

The impact of free-roaming cats on wildlife, environmental, and human health



Dave McRuer, MS, DVM, DACVPM
Wildlife Health Specialist
Adjunct Professor, AVC



Global bird populations

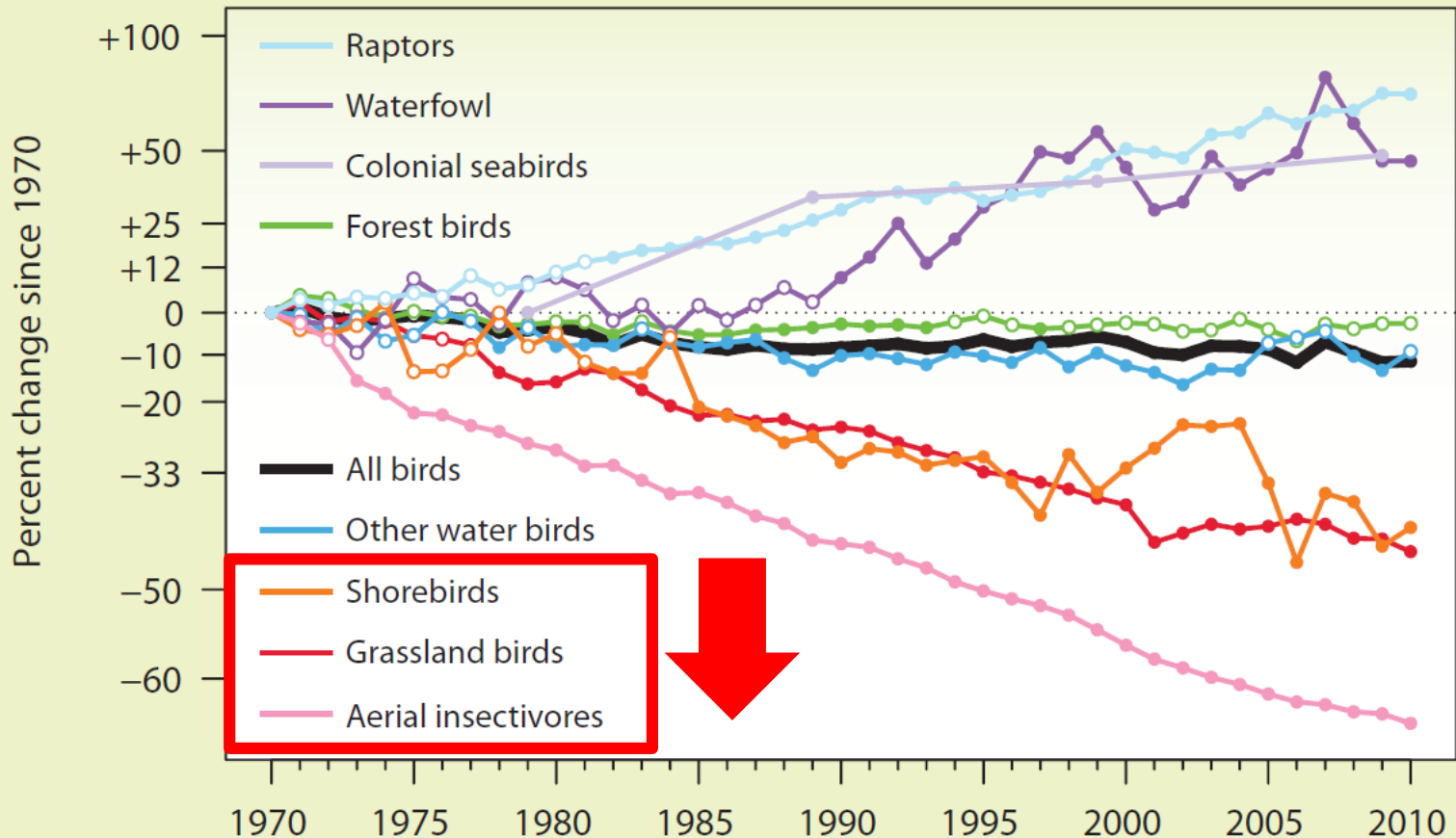


- “State of the worlds bird populations, 2018”
 - Globally bird populations continue to decline since first assessment in 1988
 - 44% of species in decline
- Potentially 183 species extinct in last 500 yrs, greater than normal background rate
- Increased rate due to human caused mortality



How are birds doing in Canada?

On average Canadian bird populations have decreased
12 % since 1970

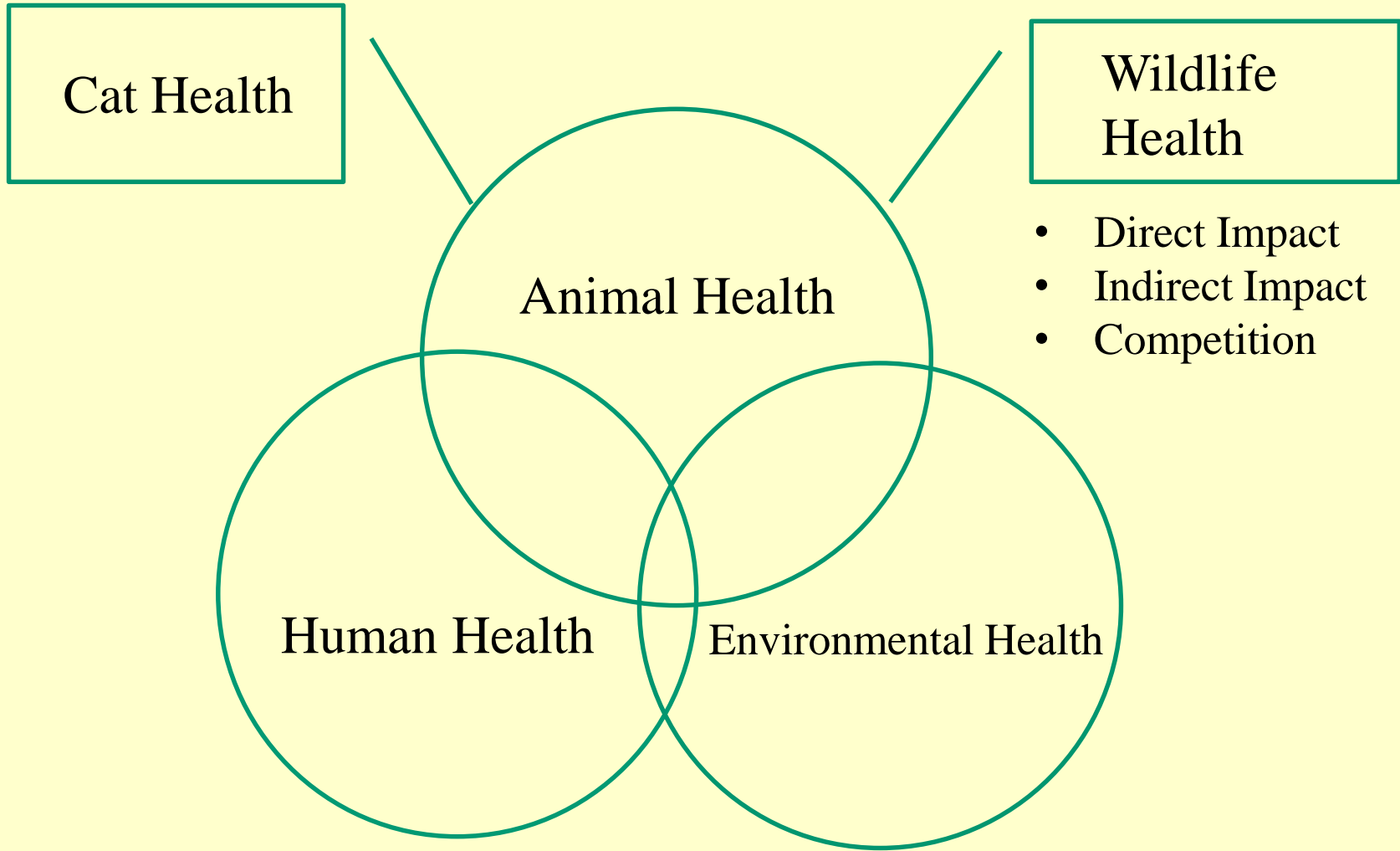


Indicators of the national population status of all regularly occurring native bird species in Canada and eight selected subgroups.





Overview



Impact of Free-Roaming Cats on Health

The Subject: Domestic Cats

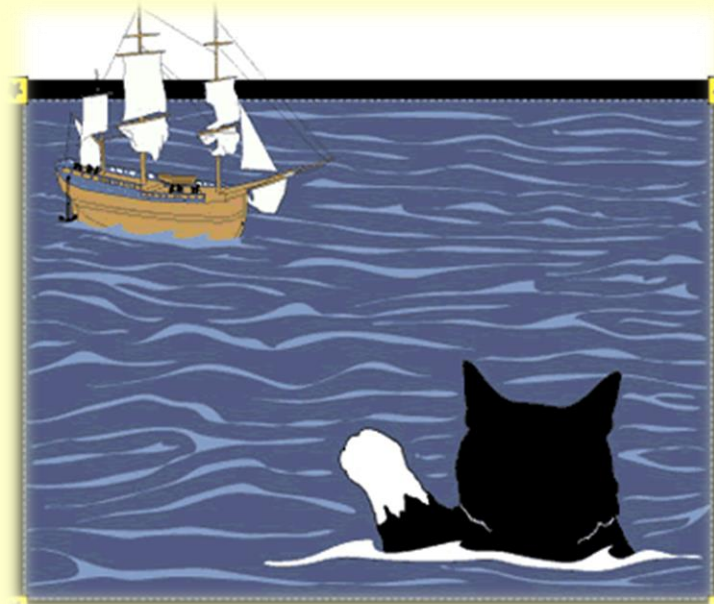
- Most abundant carnivore in NA
- Listed as “one of the world’s worst” non-native invasive species (ISSG, 2004)
- Exist on 7 continents and are considered a domestic species
- As a domestic species, they have no native range and are therefore not considered wildlife even when feral.





- Cats domesticated from African and European wildcats; 4000 – 9500 years ago
- Traveled around the world for rodent control and companionship.

- Prey has not coevolved with the spread of domestic cats.
- Cats are **NOT** a natural part of our ecosystem



Cats in Canada



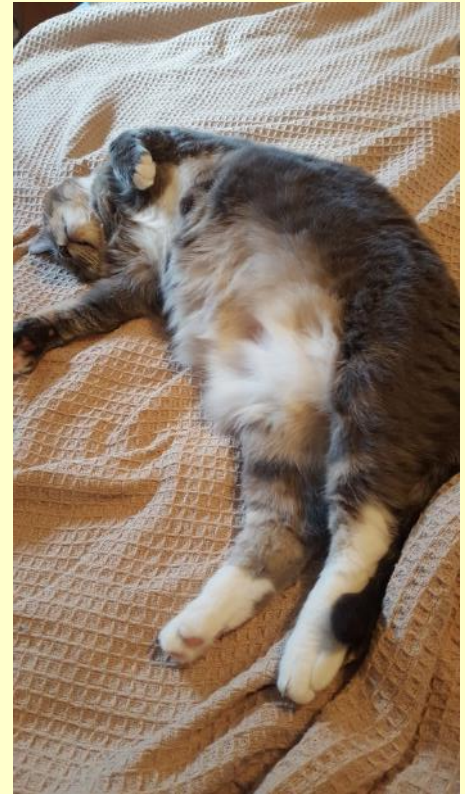
The estimates....

- 8 – 9 million cats in Canadian homes.
- One in three households have 1+ cat(s).
- 1.4 – 4.2 million stray and feral cats (Environment Canada).

The good news!

An estimated 80 – 94 percent of pet cats are spayed or neutered.

Canadian Federation of Humane Societies (2017)



Direct Impact

- **Definition:** Predation or disease transmission that leads to morbidity (sickness) or mortality
- Preference for prey items less than 100grams
- Depends on individual cat (not all outdoor cats hunt), time of year, availability of prey, location, etc.
- Most wildlife mortality studies focus on this impact.



Annual mortality of Canadian birds due to human activities

In Canada, cats (mainly feral) kill ~ 100 - 350 millions birds /year Blancher (2013).

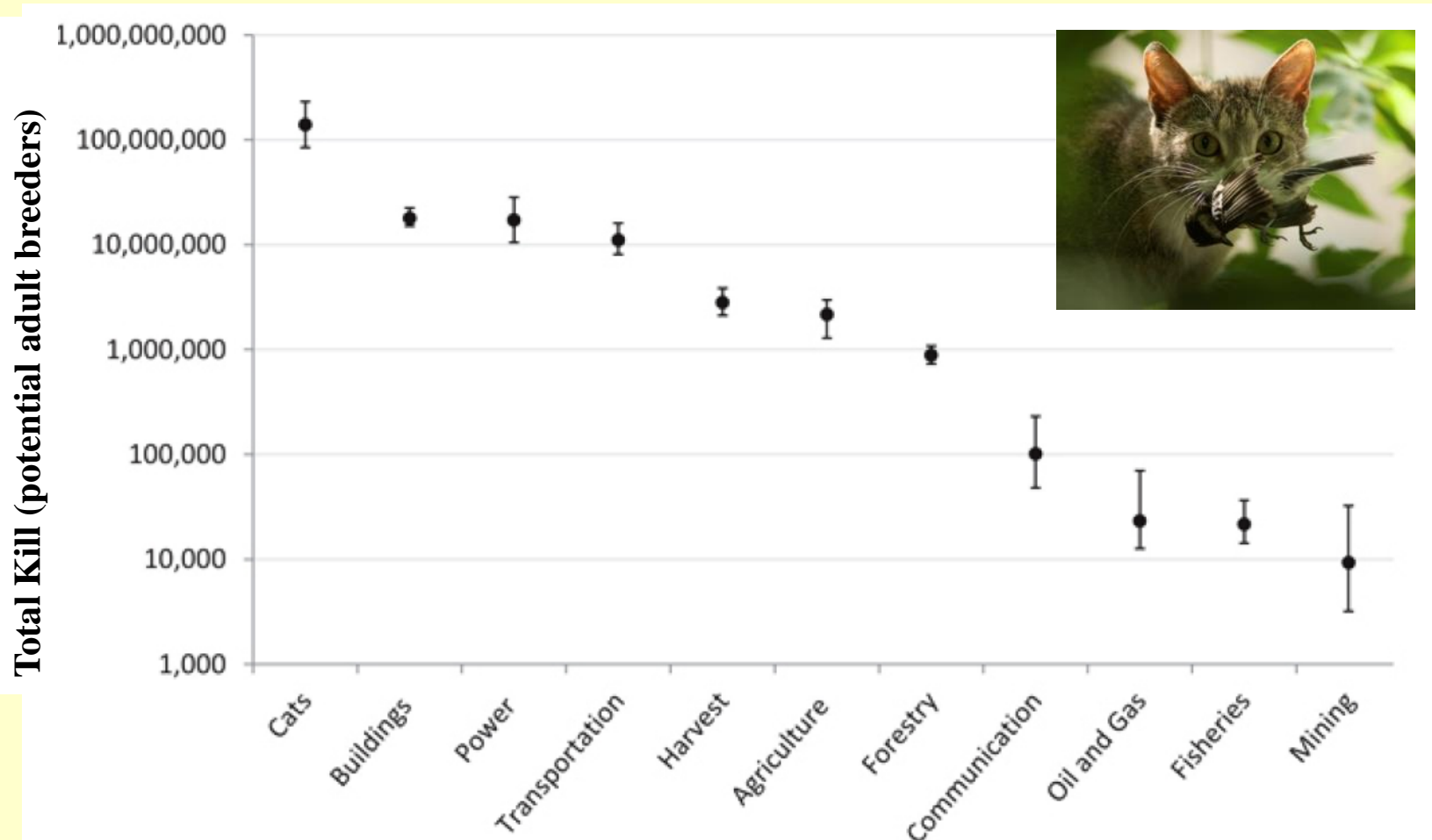
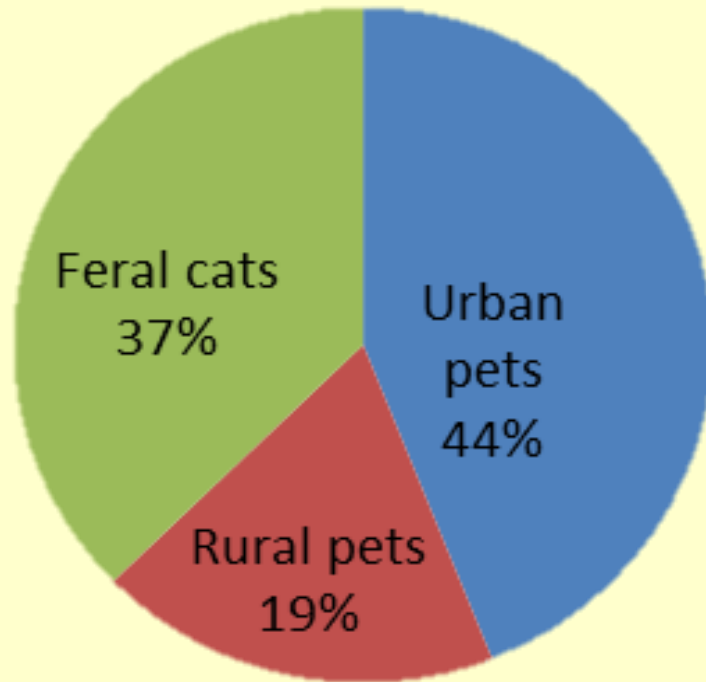


Figure 1C: Log scale, Calvert et al (2013).

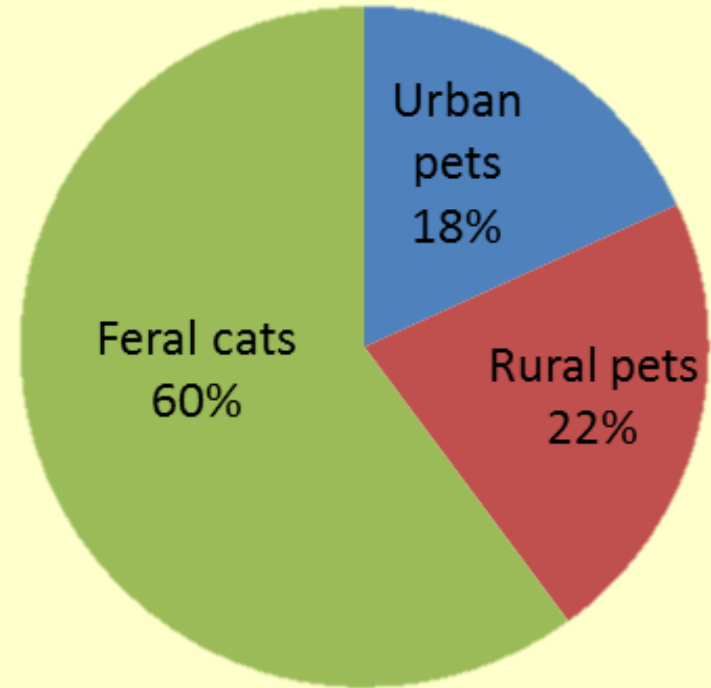
Cats in Canada - Estimated median numbers

Feral cats kill more birds than pet cats but both are a threat

~ 7.5 Million Free-roaming Cats



~100-350 million birds killed annually by cats



Outdoor roaming pet cats are responsible for over half of birds killed annually. Blancher (2013)

National Bird Mortality Results (USA)

- Annual Mortality Results:
 - 1.4-3.7 billion birds; 69% from un-owned cats
 - 66% of birds were native species.
 - 6.9-20.7 billion mammals; 89% from un-owned cats
 - More than any other direct source of anthropogenic mortality including: collisions with windows, buildings, communication towers, vehicles, and pesticide poisoning.
 - Estimates err on conservative side

Loss et al. 2013



The Local Level

The Journal of Wildlife Management; DOI: 10.1002/jwmg.21181



Note

Free-roaming cat interactions with wildlife admitted to a wildlife hospital

DAVE L. MCRUER,¹ *Wildlife Center of Virginia, PO Box 1557, 1800 South Delphine Avenue, Waynesboro, VA 22980, USA*

LINCOLN C. GRAY, *Department of Communication Sciences and Disorders, James Madison University, MSC 4304, 801 Carrier Drive, Harrisonburg, VA 22807, USA*

LEIGH-ANN HORNE, *Wildlife Center of Virginia, PO Box 1557, 1800 South Delphine Avenue, Waynesboro, VA 22980, USA*

EDWARD E. CLARK JR., *Wildlife Center of Virginia, PO Box 1557, 1800 South Delphine Avenue, Waynesboro, VA 22980, USA*

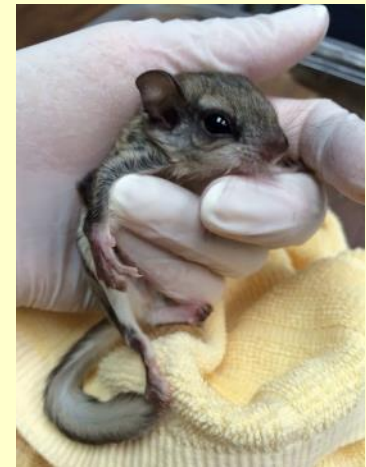
- 11 year retrospective study of patients presenting to the Wildlife Center of Virginia (WCV) (2000-2010)
- Study includes all small birds & mammals that could conceivably be preyed upon by cats.

Summary

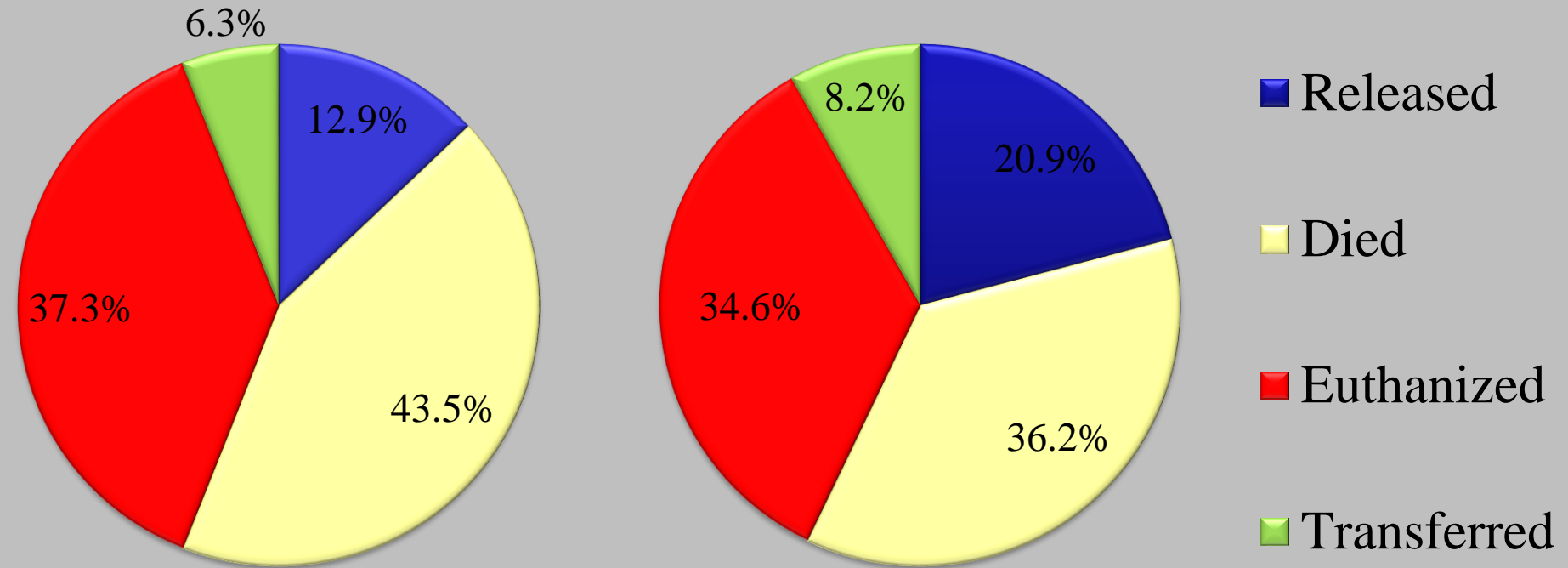
- Total select **mammals**: 11,144
- Cat interaction: 14.8%
- 21 species
- Total select **birds**: 9777
- Cat interactions: 13.7%
- 62 species



Most Commonly Captured



Cat Interaction Dispositions



Avian

80.8%

2nd leading cause of
mortality

← **Overall Mortality** →

Mammal

70.8%

4th leading cause of
mortality

Kitty Cam



- 55 owned free-roaming cats fitted with cameras for 1 year.

<http://www.kittycams.uga.edu/>

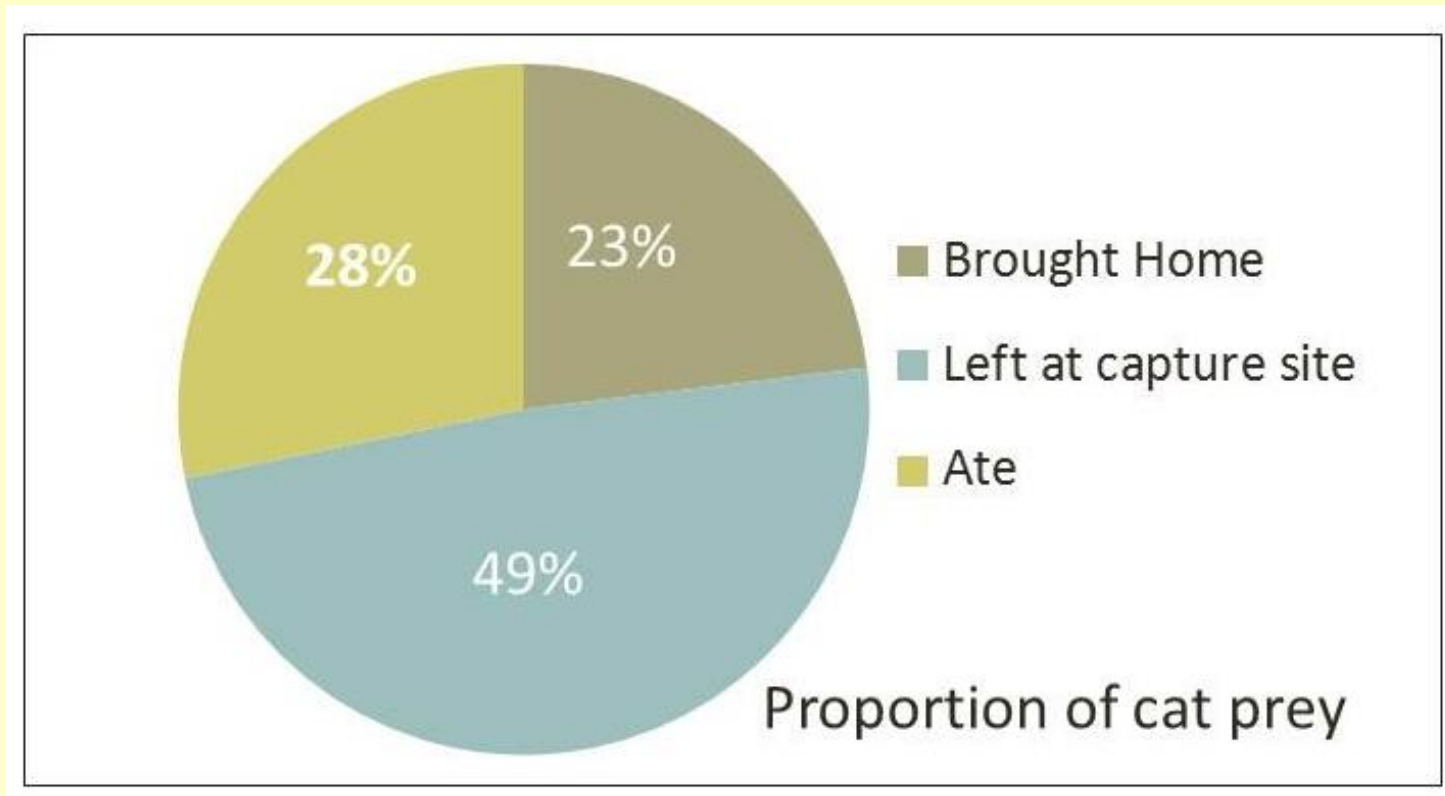
- Results:
 - 44% of cats stalked prey
 - 30% of cats were successful
 - Average # caught was 2.1/wk of roaming
 - 1/3 of the cats caught between 4-5 animals/wk roaming

Do the math: > 300,000 animals killed per year – 40K birds

Kitty Cam

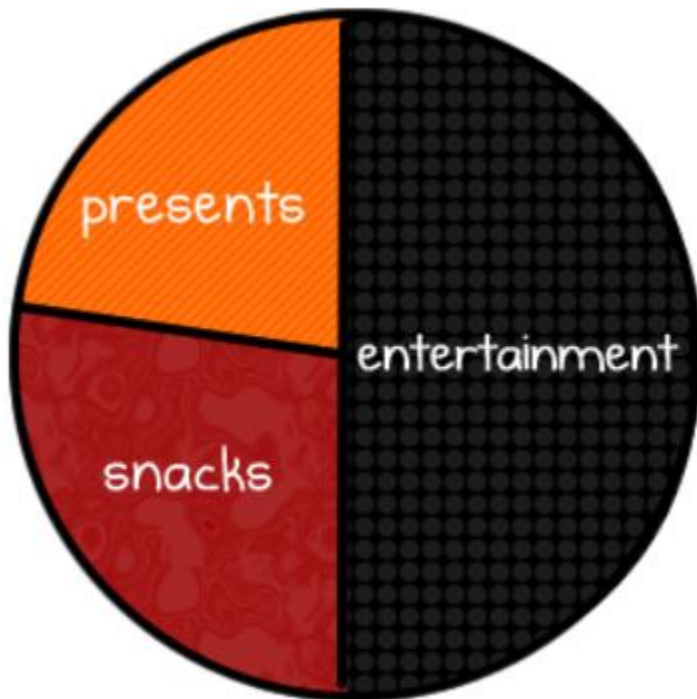


- Reptiles/amphibians > rodents > insects > birds.
- warm months (6x) > cooler months



Kitty Cam

- Reptiles/amphibians > rodents > insects > birds.
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- 23% of your cat's victims are brought home
- 28% are eaten
- 49% are left to rot

Outdoor pet cats impact local ecosystems

Many pet cats are active hunters and roam up to 700 meters from home.

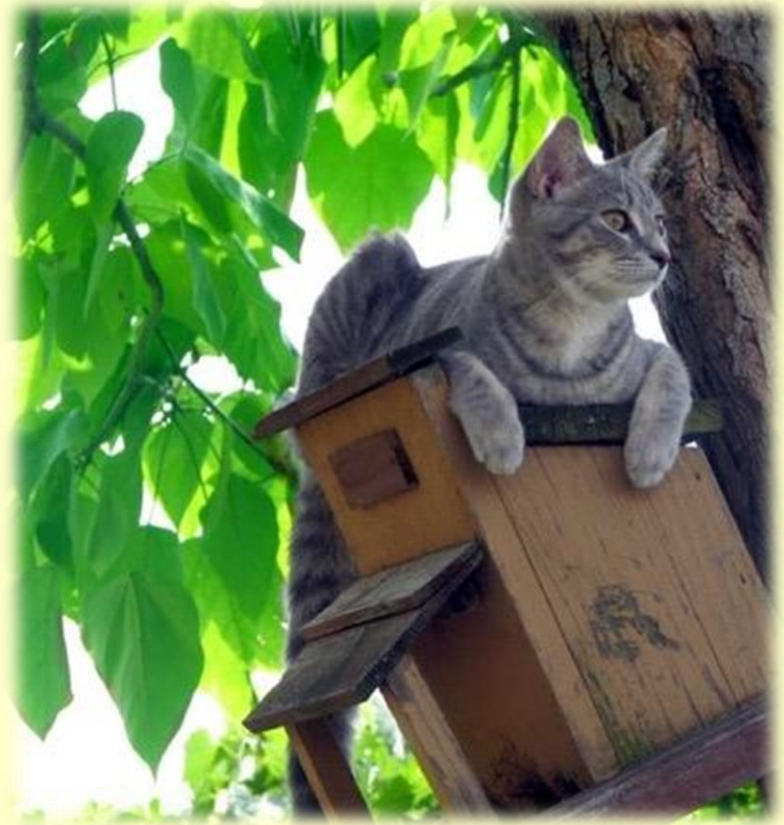


— Daytime
— Nighttime

GPS tracking of one cat living near a seabird colony in Australia.

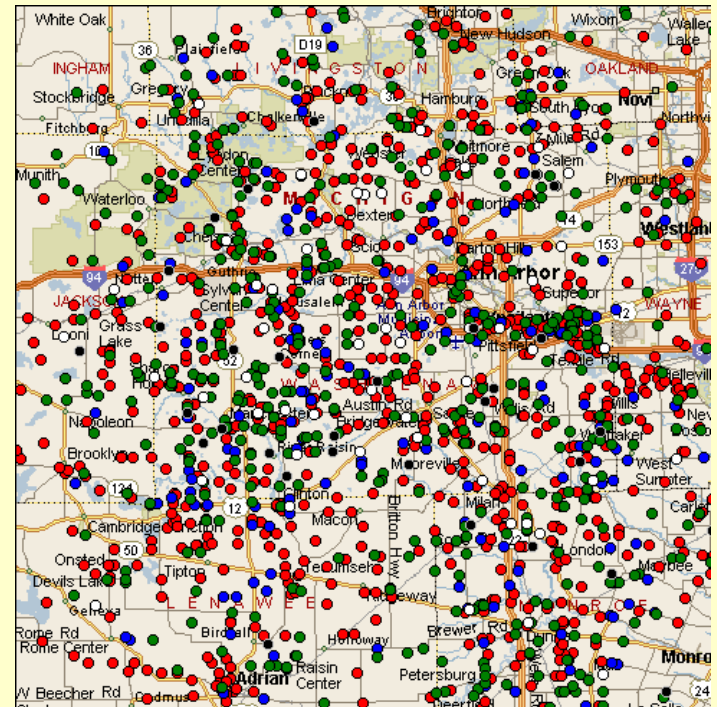
Indirect Impact

- Presence of outdoor cats influences wildlife behavior and health
- Free-roaming cats in a nesting area decrease #times parents return to feed young
- UK study showed 1/3 decrease in feeding trips
- At this rate, nestling growth rate will be decreased by 40%.



Cats are Subsidized Predators

- Domestic cats have some protection against disease, predation, competition, and starvation.
- Population numbers do not fluctuate as drastically as natural predators when prey is scarce.
- Cats are not strictly territorial therefore can exist in much higher densities thus out compete natural predators.
- Prolific breeders



Feline zoonoses – Public health concern

Zoonosis: A disease which may be transmitted from an animal to a human

Free-roaming cats have an increased likelihood of picking up infectious agents, including zoonotic diseases, which may be passed on to pet cats and humans

Feline Zoonoses – Rabies

Free roaming cats at increased risk of developing rabies

- CDC assessment 2017: Cats most commonly infected domestic species 1992-2017
- Infected free-roaming cats risk exposing the humans who feed them – “furious form”
- Cats often exposed to rabies vector wildlife species at artificial feeding sites.



<https://patch.com/florida/bloomingdale/rabid-cat-attacks-man>

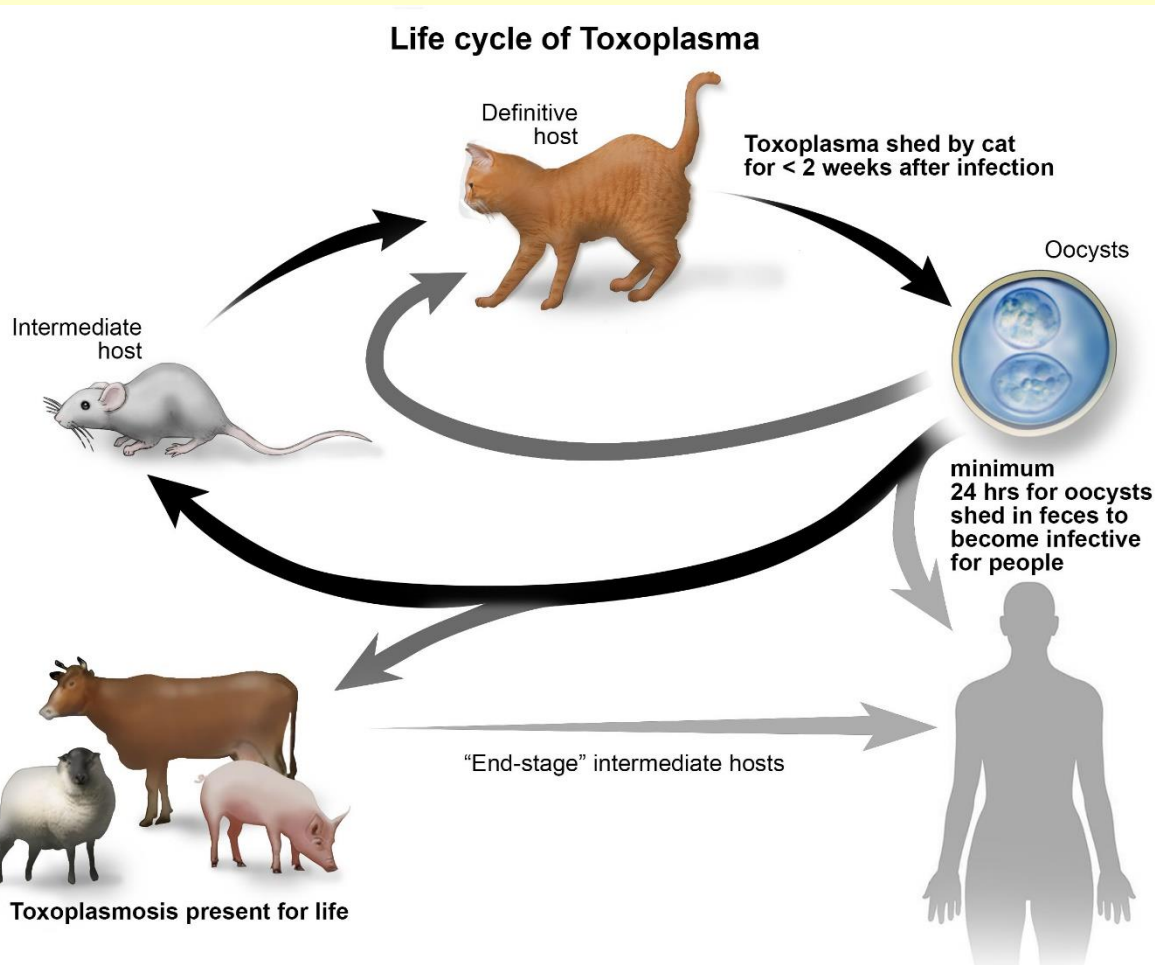
Feline Zoonoses

- **Hookworms**
- **Fleas:**
 - Cat scratch Fever (*Bartonella henselae*)
 - Plague (*Yersinia pestis*)
 - Murine typhus (*Rickettsia typhi*)
- **Tularemia** (*Francisella tularensis*)
- **Cat bite infections**



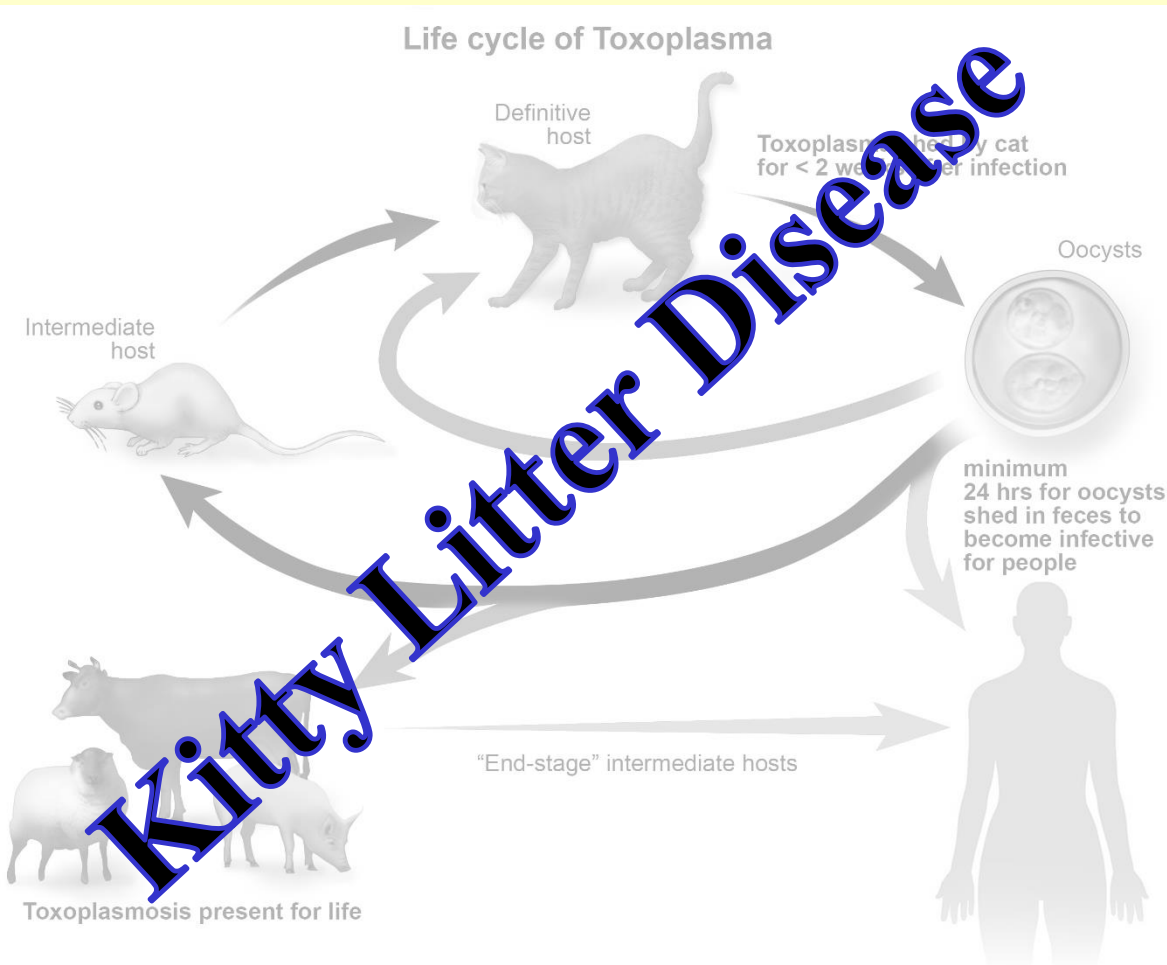
Feline Zoonoses – *Toxoplasma gondii*

Infection is **COMMON**, Disease is **NOT**!



Feline Zoonoses – *Toxoplasma gondii*

Infection is COMMON, Disease is NOT!



At risk:

1. Naïve, pregnant women
2. Immuno-suppressed individuals

Clinical :

- Parasite migration in organs and eyes
- Neurologic impairment
- Abortions, birth defects
- Increased risk of schizophrenia, autism spectrum disorders, and neuro-inflammatory diseases

Environmental Health

- Cats makes significant contributions to fecal pollution in the environment and to bacterial loading of streams and coastal waters.
- ~ 1.2 million metric tons cat feces annually, USA.
- *Toxoplasma* oocyst (egg) density can range 3 - 434 per sq. ft



Toxoplasmosis impacts on wildlife

- Toxoplasma has been implicated in infections of vulnerable wildlife populations.
- The parasite has been found in more than 10 percent of belugas in the Beaufort Sea
- Major cause of mortality in California sea otters (70% infected, 20% mortality).



Grigg and Raverty (2014)
Conrad (2005)
Shapiro et al. 2019

Wildlife Health

- Rabies
- Feline leukemia virus (mountain lions in California)
- Feline panleukopenia (Florida panthers).
- FIP (mountain lion and lynx)
- FIV (Florida panther and bobcat)
- Toxoplasmosis
 - Alala , harbor seals, sea lions, responsible for ¼ of southern sea otter deaths necropsied over a three year period in CA.



Roaming cats face health risks

Cat welfare issue: Feral-roaming cats have a significantly shorter lifespan compared to indoor only cats (2 vs. 10yrs)

Outdoors unsupervised cats are at higher risk of:

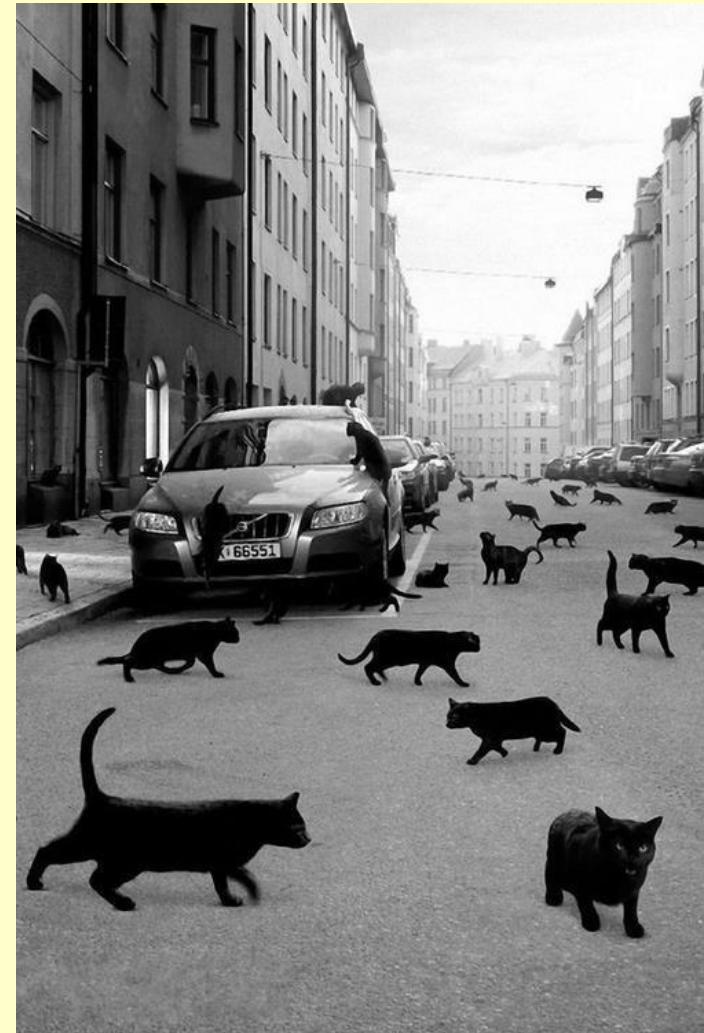
- Unwanted pregnancy
- Cat fights
- Vehicle trauma
- Wildlife attack
- Becoming lost
- Poisoning
- Disease



Cat Welfare

Kitty Cam study also evaluated “risky” behaviors of free-roaming cats.

- 85% of cats were observed with at least 1 risk factor.
- 178 road crossings (45% of cats)
- 28 encounters with other cats (25%)
- 20 consumed non-provided liquids and solids (25%)
- 20% each went into storm drains, crawl spaces and climbed trees/roofs.



The impacts of free-roaming cats to communities and wildlife

- Zoonotic diseases



- Loss of birds & wildlife



- Costly animal control



- Cat welfare issues/Disease



- Unwanted kittens euthanized



- Lost cats & feral cats



Common misconception – cats are low maintenance pets

- Cats may not show outward signs of stress and anxiety
- Many indoor cats are housed in suboptimal environments
- Suboptimal environmental stimulation for indoor cats is associated with:

Obesity

Type 2 diabetes mellitus

Joint problems

Chronic urinary tract infections

Stress and behavioural problems



These issues lead to low quality of life for cats, increased likelihood of being allowed outside, and an increased likelihood of being euthanized for health reasons.

Don't blame the cats, it's a People Problem!

Indoor cats **NEED** environmental enrichment

Simple methods can reduce stress and promote healthy weight

- Healthy diet
- Scratching facilities
- Climbing perches
- Window-watching
- Cardboard boxes
- Interactive play, toys!
- Leash and harness

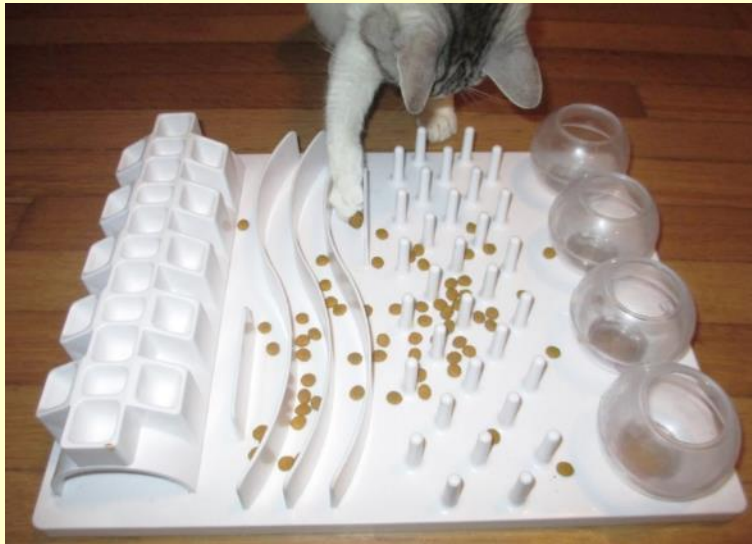


Food puzzles for cats

Dantas et al. 2016. JFMS

Cats have predatory instincts and make multiple daily hunting forays

Environmental enrichment – encourage active acquisition of food



“Catios” – outdoor cat patios

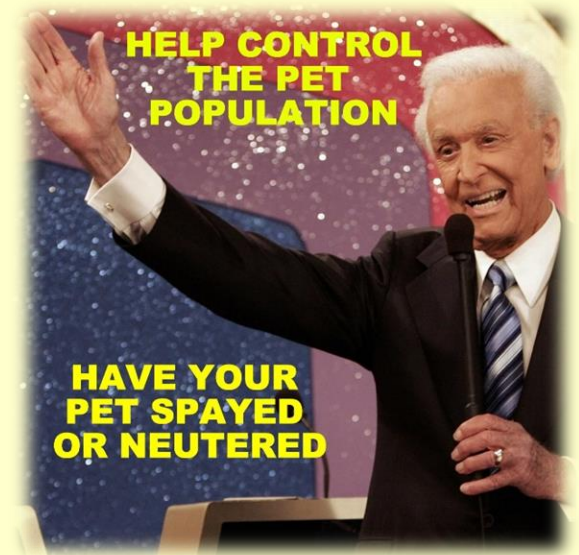


Ideally cats have supervised or controlled access to the outdoors for fresh air, stimulation, and wildlife watching

- Can help cats to make the indoors transition

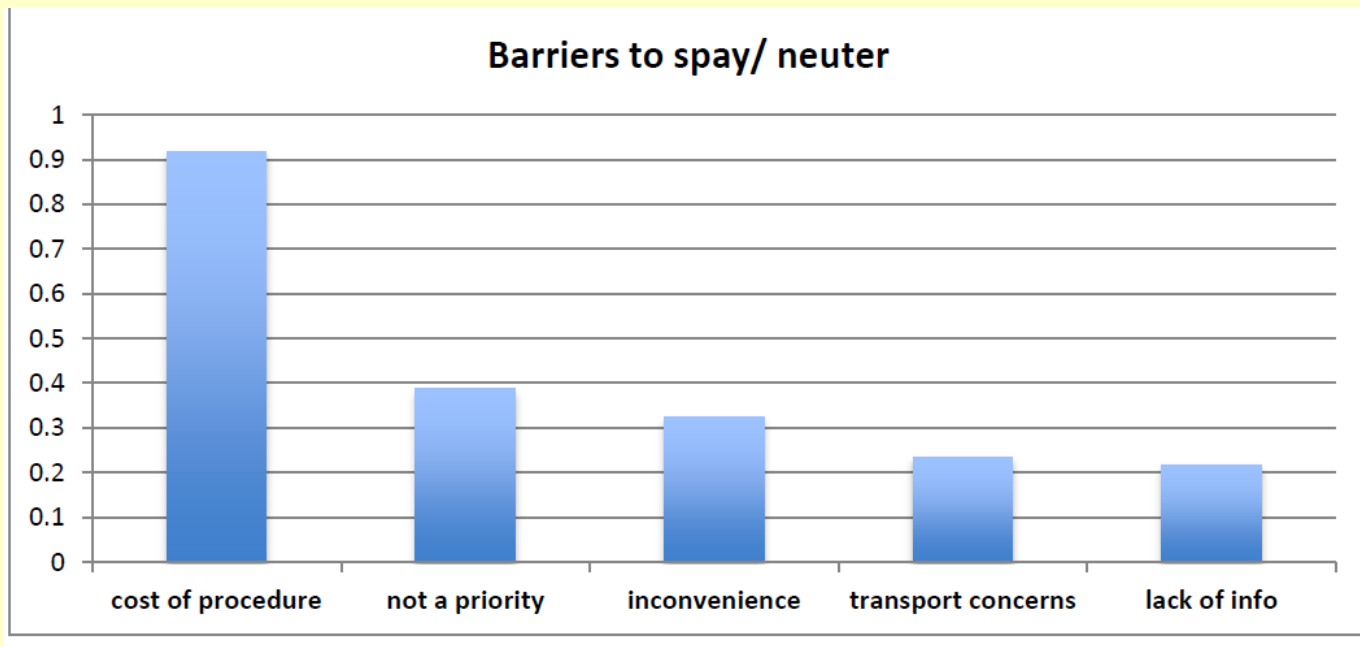
Spay neuter – Canadian Federation of Humane Societies

- 28 % of cat owners **allow their cats outdoors** some of the time.
- Cats are often **not sterilized early enough** to prevent pregnancy.
 - Early-age spay/neuter before 5 mo
 - Pediatric spay/neuter b/t 6-16 weeks
- An average of 43% of cats in shelters are kittens showing that **a high number of cat litters are unwanted.**
- Neutered cats have **improved long-term outlooks** since being intact or pregnant is a leading factor in cats being given to shelters.



Barriers to cat owners sterilizing pets

- Cats owners may delay or avoid sterilizing their cats if they are financially unable to cover the costs.
- Preventing unwanted litters requires that financial barriers be removed.



BC SPCA report (2016)

Farm cats and barn cats



- Encourage the sterilization, vaccination and regular feeding of “barn cats”.
- Predation of wildlife by local “barn cats” remains high.
- A recent study of cat predation of rats showed little impact on the rat population. Rats learned to avoid being seen and cats concentrated on easier prey.

Parsons et al (2018)

Permanent identification

The Canadian Veterinary Medical Association supports the permanent identification of animals and recommends a microchip using International Standards Organization microchip technology.

About 70% of cats taken in by shelters in 2016 had some form of ID.

But only 5-10 % of cats in shelters are returned to families while 18% are euthanized.



Housing issues are primary reason people give up companion animals

Cat collars reduce avian mortality



In a controlled test of the Birdbesafe™ cat collar:

- cats wearing collars killed 19 times fewer birds than uncollared cats
- specially-designed cat collars are a conservation tool for owners who allow cats outside

Bird collars may help reduce cat predation but don't address risks to cats of roaming outside.

Trap, neuter & return programs – do they work?

Studies show TNR programs are ineffective long-term solutions to reducing feral cat populations.

- Unless there are resources to annually sterilize a majority of the cats in a colony, colonies continue to be repopulated with kittens, newly abandoned and homeless cats.
- TNR does little to reduce the impact on local wildlife since the cats still hunt birds and other wildlife.



Longcore et al (2009)
Natoli et al (2006)



Options for feral cat management

- Support TNR programs as one tool of a **multipronged approach**.
- Support **community education and bylaws promoting** sterilizing owned cats.
- Support **low-cost spay/neuter clinics** for low-income families.
- Trap, neuter and **rehome** (not re-abandon) feral cats.
- Establish permanent sanctuaries for cats that can't be socialized.
- **Relocate** colonies that are near natural areas of particular importance to wildlife.



Cats and the community - legislature

The burden for cat overpopulation should not rest on cat welfare groups and veterinarians. It is a community responsibility.



It takes a village...

- Include cats in local government animal control bylaws
- Advocate for local government support of humane shelters and low-cost spay/neuter programs.
- Promote responsible cat ownership education programs.

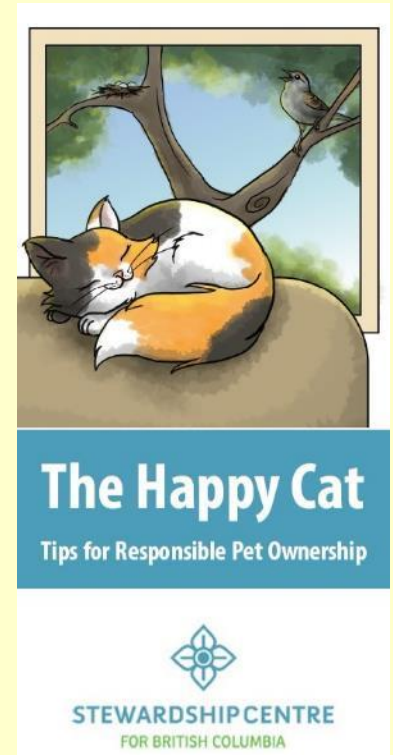
Calgary: a model city for animal control

- Dog and cat licensing
- No roaming at large bylaw
- Animal license fees pay for no-cost sterilization and microchip services for cats and dogs of eligible low income Calgarians
- Strong education campaigns on responsible pet ownership and bylaws
- Feral cats cared for by a coalition of non-profit organizations



Resources

Many web sites provide professional expertise as well as information for cat owners on feline enrichment for indoor cats and reducing risks for cats and wildlife.



Questions?

