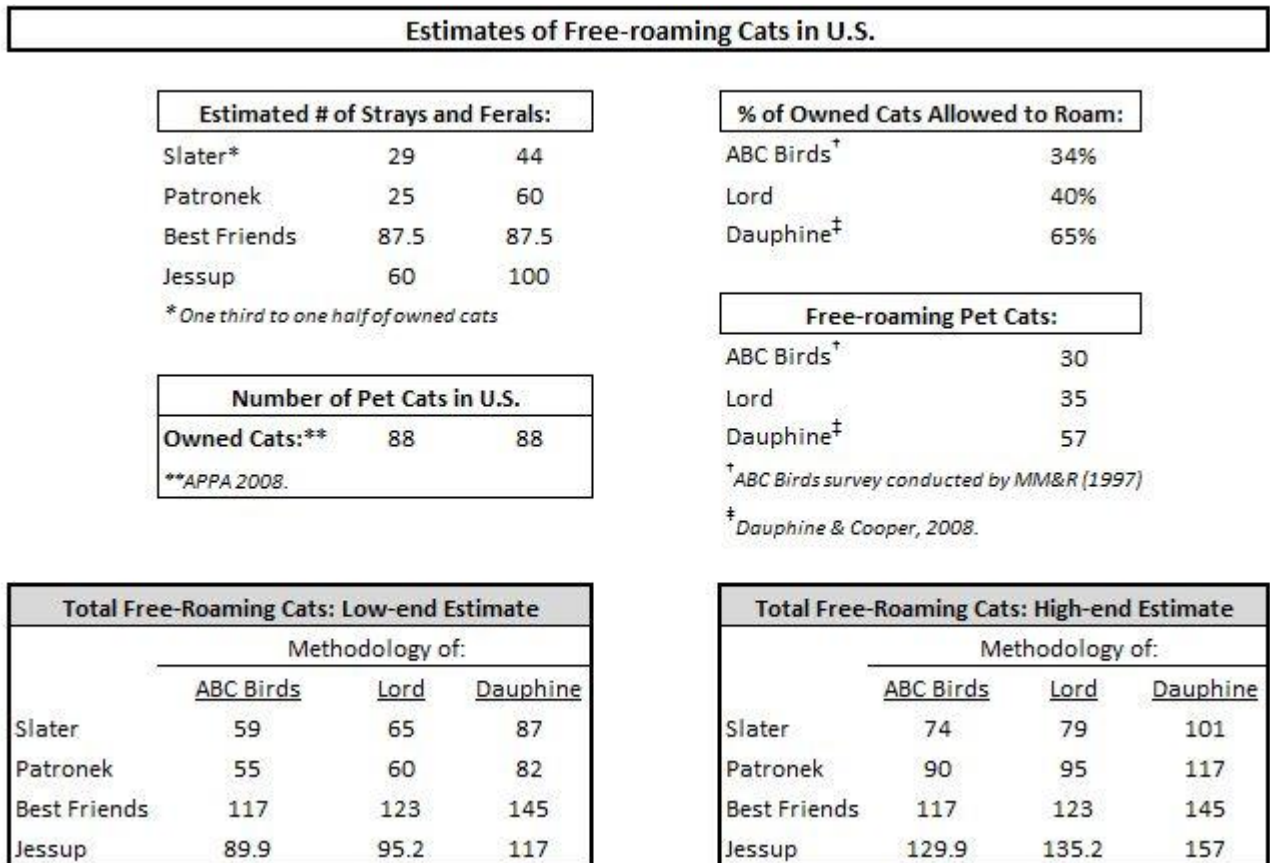
Dauphiné and Cooper go on to state there are an estimated 60 – 100 million stray and feral cats, citing Jessup, 2004.<sup>7</sup> Jessup does not cite the number nor does he state a methodology for arriving at the number, but it does not disagree with the recently published number of 87.5 million stray and feral cats by John Dunham & Associates, 2010, in a study commissioned by the Best Friends Animal Society,<sup>8</sup> which cites Alley Cat Allies, 2009,<sup>9</sup> which cites Levy and Crawford, 2004 and Levy et al., 2003.<sup>10</sup>

Adding the 60 – 100 million stray and feral cats to the (incorrectly cited) estimate of 65% of pet cats that are allowed to roam, Dauphiné and Cooper arrive at an estimate of 117 – 157 million free-ranging cats in the United States. Of course, Patronek, 1998, suggested that the number of feral cats in the U.S. is between 25 and 60 million,<sup>11</sup> and Slater, 2005, estimated stray and feral cats in the U.S. to be between one-third to one-half of the owned population.<sup>12</sup> Using a matrix indicating the differing numbers of estimates of free-roaming stray and feral populations in the U.S. and the differing estimates of the number of pet cats that roam, we find that the estimates of free-roaming cats in the United States ranges

from 59 million to 157 million. (Figure 1). As the Dauphiné and Cooper piece (incorrectly) cites the Linda Winter JAVMA article (2004) (which inaccurately portrays the survey as published by ABC Birds), the corrected range of the total number of free-roaming cats in the U.S. should arguably be reduced to a range of 59 million to 135 million. (Figure 1).

**Figure 1.**

*Millions of Cats*



Next, in the section of the article titled “Cumulative Impacts of Cats on Migratory Landbirds in the U.S.,” Dauphiné and Cooper go on to state,

“If we accept the range estimated above of 117 – 157 million outdoor cats in the United States, then each of these cats killing a single bird per year would result in ‘hundreds of millions’ of cat-killed birds, whereas we know from published studies that the average minimum number of birds per year killed by many cats may exceed fifty times this number.” *(Note, the use of “may exceed fifty times this number” is quite misleading as it is an extrapolation of data from individual cats within the studies).*

“A number of peer-review publications on cat predation of birds and other animals report information provided by cat owners on cats’ prey returns. These demonstrate various minimum averages of pet cat predation rates on birds in the United States, **including** kill rates of 4, 15, 52 and 54 birds per year, depending on the location and degree of urbanization (Mitchell and Beck 1992, Crooks and Soulé 1999, Fiore and Sullivan 2002, Lepczyk et al. 2004).” *(Emphasis added). (Again, we note the predation rates represent extrapolation of data from individual cats within the studies, not mean or median predation rates as reported by the authors of the studies).*

Apart from the problem of the over-stated estimated range of the number free-roaming cats, the body of cat predation studies indicates that some cats are predators, but not all. Studies by Robertson, 1998,<sup>13</sup> Perry, 1998,<sup>14</sup> and Reark, 1994<sup>15</sup> indicate that 36% - 56% of owned cats that are allowed to roam have been observed to hunt, meaning 44% - 66% of owned cats are not observed to hunt. Liberg, 2004, found that 31% of owned cats’ scat contained no remains of vertebrate prey.<sup>16</sup> Even Woods et al. (2003)<sup>17</sup> and Churcher and Lawton (1987)<sup>18</sup> found in their respective studies that approximately 9% of owned cats did not hunt. In Barratt’s 1997 study of cat predation in Canberra, Australia, homes were surveyed for cat ownership, and only homes that reported owning hunting cats were included in the study (though the number of homes with cats that did not hunt was not reported).<sup>19</sup> Thus it is incorrect and inappropriate to estimate cumulative cat predation numbers based on the assumption that all owned free-roaming cats hunt.

Furthermore, the four studies cited by Dauphiné and Cooper are not representative of the entire body of cat predation studies. Importantly, the number of bird kills cited by Dauphiné and Cooper are not mean bird kills rates nor median kill rates; they are **depredation numbers of individual cats pulled from within the studies** (thus the use of their phrase “including kill rates of...”). This representation of data is a method not considered nor accepted as scientific by any stretch of the imagination.

- The Mitchell and Beck study<sup>20</sup> was a non-random sample size of 1 rural cat and 4 urban cats. Insufficient data was provided in the study to determine the median bird kill per cat annually, but the mean data of 7.4 birds killed between Jan-Nov 1990 is tremendously skewed by the rural cat, which depredated 25 birds. Excluding the outlier, the mean is reduced to 3 bird kills per cat between Jan-Nov 1990.
- The Crooks and Soulé study was a sample size of 35 cats: insufficient data was provided in the study to determine the median number of bird kills per cat annually, but the mean number of bird kills per year per cat was 15.<sup>21</sup>
- The Fiore and Sullivan study was a sample size of 41 cats, and the study indicated that the mean number of birds killed per year was 4.2. Bird kills per cat and scat sampling was provided: **the median number of birds killed per cat was just one per cat per year**. Notably, in this study, European Starlings represented the highest proportion of birds killed (14%), followed by European House Sparrows (12%).<sup>22</sup>
- The study conducted by Lepczyk et al. 2004 was not a study but a survey, and, notably, in their methodology, the authors of the survey included bird predation rates based on all landowners that had outdoor cats “even if they indicated predation rates of zero.” The authors then calculated an alternative predation rate based only on landowners that had outdoor cats for which they reported one or more birds killed or injured per week. The survey results also included several different estimates of non-respondent outdoor cat ownership “to provide a plausible range when scaling up the results to the landscape level.”<sup>23</sup> The surveys were mailed between Oct and Dec of 2000, and the data were not based on observations over time, collections, or scat data, but simply owner recollection of cat predation. The results indicated depredation of 0.7 – 1.4 birds per week during the breeding season, which cannot be extrapolated into annual numbers as cat predation on birds is highest during the breeding season (Mitchell and Beck, 1992; Fiore and Sullivan, 2002; Barratt, 1998). Importantly, Barratt (1998) found that annual mean total prey (not just birds) reported (10.2) was significantly lower than mean total predation based on owner estimates (recollections) (23.3) prior to the one-year study period.<sup>24</sup> Thus the Lepczyk survey may significantly overstate cat predation of bird estimates.

Additionally, though Dauphiné and Cooper did not even use the mean bird prey observations provided by the authors of the studies, Barratt (1998) points out that counts of the amount of prey caught by house cats were “highly positively skewed” in his study, as 70% of cats were observed to catch less than 10 prey over the 12 months (again, this is all prey, not just birds, which represented only 27% of total prey caught), and 6% of cats caught more than 50 prey over the 12 months. “The total number of prey caught by house cats in Canberra estimated using the sample median was approximately half the estimate based on the sample mean,” and Barratt cautions against estimating predation of house cats using extrapolated estimates because of this significant variation between median and mean predation rates.<sup>25</sup>

Dauphiné and Cooper do not actually produce an estimate of cat predation on birds, which is fortunate given the extreme flaws in the methodology they propose and the numbers they provide. They simply state, “Given the large numbers of cats and considering the numbers of avian prey returned to owners, a minimum of one billion birds killed by cats annually in the

United States is a conservative estimate, and the actual number is probably much higher. Stallcup (1991) and Gill (1995) estimated that bird mortality caused by pet cats alone at over one billion birds per year.”<sup>26</sup> As illustrated earlier, given that only a percentage of house cats that roam hunt, and given that food provided to feral cats will affect hunting habits and predation rates of cats (Berkeley, 2001;<sup>27</sup> Dickman, 2009;<sup>28</sup> Fitzgerald, 1998;<sup>29</sup> and Winograd, 2003<sup>30</sup>), their conclusion that “one billion birds killed by cats annually in the United States is a conservative estimate,” is simply incorrect.

The citations credited to Stallcup (1991) and Gill (1995) are additionally misleading. The way the information is presented in the article, the authors make it appear that both Stallcup and Gill independently arrive at estimates of cat predation impacting over one billion birds per year. Gill (1995) in his textbook, “Ornithology, 2<sup>nd</sup> Edition”<sup>31</sup> simply cites Stallcup, 1991. So Gill does not independently estimate any rate of cat predation.

So what does the Stallcup piece indicate? The cited article is just that – an article, not a study nor a scientific work. In fact, in “A note from the author,” on the Point Reyes Bird Observatory (PRBO) website, Rich Stallcup (2007) wrote, “In 1982 director Burr Heneman asked if I would write a bird piece for the PRBO newsletter. The idea was to present something for *birders* beside the scientific articles. Now, 25 years and 75 Focus columns later we’re still knockin’ them out.”<sup>32</sup> Let’s read on.

Stallcup states,

“The problem is cats. How large a threat do they pose? Let’s do a quick calculation, starting with the numbers of pet cats. Population estimates of domestic house cats in the contiguous United States vary somewhat, but most agree the figure is between 50 and 60 million. On 3 March 1990, the *San Francisco Chronicle* gave the number as 57.9 million, ‘up 19% since 1984.’ For this assessment, let’s use 55 million.

“Some of these (maybe 10%) never go outside, and maybe another 10% are too old or too slow to catch anything. That leaves 44 million domestic cats hunting in gardens, marshes, fields, thickets, empty lots, and forests. It is impossible to know how many of those actively hunting animals catch how many birds, but the numbers are high. To be very conservative, say that only one in ten of those cats kills only one bird a day. This would yield a daily toll of 4.4 million songbirds!!”<sup>33</sup>

Mr. Stallcup’s alarmist piece goes on to recommend physically discouraging cats from attacking birds around your home by shooting them with a B-B gun or pellet gun.<sup>34</sup>

**It is essential to note that no study of cat predation has ever found depredation of birds by any cat to be anywhere near 365 birds per year.** Of course, Mr. Stallcup does not claim his guess of total cat predation is based on any science whatsoever. The problems with his guess are self-evident, as admitted by Mr. Stallcup himself, and as outlined above.

The use of the “one billion bird” guesstimate by Stallcup (1991) certainly does not meet Dauphiné and Cooper’s stated goal “to provide a brief review of our current state of knowledge of the cumulative effects, including population level effects, of outdoor domestic cats in the United States, **based on the best available science.**”<sup>35</sup> (*emphasis added*). The “best available science” usually means peer-review journals (of which the intentionally non-science-based opinion *Focus* column clearly is not), or the use of scientific methodology (Mr. Stallcup’s guess is admittedly non-scientific).

In short, the work of Dauphiné and Cooper as it relates to the presentation of the cumulative predation of cats on birds is sadly lacking in any science or scientific method. “Data” and scientific studies are misrepresented, and the estimate of “one billion birds,” is, in fact, another misrepresentation, as it is admittedly simply a guess by its author. It is not an estimate that uses any scientific methodology (and is not presented as such by the author himself), and the guess is based on nothing more than generalized supposition as opposed to any research at all.

References

1. O’Dea, Colleen, 2010. “Animal groups: Could ruling lead to hunters shooting cats?” [www.dailyrecord.com](http://www.dailyrecord.com/article/20100313/COMMUNITIES/303130002/Animal-groups-Could-ruling-lead-to-hunters-shooting-cats) March 13, 2010. <http://www.dailyrecord.com/article/20100313/COMMUNITIES/303130002/Animal-groups-Could-ruling-lead-to-hunters-shooting-cats>
2. Dauphiné, N. and Copper, R.J., 2009. *Impacts of free-ranging domestic cats (Felis catus) on birds in the United States: A review of recent research with conservation and management recommendations*; Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics 205-219.
3. American Pet Products Association, 2008. *APPA National Pet Owner’s Survey 2007-2008*; American Pet Products Association, Inc. Greenwich, CT.
4. Winter, L. 2004. *Trap-neuter-release programs: the reality and the impacts*; Journal of the American Veterinary Medical Association 225: 1369-1376.
5. American Bird Conservancy: Marketing and Research Resources, Inc., 1997. *Human attitudes and behavior regarding cats*; study commissioned by ABC Birds and conducted by Marketing and Research Resources, Inc.: Greenwich, CT. August 1997. <http://www.abcbirds.org/abcprograms/policy/cats/materials/attitude.pdf>
6. Lord, L., 2008. *Attitudes toward and perceptions of free-roaming cats among individuals living in Ohio*; Journal of the American Veterinary Medical Association 232:1159-1167.
7. Jessup, D.A., 2004. *The welfare of feral cats and wildlife*; Journal of the American Veterinary Medical Association 225:1377-1383.
8. Best Friends Animal Society: John Dunham and Associates, 2010. *The fiscal impact of trap, neuter and return policies in controlling feral cat populations in the United States*; study commissioned by Best Friends Animal Society and conducted by John Dunham and Associates: New York, NY. March 2010. <http://www.guerrillaeconomics.biz/communitycats/methodology.pdf>
9. Alley Cat Allies, 2009. *Sources of cats in U.S. Households*.
10. Levy J.K., and Crawford P.C., 2004. *Humane Strategies for Controlling Feral Cat Population*; J Am Vet Med Assoc 225:1354-1360, 1355 at Table 1; see also Levy JK, et al., (2003). *Number of Unowned Free-roaming Cats in a College Community in the Southern United States and Characteristics of Community Residents Who Feed Them*; J Am Vet Med Assoc 223:202-205, 204.
11. Patronek, G. J., 1998. *Free-roaming and feral cats – their impact on wildlife and human beings*; Journal of the American Veterinary Medical Association 212: 218-226.
12. Slater, M.R., 2005. *The welfare of feral cats*. In: Richlitz I (ed), *The Welfare of Cats*. Dordrecht: Springer pp. 141-176.
13. Robertson, I.D., 1998. *Survey of predation by domestic cats*; Aust Vet J. 76:551-554.
14. Perry, G., 1999. *Cats – perceptions and misconceptions: two recent studies about cats and how people see them*; Urban Animal Management Proceedings.
15. Reark Research Pty. Ltd., 1994. *The Metropolitan Domestic Cat: A survey of the population characteristics and hunting behavior of the domestic cat in Australia*; Prepared for the Petcare Information & Advisory Service.
16. Liberg, O., 1984. *Food habits and prey impact by feral and house-based domestic cats in a rural area in southern Sweden*. Journal of Mammalogy 65(3): 424-432.

17. Woods, M., McDonald, R.A., Harris, S., 2003. *Predation of wildlife by domestic cats Felis catus in Great Britain*. Mammal Review 33: 174-178.
18. Churcher, P.B., Lawton, J.H., 1987. *Predation by domestic cats in an English village*. Journal of Zoology, London 212: 439-455.
19. Barratt, D.G., 1997. *Predation by House cats, Felis Catus (L.), in Canberra, Australia. I. Prey composition and preference*; Wildlife Research 24(3):263-277.
20. Mitchell, J.C., and Beck, R.A., 1992. *Free-ranging domestic cat predation on native vertebrates in rural and urban Virginia*. Virginia Journal of Science Vol 43(1B): 197-207.
21. Crooks, K.R. and Soule, M.E., 1999. *Mesopredator release and avifaunal extinctions in a fragmented system*; Nature 400:563-566.
22. Fiore, C. and Sullivan, K.B., 2000. *Domestic cat (Felis catus) predation of birds in an urban environment*; M.S. Thesis. Wichita State University, Wichita, KS.
23. Lepczyk, C.A., Mertig, A.G., and Liu, J., 2003. *Landowners and cat predation across rural-to-urban landscapes*. Biological Conservation 115:191-201.
24. Barratt, D.G., 1998. *Predation by house cats, Felis catus (L.), in Canberra, Australia. II. Factors affecting the amount of prey caught and estimates of the impact on wildlife*; Wildlife Research 25(5):475-487.
25. Ibid.
26. Dauphiné, N and Copper, RJ (2009). *Impacts of free-ranging domestic cats (Felis catus) on birds in the United States: A review of recent research with conservation and management recommendations*; Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics 205-219.
27. Berkeley, Ellen Perry., 2001. *Maverick Cats: Encounters with Feral Cats*. Revised and Updated. Shelburne, Vermont.: The New England Press.
28. Dickman, C.R., 2009. *House cats as predators in the Australian environment: impacts and management*. Human-Wildlife Conflicts 3(1):41-48.
29. Fitzgerald, B.M., 1988. "Diet of Domestic Cats and Their Impact on Prey Population," *The Domestic Cat: The biology of its behavior*; D.C. Turner and P. Bateson (eds). Cambridge: Cambridge University Press.
30. Winograd, N.J., 2003. *Feral Cats on the Firing Line*. (<http://www.alleycat.org/pdf/firingline.pdf>)
31. Gill, F., 1995. *Ornithology*, 2<sup>nd</sup> ed. W.H. Freeman: New York, NY.
32. Stallcup, R., 2007, note on "Focus Articles by Rich Stallcup," as hosted at <http://www.prbo.org/cms/461>.
33. Stallcup, R., 1991. *Cats: A heavy toll on songbirds. A reversible catastrophe*; Point Reyes Bird Observatory (eds.), *Focus* 29 (Spring/Summer): 8-9. <http://www.prbo.org/cms/docs/observer/focuscats.pdf>
34. Ibid.
35. Dauphiné, N and Copper, RJ (2009). *Impacts of free-ranging domestic cats (Felis catus) on birds in the United States: A review of recent research with conservation and management recommendations*; Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics 205-219.