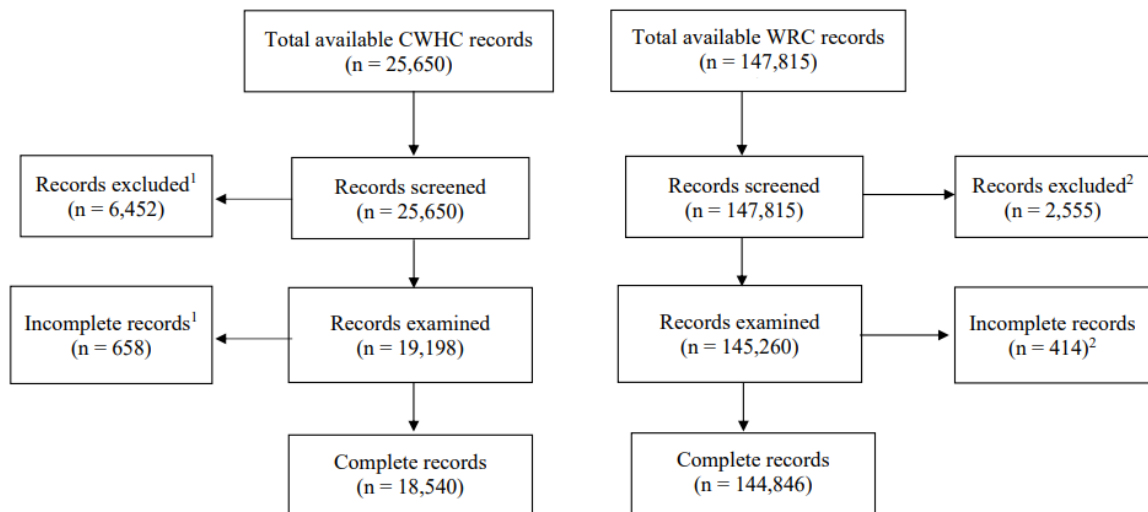


Supplementary materials for Journal of Wildlife Diseases DOI: 10.7589/JWD-D-21-00178: Meagan King, Jolene Giacinti, Sara Dubois, Stéphane Lair, E. Jane Parmley, and Claire M. Jardine. USING WILDLIFE REHABILITATION AND POST-MORTEM DATA TO IDENTIFY KEY CAUSES OF MORBIDITY AND MORTALITY IMPACTING THE HEALTH AND WELFARE OF FREE-LIVING WILD ANIMALS IN CANADA.

Supplementary Figure 1. Flowchart explaining exclusion process of incomplete records so that only complete records were included in the analysis.

Supplementary Figure 1.

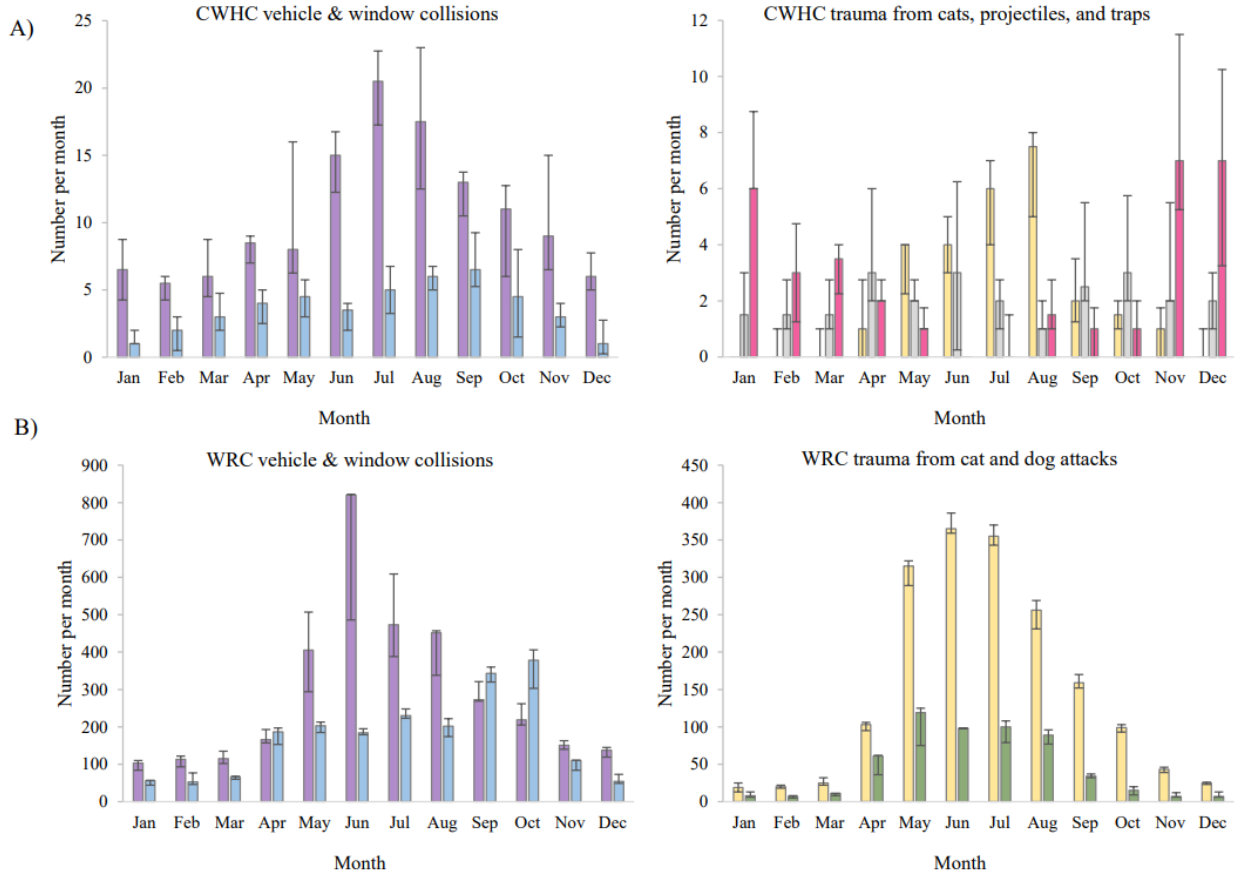


¹Canadian Wildlife Health Cooperative (CWHC) records were excluded if they were collected as part of research projects and active surveillance programs, due to over-representation of those specimens, or were purposely harvested for human consumption and submitted for food safety determination. Any invertebrate, egg, or domestic or captive wild animal was also removed from the dataset. Any report lacking information to make a proper classification was also excluded, such as missing diagnoses and/or contradictory fields.

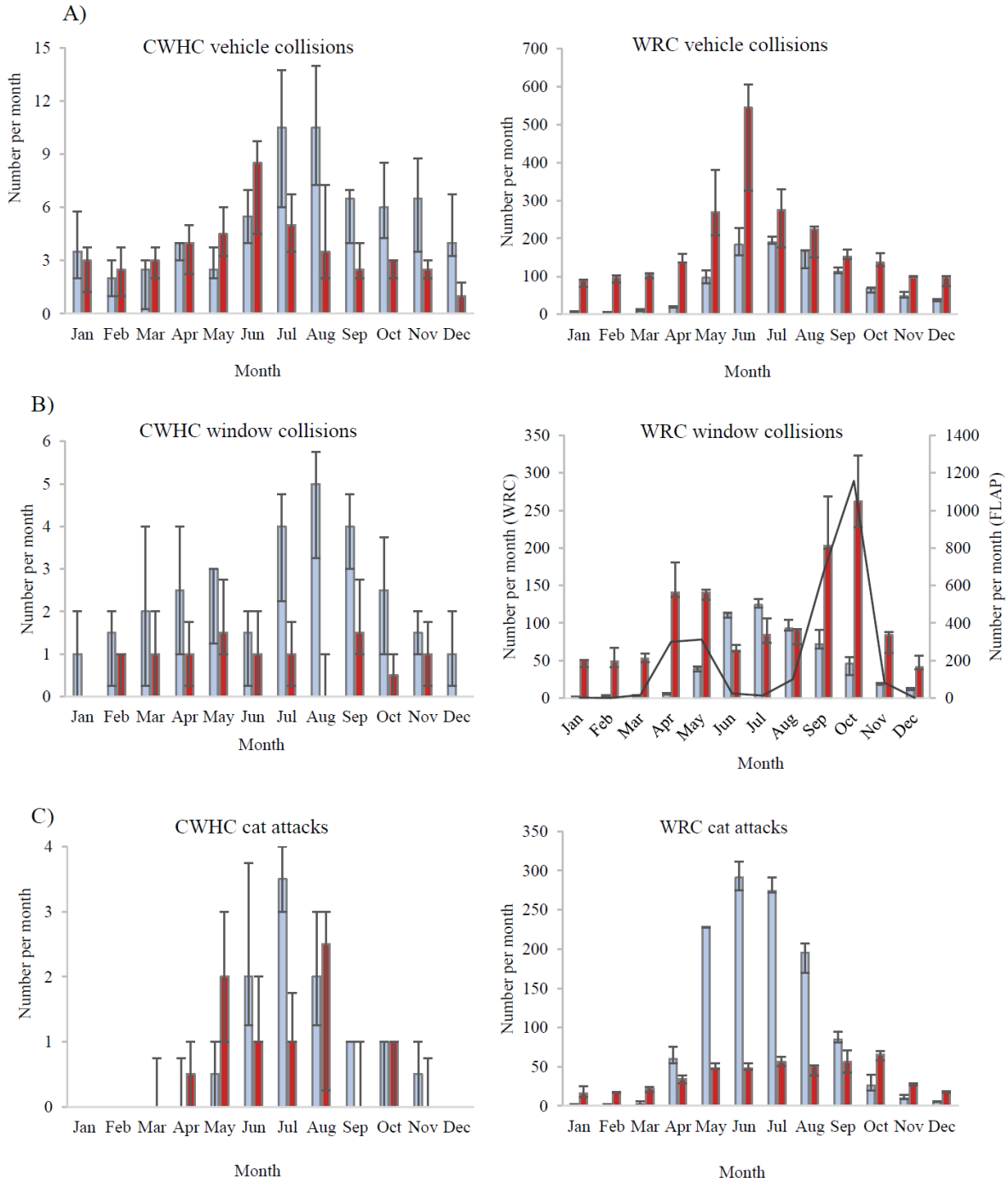
²Wildlife rehabilitation center (WRC) records not included in analyses were those for domestic and exotic species, as well as those transferred from another rehabilitation center, whether that WRC was unknown or included in the dataset. Those transferred from known WRC which were not included in the dataset were included. An additional 1,617 entries were removed because they were animals extracted before birth and hatched/born at WRC. Those lacking information or containing contradictory information were also excluded.

Supplementary Figure 2. Summary of the most common, known sources of trauma by month summarized for a) Canadian Wildlife Health Cooperative data (2009 to 2019) and b) 19 wildlife rehabilitation centers (2015 to 2019). Vertical bars show the median number of cases by month and the whiskers represent the 25th and 75th percentiles. Vehicle collisions (purple), window collisions (blue), cat attacks (yellow), dog attacks (green), captured by traps/snares (pink), and projectile/gunshot (gray).

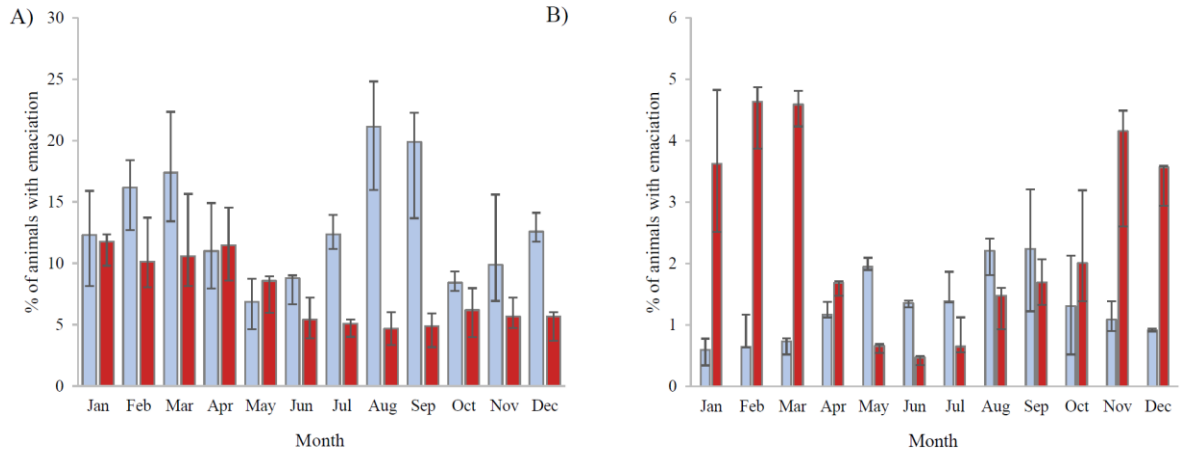
Supplementary Figure 2.



Supplementary Figure 3. Summary of three common, known sources of trauma by month by age group (immature in light blue bars, mature in dark red bars) for a) Canadian Wildlife Health Cooperative (CWHC) and wildlife rehabilitation center (WRC) vehicle collisions, b) CWHC and WRC window/building strikes, as well as FLAP Canada (median of all ages together in black line), c) CWHC and WRC cat attacks. Vertical bars show the median number of cases by month and the whiskers represent the 25th and 75th percentiles.



Supplementary Figure 4. Proportion of total monthly cases of a) mortality due to emaciation in Canadian Wildlife Health Cooperative data and b) wildlife rehabilitation center admissions due to starvation by age group (immature in light blue, mature in dark red) by month. Vertical bars show the median number of cases by month and the whiskers represent the 25th and 75th percentiles.



Supplementary Table. Classifications used in methodology as well as results (raw number followed by percentage in brackets) for 18,540 specimens analyzed by the Canadian Wildlife Health Cooperative and 144,846 animals admitted to wildlife rehabilitation centers. Results are stratified by region, age group, species group, and month of the year. Total values may be less than the sum of categories as animals could be diagnosed with more than one issue.

METHODS

Diagnostic Categories	Subcategory	Natural or Anthropogenic
Trauma		
Collision	Vehicle (car, truck, boat, plane, train)	Anthropogenic
	Unknown	Unknown
	Window/building strike	Anthropogenic
	Natural event (trees, cliffs or due to storms and extreme weather events)	Natural
	Fell from nest/dropped	Unknown
	Other man-made structure (wind turbines, powerlines, fences, or fans)	Anthropogenic
	Entanglement/entrapment	Trap/snare (mouse trap, glue trap, leghold trap, live trap)
Non-trap/space (man-made space like building, vent, dumpster, sewer, pool, chimney or pipes, or in materials such as litter, string, rope, or netting)		Anthropogenic
Fishing gear (nets, hooks, lines)		Anthropogenic
Natural/organic source (ice, pond, puddle, siblings' tails)		Natural
Other (bucket, barrel, pot, bird feeder, tote, construction)		Anthropogenic
Unknown		Unknown
Predation/attack		Wild animals (free-living, includes conspecifics, predators, prey defense)
	Domestic – cat	Anthropogenic
	Domestic – dog	Anthropogenic
	Domestic – other (captive zoo animals and other domestic animals/pets)	Anthropogenic
	Unknown animal	Unknown
Other	Foreign body, being stepped on or crushed	Anthropogenic
Unknown	Luxation, traumatic hemorrhages, and fractures with non-metabolic causes	Unknown
Projectile/gunshot	Excluding animals dispatched via gunshot	Anthropogenic
Abuse/neglect	Animals being hit by humans with objects such as bats, rocks, sticks	Anthropogenic
Electrocution	From a known man-made source	Anthropogenic
Burns	Unknown cause	Unknown
Yard gear	Lawnmower, weed wacker	Anthropogenic

Farm gear	Combines, harvesting equipment	Anthropogenic
Toxicity/Contamination		
Soiled/oiled feathers/fur	WRC data – Unspecified product	Unknown
	WRC data – Food, oil	Anthropogenic
	CWHC data – Oil, grease	Anthropogenic
Glue/sticky material (WRC)	Glue/sticky trap	Anthropogenic
	Sticky substance	Unknown
Lead		Anthropogenic
Poison	Avitrol	Anthropogenic
	Strychnine	Anthropogenic
	Unknown	Anthropogenic
Pesticide	Insecticide	Anthropogenic
	Rodenticide	Anthropogenic
	Unknown	Unknown
Botulism	Type C	Natural
	Type E	Unknown
	Type unknown	Unknown
Other	Salt, ethylene glycol, carbon monoxide, barbiturate, caustic chemicals, pentobarbital, glue/sticky substance, Tanglefoot, construction materials, tar	Anthropogenic
Berries		Natural
Unknown		Unknown
Natural contaminants	Sap	Natural
	Dirty scales	Natural
Supersaturation		Natural
‘Other’ diagnoses		
	Drowning	
	Accidents and/or neglect due to research (mist net), management (capture myopathy), or pest control (livetraps)	
	Anemia of unknown origin	
	Atelectasis of unknown origin	
	Blockage/impaction/perforation	
	Congenital	
	Deformity/tumor	
	Dental issue	
	Exposure to environment	
	Grain overload	
	Hypoxia of unknown origin	
	Metabolic bone disease	
	Metabolic disorder	
	Migration exhaustion	
	Neoplasia	

Nephrosis and/or gout
Parturition complications

Species Groupings

Bird Groupings	Common Names	Genus (or in some cases, only the Family)
Aerial Insectivores	Swifts, swallows, flycatchers	Apus, Chaetura, Contopus, Cypseloides, Empidonax, Hirundo, Myiarchus, Petrochelidon, Riparia, Stelgidopteryx, Swallow, Tachycineta
Birds of Prey	Hawks, owls, falcons	Accipitridae, Accipiter, Aegolius, Aquila, Asio, Athene, Bubo, Buteo, Cathartes, Chordeiles, Circus, Coragyps, Falco, Glaucidium, Haliaeetus, Megascops, Pandion, Strigidae, Strix, Surnia, Tyto, Strigiformes, Parabuteo, Otus
Gamebirds	Pigeons, doves, grouse, pheasants	Bonasa, Callipepla, Centrocercus, Chrysolophus, Colinus, Columbidae, Columba, Dendragapus, Falcipennis, Gallus, Lagopus, Meleagris, Oreortyx, Patagioenas, Pavo, Perdix, Phasianus, Plectrophenax, Streptopelia, Tympanuchus, Zenaida
Hummingbirds	Ruby-throated, Anna's, Rufous, Blue-throated	Calypte, Archilochus, Selasphorus, Lampornis
Seabirds	Cormorants, gulls, loons	Alca, Alle, Brachyramphus, Calonectris, Cerorhinca, Clangula, Cepphus, Chlidonias, Chroicocephalus, Fratercula, Fulmarus, Gavia, Hydroprogne, Ixobrychus, Laridae, Larus, Leucophaeus, Morus, Oceanodroma, Pagophila, Pelecanus, Phalacrocoracidae, Phalacrocorax, Ptychoramphus, Puffinus, Rhodostethia, Rissa, Somateria, Sterna, Sula, Synthliboramphus, Tachybaptus, Uria, Xema
Shore/groundbirds	Cranes, rails, sandpipers	Actitis, Aechmophorus, Antigone, Ardea, Arenaria, Bartramia, Botaurus, Bubulcus, Butorides, Calidris, Casmerodius, Catoptrophorus, Charadrius, Coturnicops, Fulica, Gallinula, Gallinago, Grus, Limnodromus, Numenius, Nycticorax, Phalaropus, Pluvialis, Podicipedidae, Podiceps, Podilymbus, Porzana, Rallidae, Rallus, Recurvirostra, Scolopacidae, Scolopax, Tringa, Tryngites
Songbirds	Passerines	Acanthis, Agelaius, Alectoris, Ammodramus, Amphispiza, Anaxyrus, Anthus, Ardena, Basileuterus, Bombycilla, Caprimulgus, Cardellina, Cardinalis, Carduelis, Carpodacus, Catharus, Certhia, Ceryle, Cinclus, Cistothorus, Coccythraustes, Coccyzus, Colaptes, Contia, Corvus, Corynorhinus, Cyanocitta, Dendroica, Dolichonyx, Dryocopus, Dumetella, Emberiza, Eremophila, Euphagus, Geothlypis, Geothypis, Haematopus, Hylocichla, Icterus, Ixoreus
		Junco, Lanius, Leiothlypis, Limnothlypis, Loxia
		Mallard, Megaceryle, Melanerpes, Melospiza
		Mimus, Mniotilta, Molothrus, Myadestes
		Nucifraga, Opheodrys, Parkesia, Parula, Parus, Passer, Passerculus, Passerella, Passerina, Perisoreus, Peucedramus,

		Phalaenoptilus, Pheucticus, Phylloscopus, Pica, Picoides, Pinicola, Pipilo, Piranga, Poecile, Poocetes, Porphyrio, Progne, Psaltriparus, Quiscalus, Regulus, Sayornis, Seiurus, Setopaga, Setophaga, Sialia, Sitta, Sphyrapicus, Spinus, Spizella, Sturnella, Sturnus, Taeniopygia, Taricha, Terrapene, Thryomanes, Thryothorus, Toxostoma, Troglodytes, Turdus, Tyrannus, Vermivora, Vireo, Wilsonia, Xanthocephalus, Zonotrichia, Zontrichia Accipitridae, Aix, Anas, Anatidae, Anser, Aythya, Branta, Bucephala, Calcarius, Chen, Clangula, Cygnus, Hiodon, Lophodytes, Mareca, Melanitta, Mergus, Oxyura, Somateria, Spatula
Waterfowl	Ducks, mergansers, teals	

Mammalian Groupings

Aquatic	Dolphins, whales For WRC data only, seals	Balaena, Balaenoptera, Cetacea, Cystophora, Delphinus, Delphinapterus, Erignathus, Eubalaena, Globicephala, Halichoerus, Kogia, Lagenorhynchus, Megaptera, Mesoplodon, Mirounga, Orcinus, Pagophilus, Phoca, Phocoena, Physeter, Pusa, Stenella, Tursiops, Zalophus, Ziphius
Bats		Chiroptera, Eptesicus, Lasionycteris, Lasiurus, Myotis, Perimyotis, Vespertilionidae, Tadarida
Bears		Ursus, Ursidae
Canids	Coyotes, wolves, foxes	Alopex, Canis, Urocyon, Vulpes
Felids	Lynx, bobcat, cougar	Felis, Lynx, Prionailurus, Puma
Hares/Rabbits		Leporidae, Lepus, Oryctolagus, Sylvilagus
Opossums		Didelphis
Raccoons		Procyon
		Apodemus, Blarina, Castor, Castoridae, Clethrionomys, Condylura, Cynomys, Dicrostonyx, Erethizon, Erethizontidae, Geomyidae, Glaucomys, Lemmyscus, Lemmus, Marmota, Microtus, Mus, Myodes, Napaeozapus, Neotamias, Neotoma, Neurotrichus, Ondatra, Parascalops, Peromyscus, Phenacomys, Rattus, Reithrodontomys, Scalopus, Scapanus, Sciurus, Soricidae, Sorex, Spermophilus, Tamias, Tamiasciurus, Thomomys, Uroditellus,
Rodents	Mice, rats, beavers, muskrats, marmot, squirrels, chipmunks	Mephitis
Skunks		Alces, Antilocapra, Bison, Bovidae, Cervus, Ictiobus, Odocoileus, Oreamnos, Ovibos, Ovis, Rangifer, Sus, Dama
Ungulates	Bison, deer, muskox, elk	Conepatus, Gulo, Lontra, Martes, Mustela, Mustelidae, Neovison, Pekania, Taxidea
Weasels/Otters	Badgers, otters, and wolverines	
Unknown mammals	Unidentified or unspecified	Mammal

Human-Wildlife Conflict

Definition used to classify CWHC submissions

<i>Location</i>	<i>Behavior/Symptoms</i>	
	Aggressive, diseased, abnormal, and/or nuisance	Healthy, normal, only injured, and/or health not mentioned
Touching a human structure	Conflict	Conflict
Near property/human activity	Conflict	Not conflict
Not close to humans	Not conflict	Not conflict

Methods of Euthanasia vs. Killing Animals Submitted to CWHC

Humane methods (n=5,006)	Most animals were euthanized using sedatives/analgesics, barbiturates, inhalants, projectile/gunshot, and cervical dislocation
Questionable methods (n=115)	76 animals were killed using blunt force trauma by untrained individuals which included sports rackets, bats, clubs, brooms, rods, shovels, driving over the animal, or stepping on it Snares/traps were used to kill 27 problem animals, of which 9 had to be shot and 4 specifically referred to the animal having a ‘jelly head’, indicating a prolonged death 10 were killed via trauma (unspecified by definitely untrained) 1 was injured via trauma followed by euthanasia
Inhumane methods (n=51)	15 animals (primarily bats) were killed by freezing them 10 animals were asphyxiated 6 were drowned 5 were killed by a dog and its owner 4 were shot with a pellet gun (2 of those 4 were then asphyxiated) 3 animals were exsanguinated without prior stunning 2 were trapped and then drowned 2 were killed with carbon dioxide 1 animal was trapped followed by blunt force trauma 1 frozen in a bag (also asphyxiated) 1 shot in the rear end but only injured 1 ‘euthanized’ with subcutaneous Euthanyl 1 was killed using an unspecified ‘intrathoracic’ method

RESULTS

Data Included in Analyses

By year	Submissions to CWHC (%)	WRC Admissions (%)
2010	1,669 (9.0)	N/A
2011	1,968 (10.6)	N/A
2012	1,953 (10.5)	N/A
2013	2,247 (12.1)	N/A
2014	1,881 (10.1)	N/A
2015	1,789 (9.6)	21,539 (14.9)
2016	1,612 (8.7)	26,195 (18.1)
2017	2,223 (12.0)	31,789 (21.9)
2018	1,893 (10.2)	31,688 (21.9)
2019	1,305 (7.0)	33,635 (23.2)

By month	Submissions to CWHC (%)	WRC Admissions (%)
January	1,056 (5.7)	3,167 (2.2)
February	1,013 (5.5)	3,737 (2.6)
March	1,252 (6.8)	3,703 (2.6)
April	1,358 (7.3)	9,042 (6.2)
May	1,533 (8.3)	25,526 (17.6)
June	1,716 (9.3)	29,577 (20.4)
July	2,317 (12.5)	23,092 (15.9)
August	2,872 (15.5)	18,692 (12.9)
September	1,999 (10.8)	12,333 (8.5)
October	1,367 (6.97)	7,866 (5.4)
November	1,134 (5.38)	4,468 (3.1)
December	923 (5.0)	3,640 (2.5)
Unknown	.	3 (0.002)

CWHC Trauma – top 5 categories

Total trauma = 8,183

Percentages show percent within each region/taxa/age/month for that specific trauma

By Region	Collision # (% of collisions)	Entrap # (% of entrap)	Predation # (% of predation)	Shot # (% of shot)	Electrocution # (% of electrocution)	Total Trauma # (% of total)
Pacific	29 (1.0)	21 (3.5)	11 (1.1)	20 (4.8)	13 (5.4)	142 (1.7)
Prairies	882 (29.5)	117 (19.2)	399 (41.1)	118 (28.4)	51 (21.1)	2,447 (29.9)
Ontario	333 (11.1)	46 (7.6)	191 (19.7)	30 (7.2)	12 (5.0)	1,058 (12.9)
Quebec	1,002 (33.5)	344 (56.6)	157 (16.2)	174 (41.8)	71 (29.3)	2,881 (35.2)
Atlantic	705 (23.6)	74 (12.2)	200 (20.6)	68 (16.3)	79 (32.6)	1,559 (19.1)
Northern	38 (1.3)	6 (1.0)	12 (1.2)	6 (1.4)	16 (6.6)	96 (1.2)
By taxa						
Birds	2,333 (78.1)	468 (77.0)	486 (50.1)	330 (79.3)	227 (93.8)	6,238 (76.2)
Mammals	573 (19.2)	129 (21.2)	434 (44.7)	86 (20.7)	15 (6.2)	1,753 (21.4)
Amphibians	15 (0.5)	0 (0)	7 (0.7)	0 (0)	0 (0)	27 (0.3)
Reptiles	68 (2.3)	5 (0.8)	40 (4.1)	0 (0)	0 (0)	144 (1.8)
Fish	0 (0)	6 (1.0)	3 (0.3)	0 (0)	0 (0)	21 (0.3)
By age group						
Immature	1,662 (55.6)	402 (66.1)	422 (43.5)	215 (51.7)	143 (59.1)	4,465 (54.6)
Mature	959 (32.1)	156 (25.7)	348 (35.9)	134 (32.2)	75 (31.0)	2,570 (31.4)
Unknown	368 (12.3)	50 (8.2)	200 (20.6)	67 (16.1)	24 (9.9)	1,148 (14.0)
By month						
January	122 (4.1)	77 (12.7)	24 (2.5)	49 (11.8)	19 (7.9)	421 (5.1)
February	146 (4.9)	38 (6.3)	22 (2.3)	26 (6.3)	18 (7.4)	369 (4.5)
March	171 (5.7)	39 (6.4)	48 (4.9)	16 (3.8)	16 (6.6)	440 (5.4)
April	238 (8.0)	42 (6.9)	63 (6.5)	70 (16.8)	19 (7.9)	609 (7.4)
May	246 (8.2)	55 (9.0)	110 (11.3)	40 (9.6)	32 (13.2)	747 (9.1)
June	301 (10.1)	15 (2.5)	153 (15.8)	43 (10.3)	20 (8.3)	801 (9.8)
July	399 (13.3)	34 (5.6)	168 (17.3)	24 (5.8)	39 (16.1)	1,072 (13.1)
August	425 (14.2)	60 (9.9)	145 (14.9)	13 (3.1)	18 (7.4)	1,187 (14.5)
September	343 (11.5)	24 (3.9)	80 (8.2)	32 (7.7)	18 (7.4)	914 (11.2)
October	286 (9.6)	24 (3.9)	85 (8.8)	36 (8.7)	14 (5.8)	697 (8.5)
November	186 (6.2)	116 (19.1)	41 (4.2)	37 (8.9)	9 (3.7)	538 (6.6)

December	126 (4.2)	84 (13.8)	31 (3.2)	30 (7.2)	20 (8.3)	388 (4.7)
Total	2,989	608	970	416	242	8,183

WRC Trauma – top 5 categories

Total trauma = 69,434

Percentages show percent within each region/taxa/age/month for that specific trauma

	Collision	Entrapment	Predation	Shot	Yard gear	Total Trauma
	# (% of collisions)	# (% of entrap)	# (% of predation)	# (% of shot)	# (% of yard gear)	# (% of total)
By Region						
Pacific	11,584 (38.5)	1,570 (38.5)	7,153 (42.8)	103 (29.3)	24 (11.0)	23,359 (33.6)
Prairies	1,820 (6.0)	527 (12.9)	2,347 (14.0)	37 (10.5)	26 (11.9)	9,466 (13.6)
Ontario	14,718 (48.9)	1,561 (38.3)	6,000 (35.9)	177 (50.4)	169 (77.2)	31,110 (44.8)
Quebec	1,974 (6.6)	418 (10.3)	1,205 (7.2)	34 (9.7)	0 (0)	5,499 (7.9)
By taxa						
Birds	22,527 (74.9)	2,938 (72.1)	10,216 (61.2)	300 (85.5)	22 (10.0)	49,944 (71.9)
Mammals	3,155 (10.5)	1,054 (25.9)	6,317 (37.8)	49 (14.0)	170 (77.6)	14,513 (20.9)
Amphibians	19 (0.1)	5 (0.1)	18 (0.1)	0 (0.0)	10 (4.6)	78 (0.1)
Reptiles	4,389 (14.6)	75 (1.8)	151 (0.9)	2 (0.6)	17 (7.8)	4,882 (7.0)
Unknown sp.	6 (0.0)	4 (0.1)	3 (0.0)	0 (0.0)	0 (0.0)	17 (0.0)
By age group						
Immature	9,613 (31.9)	1750 (42.9)	10,895 (65.2)	52 (14.8)	165 (75.3)	28,830 (41.5)
Mature	18,431 (61.2)	1774 (43.5)	4,670 (28.0)	269 (76.6)	22 (10.0)	33,608 (48.4)
Unknown	2,052 (6.8)	552 (13.5)	1,140 (6.8)	30 (8.5)	32 (14.6)	6,996 (10.1)
By month						
January	836 (2.8)	155 (3.8)	327 (2.0)	23 (6.6)	0 (0)	1,937 (2.8)
February	911 (3.0)	154 (3.8)	278 (1.7)	12 (3.4)	0 (0)	1,948 (2.8)
March	942 (3.1)	180 (4.4)	358 (2.1)	21 (6.0)	0 (0)	2,211 (3.2)
April	1,957 (6.5)	219 (5.4)	1,100 (6.6)	32 (9.1)	0 (0)	4,367 (6.3)
May	3,527 (11.7)	555 (13.6)	2,950 (17.7)	33 (9.4)	50 (22.8)	8,994 (13.0)
June	5,390 (17.9)	630 (15.5)	3,537 (21.2)	30 (8.5)	69 (31.5)	12,109 (17.4)
July	4,162 (13.8)	626 (15.4)	2,998 (17.9)	30 (8.5)	25 (11.4)	10,804 (15.6)
August	3,597 (12.0)	549 (13.5)	2,142 (12.8)	28 (8.0)	49 (22.4)	9,242 (13.3)
September	3,353 (11.1)	323 (7.9)	1,366 (8.2)	30 (8.5)	23 (10.5)	6,999 (10.1)
October	3,049 (10.1)	279 (6.8)	894 (5.4)	43 (12.3)	2 (0.9)	5,596 (8.1)
November	1,299 (4.3)	218 (5.3)	424 (2.5)	30 (8.5)	0 (0)	2,904 (4.2)
December	1,071 (3.6)	188 (4.6)	331 (2.0)	39 (11.1)	1 (0.5)	2,320 (3.3)
Unknown	2 (0.001)	3 (0.0)
Total	30,096	4076	16,705	351	219	69,434

CWHC Infections – all types

Total infections = 5,062

Percentages show percent within each region/taxa/age/month for that infection type

	Viral	Bacterial	Parasitic	Fungal	Prion	Unknown	Total Infections
By Region	# (% of viral)	# (% of bacterial)	# (% of parasitic)	# (% of fungal)	# (% of prion)	# (% of unknown)	# (% of total)
Pacific	13 (0.7)	53 (4.0)	18 (1.7)	16 (1.8)	0 (0)	6 (1.3)	101 (2.0)
Prairies	332 (18.8)	460 (34.6)	273 (26.1)	119 (13.6)	113 (100)	173 (37.3)	1,369 (27.0)
Ontario	780 (44.2)	210 (15.8)	223 (21.4)	260 (29.7)	0 (0)	116 (25.0)	1,517 (30.0)
Quebec	506 (28.7)	342 (25.7)	256 (24.5)	218 (24.9)	0 (0)	71 (15.3)	1,165 (23.0)
Atlantic	123 (7.0)	227 (17.1)	265 (25.4)	239 (27.3)	0 (0)	93 (20.0)	833 (16.5)
Northern	10 (0.6)	39 (2.9)	9 (0.9)	23 (2.6)	0 (0)	5 (1.1)	77 (1.5)
By taxa							
Birds	900 (51.0)	859 (64.5)	520 (49.8)	473 (54.1)	0 (0)	275 (59.3)	2,643 (52.2)
Mammals	853 (48.4)	426 (32.0)	504 (48.3)	358 (40.9)	113 (100)	173 (37.3)	2,296 (45.4)
Amphibians	6 (0.3)	1 (0.1)	2 (0.2)	2 (0.2)	0 (0)	0 (0)	10 (0.2)
Reptiles	5 (0.3)	14 (1.1)	7 (0.7)	22 (2.5)	0 (0)	12 (2.6)	54 (1.1)
Fish	0 (0)	31 (2.3)	11 (1.1)	20 (2.3)	0 (0)	4 (0.9)	59 (1.2)
By age group							
Immature	892 (50.6)	607 (45.6)	482 (46.2)	380 (43.4)	0 (0)	198 (42.7)	2,233 (44.1)
Mature	646 (36.6)	516 (38.8)	441 (42.2)	345 (39.4)	109 (96.5)	220 (47.4)	2,132 (42.1)
Unknown	226 (12.8)	208 (15.6)	121 (11.6)	150 (17.1)	4 (3.5)	46 (9.9)	697 (13.8)
By month							
January	106 (6.0)	72 (5.4)	42 (4.0)	51 (5.8)	7 (6.2)	27 (5.8)	289 (5.7)
February	64 (3.6)	79 (5.9)	60 (5.7)	59 (6.7)	12 (10.6)	20 (4.3)	277 (5.5)
March	82 (4.6)	83 (6.2)	59 (5.7)	141 (16.1)	10 (8.8)	24 (5.2)	378 (7.5)
April	67 (3.8)	93 (7.0)	58 (5.6)	72 (8.2)	22 (19.5)	29 (6.3)	323 (6.4)
May	101 (5.7)	92 (6.9)	64 (6.1)	66 (7.5)	8 (7.1)	44 (9.5)	353 (7.0)
June	120 (6.8)	136 (10.2)	100 (9.6)	43 (4.9)	1 (0.9)	47 (10.1)	406 (8.0)
July	203 (11.5)	161 (12.1)	144 (13.8)	81 (9.3)	3 (2.7)	67 (14.4)	577 (11.4)
August	474 (26.9)	232 (17.4)	210 (20.1)	144 (16.5)	9 (8.0)	70 (15.1)	965 (19.1)
September	236 (13.4)	134 (10.1)	118 (11.3)	85 (9.7)	15 (13.3)	45 (9.7)	560 (11.1)
October	117 (6.6)	78 (5.9)	67 (6.4)	46 (5.3)	9 (8.0)	36 (7.8)	332 (6.6)
November	97 (5.5)	93 (7.0)	74 (7.1)	39 (4.5)	13 (11.5)	29 (6.3)	323 (6.4)
December	97 (5.5)	78 (5.9)	48 (4.6)	48 (5.5)	4 (3.5)	26 (5.6)	279 (5.5)
Total	1,764	1,331	1,044	875	113	464	5,062

WRC Infections – all types

Total infections = 4,066

Percentages show percent within each region/taxa/age/month for that infection type

	Viral	Bacterial	Parasitic	Fungal	Unknown	Total Infections
By Region	Total (% of viral)	Total (% of bacterial)	Total (% of parasitic)	Total (% of fungal)	# (% of unknown)	# (% of total)
Pacific	818 (50.0)	83 (56.8)	394 (50.8)	23 (63.9)	1,031 (69.7)	2,345 (57.7)
Prairies	28 (1.7)	20 (13.7)	21 (2.7)	9 (25.0)	79 (5.3)	157 (3.9)
Ontario	687 (42.0)	39 (26.7)	336 (43.4)	3 (8.3)	303 (20.5)	1367 (33.6)
Quebec	104 (6.4)	4 (2.7)	24 (3.1)	1 (2.8)	67 (4.5)	197 (4.8)
By taxa						
Birds	1183 (72.3)	135 (92.5)	445 (57.4)	33 (91.7)	1,205 (81.4)	2,993 (73.6)
Mammals	451 (27.6)	3 (2.1)	330 (42.6)	2 (5.6)	259 (17.5)	1,044 (25.7)
Amphibians	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.1)	1 (0.02)
Reptiles	3 (0.2)	8 (5.5)	0 (0)	1 (2.8)	15 (1.0)	27 (0.7)
Unknown	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.1)	1 (0.02)
By age group						
Immature	582 (35.6)	28 (19.2)	370 (47.7)	11 (30.6)	624 (42.2)	1,612 (39.6)
Mature	843 (51.5)	102 (69.9)	327 (42.2)	20 (55.6)	733 (49.5)	2,023 (49.8)
Unknown	212 (13.0)	16 (11.0)	78 (10.1)	5 (13.9)	123 (8.3)	431 (10.6)
By month						
January	74 (4.5)	8 (5.5)	64 (8.3)	5 (13.9)	109 (7.4)	259 (6.4)
February	77 (4.7)	16 (11.0)	78 (10.1)	1 (2.8)	102 (6.9)	274 (6.7)
March	93 (5.7)	9 (6.2)	91 (11.7)	1 (2.8)	101 (6.8)	295 (7.3)
April	95 (5.8)	26 (17.8)	21 (2.7)	0 (0.0)	80 (5.4)	221 (5.4)
May	60 (3.7)	20 (13.7)	38 (4.9)	1 (2.8)	163 (11.0)	282 (6.9)
June	84 (5.1)	15 (10.3)	56 (7.2)	5 (13.9)	182 (12.3)	339 (8.3)
July	177 (10.8)	10 (6.8)	86 (11.1)	2 (5.6)	194 (13.1)	469 (11.5)
August	313 (19.1)	11 (7.5)	88 (11.4)	5 (13.9)	180 (12.2)	595 (14.6)
September	266 (16.2)	7 (4.8)	70 (9.0)	3 (8.3)	112 (7.6)	457 (11.2)
October	172 (10.5)	13 (8.9)	47 (6.1)	6 (16.7)	78 (5.3)	316 (7.8)
November	116 (7.1)	1 (0.7)	53 (6.8)	2 (5.6)	77 (5.2)	249 (6.1)
December	110 (6.7)	10 (6.8)	83 (10.7)	5 (13.9)	102 (6.9)	310 (7.6)
Total	1,637	146	775	36	1,480	4,066

CWHC Toxicity – top 5 sources

Total toxicity = 982

	Avitrol	Oiling	Lead	Insecticide	Rodenticide	Botulism	Total Toxicity
By Region							
Pacific	0 (0)	3 (2.0)	8 (6.0)	0 (0)	0 (0)	0 (0)	21 (2.1)
Prairies	45 (21.5)	63 (42.3)	27 (20.3)	71 (64.0)	17 (22.4)	23 (16.4)	300 (30.5)
Ontario	23 (11.0)	12 (8.1)	61 (45.9)	9 (8.1)	49 (64.5)	91 (65.0)	280 (28.5)
Quebec	100 (47.8)	65 (43.6)	10 (7.5)	1 (0.9)	9 (11.8)	26 (18.6)	263 (26.8)
Atlantic	41 (19.6)	6 (4.0)	27 (20.3)	28 (25.2)	1 (1.3)	0 (0)	115 (11.7)
Northern	0 (0)	0 (0)	0 (0)	2 (1.8)	0 (0)	0 (0)	3 (0.3)
By taxa							
Birds	209 (100)	144 (96.6)	133 (100)	82 (73.9)	27 (35.5)	140 (100)	840 (85.5)
Mammals	0 (0)	4 (2.7)	0 (0)	29 (26.1)	49 (64.5)	0 (0)	137 (14.0)

Amphibians	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0.0)
Reptiles	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0.0)
Fish	0 (0)	1 (0.7)	0 (0)	0 (0)	0 (0)	0 (0)	5 (0.5)
By age group							
Immature	121 (57.9)	33 (22.1)	35 (26.3)	30 (27.0)	19 (25.0)	30 (21.4)	331 (33.7)
Mature	67 (32.1)	51 (34.2)	89 (66.9)	62 (55.9)	41 (53.9)	69 (49.3)	449 (45.7)
Unknown	21 (10.0)	65 (43.6)	9 (6.8)	19 (17.1)	16 (21.1)	41 (29.3)	202 (20.6)
By month							
January	18 (8.6)	0 (0)	27 (20.3)	27 (24.3)	3 (3.9)	2 (1.4)	88 (9.0)
February	12 (5.7)	0 (0)	5 (3.8)	4 (3.6)	2 (2.6)	0 (0)	35 (3.6)
March	16 (7.7)	1 (0.7)	21 (15.8)	5 (4.5)	3 (3.9)	0 (0)	56 (5.7)
April	15 (7.2)	8 (5.4)	16 (12.0)	9 (8.1)	6 (7.9)	0 (0)	92 (9.4)
May	9 (4.3)	12 (8.1)	12 (9.0)	4 (3.6)	3 (3.9)	0 (0)	56 (5.7)
June	20 (9.6)	2 (1.3)	6 (4.5)	6 (5.4)	6 (7.9)	3 (2.1)	45 (4.6)
July	19 (9.1)	53 (35.6)	5 (3.8)	8 (7.2)	11 (14.5)	8 (5.7)	121 (12.3)
August	16 (7.7)	8 (5.4)	6 (4.5)	1 (0.9)	9 (11.8)	42 (30.0)	102 (10.4)
September	50 (23.9)	52 (34.9)	4 (3.0)	16 (14.4)	3 (3.9)	24 (17.1)	156 (15.9)
October	13 (6.2)	2 (1.3)	6 (4.5)	10 (9.0)	4 (5.3)	38 (27.1)	87 (8.9)
November	3 (1.4)	0 (0)	9 (6.8)	8 (7.2)	17 (22.4)	20 (14.3)	67 (6.8)
December	18 (8.6)	11 (7.4)	16 (12.0)	13 (11.7)	9 (11.8)	3 (2.1)	77 (7.8)
Total	209	149	133	111	76	140	982

WRC Toxicity/Contamination – top 5 sources

Total toxicity/contamination = 1,606

	Soiled/oiled feathers/fur	Poison	Glue/sticky substance	Lead	Construction material/tar	Total Toxicity
By Region						
Pacific	419 (53.4)	160 (45.1)	67 (57.8)	41 (67.2)	16 (39.0)	830 (51.7)
Prairies	20 (2.6)	117 (33.0)	7 (6.0)	3 (4.9)	3 (7.3)	226 (14.1)
Ontario	280 (35.7)	74 (20.8)	42 (36.2)	14 (23.0)	22 (53.7)	478 (29.8)
Quebec	65 (8.3)	4 (1.1)	0 (0)	3 (4.9)	0 (0)	72 (4.5)
By taxa						
Birds	742 (94.6)	238 (67.0)	88 (75.9)	61 (61.0)	33 (80.5)	1270 (79.1)
Mammals	42 (5.4)	116 (32.7)	24 (20.7)	0 (0)	7 (17.1)	211 (13.1)
Amphibians	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Reptiles	0 (0)	1 (0.3)	4 (3.4)	0 (0)	1 (2.4)	124 (7.7)
Unknown	1 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.06)
By age group						
Immature	251 (32.0)	101 (28.5)	31 (26.7)	3 (4.9)	13 (31.7)	515 (32.1)
Mature	386 (49.2)	217 (61.1)	71 (61.2)	50 (82.0)	22 (53.7)	863 (53.7)
Unknown	147 (18.8)	37 (10.4)	14 (12.1)	8 (13.1)	6 (14.6)	228 (14.2)
By month						
January	39 (5.0)	35 (9.9)	6 (5.2)	2 (3.3)	2 (4.9)	88 (5.5)
February	34 (4.3)	14 (3.9)	5 (4.3)	0 (0)	0 (0)	173 (10.8)
March	89 (11.4)	11 (3.1)	6 (5.2)	2 (3.3)	0 (0)	113 (7.0)
April	52 (6.6)	20 (5.6)	4 (3.4)	5 (8.2)	2 (4.9)	94 (5.9)
May	67 (8.5)	28 (7.9)	17 (14.7)	4 (6.6)	5 (12.2)	135 (8.4)
June	84 (10.7)	22 (6.2)	12 (10.3)	1 (1.6)	4 (9.8)	137 (8.5)

July	179 (22.8)	44 (12.4)	22 (19.0)	2 (3.3)	3 (7.3)	274 (17.1)
August	63 (8.0)	71 (20.0)	15 (12.9)	0 (0)	7 (17.1)	174 (10.8)
September	54 (6.9)	37 (10.4)	7 (6.0)	0 (0)	7 (17.1)	120 (7.5)
October	56 (7.1)	29 (8.2)	9 (7.8)	1 (1.6)	7 (17.1)	109 (6.8)
November	34 (4.3)	15 (4.2)	8 (6.9)	2 (3.3)	3 (7.3)	70 (4.4)
December	33 (4.2)	29 (8.2)	5 (4.3)	42 (68.9)	1 (2.4)	119 (7.4)
Total	784	355	116	61	41	1,606

CWHC Conflict – all categories

Total conflict = 1,518

	No Conflict	Total Conflict	Conflict + Normal	Conflict + Open	Conflict + Other
	# (%)	# (%)	# (%)	# (%)	# (%)
By Region					
Pacific	350 (2.1)	6 (0.4)	1 (0.4)	1 (0.4)	4 (0.4)
Prairies	4,540 (26.7)	572 (37.7)	124 (49.6)	98 (39.7)	350 (34.3)
Ontario	3,446 (20.2)	438 (28.8)	35 (14.0)	87 (35.2)	316 (30.9)
Quebec	5,170 (30.4)	214 (14.1)	31 (12.4)	24 (9.7)	159 (15.6)
Atlantic	3,214 (18.9)	263 (17.3)	55 (22.0)	32 (13.0)	176 (17.2)
Northern	302 (1.8)	25 (1.6)	4 (1.6)	5 (2.0)	16 (1.6)
By taxa					
Birds	11,867 (69.7)	222 (14.6)	3 (1.2)	46 (18.6)	173 (16.9)
Mammals	4,531 (26.6)	1,294 (85.3)	247 (98.8)	201 (81.4)	846 (82.9)
Amphibians	97 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)
Reptiles	277 (1.6)	2 (0.1)	0 (0)	0 (0)	2 (0.2)
Fish	250 (1.5)	0 (0)	0 (0)	0 (0)	0 (0)
By age group					
Immature	8,461 (49.7)	224 (14.7)	50 (20.0)	61 (24.7)	281 (27.5)
Mature	5,789 (34.0)	391 (25.8)	145 (58.0)	153 (61.9)	604 (59.2)
Unknown	2,772 (16.3)	903 (59.4)	55 (22.0)	33 (13.4)	136 (13.3)
By month					
January	939 (5.5)	117 (7.7)	30 (12.0)	9 (3.6)	78 (7.6)
February	904 (5.3)	109 (7.2)	15 (6.0)	17 (6.9)	77 (7.5)
March	1,095 (6.4)	157 (10.3)	15 (6.0)	27 (10.9)	115 (11.3)
April	1,252 (7.4)	106 (7.0)	14 (5.6)	19 (7.7)	73 (7.1)
May	1,414 (8.3)	119 (7.9)	16 (6.4)	15 (6.1)	88 (8.7)
June	1,597 (9.4)	119 (7.8)	29 (11.6)	23 (9.3)	67 (6.6)
July	2,175 (12.8)	142 (9.3)	28 (11.2)	32 (13.0)	82 (8.0)
August	2,665 (15.7)	207 (13.6)	43 (17.2)	22 (8.9)	142 (13.9)
September	1,864 (11.0)	135 (8.9)	19 (7.6)	28 (11.3)	88 (8.6)
October	1,265 (7.4)	102 (6.7)	15 (6.0)	29 (11.7)	58 (5.7)
November	1,023 (6.0)	111 (7.3)	13 (5.2)	14 (5.7)	84 (8.2)
December	829 (4.9)	94 (6.2)	13 (5.2)	12 (4.9)	69 (6.8)
Total	17,022	1,518	250	247	1,021

WRC Situational Reasons for Admission – all categories

Total situations = 53,671

Parental loss	Unsuitable location	Nest/habitat disturbed	Illegal Possession	Abnormal behavior	Total situational
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By Region						
Pacific	6,197 (15.6)	4,083 (47.1)	1,794 (38.6)	135 (12.5)	18 (5.7)	12,090 (22.5)
Prairies	8,090 (20.3)	202 (2.3)	297 (6.4)	83 (7.7)	2 (0.6)	8,705 (16.2)
Ontario	22,711 (57.0)	4,079 (47.0)	2,547 (54.8)	738 (68.1)	288 (91.4)	29,611 (55.2)
Quebec	2,837 (7.1)	314 (3.6)	6 (0.1)	127 (11.7)	7 (2.2)	3,265 (6.1)
By taxa						
Birds	20,681 (51.9)	7,398 (85.3)	1,869 (40.2)	514 (47.5)	33 (10.5)	30,235 (56.3)
Mammals	19,027 (47.8)	1,199 (13.8)	1,915 (41.2)	439 (40.5)	258 (81.9)	22,229 (41.4)
Amphibians	1 (0.0)	7 (0.1)	16 (0.3)	3 (0.3)	4 (1.3)	29 (0.1)
Reptiles	118 (0.3)	71 (0.8)	844 (18.2)	127 (11.7)	20 (6.3)	1,167 (2.2)
Unknown	8 (0.0)	3 (0)	0 (0)	0 (0)	0 (0)	11 (0)
By age group						
Immature	39,817 (100)	8,092 (93.2)	3,663 (78.9)	827 (76.4)	31 (9.8)	51,203 (95.4)
Mature	17 (0.04)	139 (1.6)	176 (3.8)	230 (21.2)	81 (25.7)	972 (1.8)
Unknown	1 (0.04)	447 (5.2)	805 (17.3)	26 (2.4)	203 (64.4)	1,496 (2.8)
By month						
January	83 (0.2)	35 (0.4)	45 (1.0)	22 (2.0)	68 (21.6)	249 (0.5)
February	63 (0.2)	46 (0.5)	695 (15.0)	6 (0.6)	41 (13.0)	844 (1.6)
March	284 (0.7)	79 (0.9)	108 (2.3)	22 (2.0)	21 (6.7)	509 (0.9)
April	2,702 (6.8)	469 (5.4)	412 (8.9)	53 (4.9)	16 (5.1)	3,562 (6.6)
May	10,752 (27.0)	2,669 (30.8)	1,086 (23.4)	171 (15.8)	6 (1.9)	14,675 (27.3)
June	11,218 (28.2)	2,480 (28.6)	894 (19.3)	225 (20.8)	8 (2.5)	14,581 (27.2)
July	6,995 (17.6)	1,464 (16.9)	628 (13.5)	207 (19.1)	13 (4.1)	9,085 (16.9)
August	4,584 (11.5)	961 (11.1)	498 (10.7)	137 (12.7)	4 (1.3)	6,002 (11.2)
September	2,515 (6.3)	249 (2.9)	200 (4.3)	93 (8.6)	8 (2.5)	2,978 (5.5)
October	455 (1.1)	112 (1.3)	42 (0.9)	64 (5.9)	13 (4.1)	657 (1.2)
November	109 (0.3)	61 (0.7)	26 (0.6)	51 (4.7)	48 (15.2)	295 (0.5)
December	75 (0.2)	53 (0.6)	10 (0.2)	32 (3.0)	69 (21.9)	234 (0.4)
Total	39,835	8,678	4644	1,083	315	53,671

Categories of admissions by species grouping for animals admitted to 19 wildlife rehabilitation centers from 2015 to 2019. Raw number (percentage within that species category).

Species Subcategory	Health issue	Situational issue	Situational + health issue	Undetermined	Total
BIRDS					96,648
Aerial Insectivores	583 (34.3)	769 (45.3)	134 (7.9)	213 (12.5)	1,699
Birds of Prey	6,001 (70.8)	560 (6.6)	95 (1.1)	1816 (21.4)	8,472
Gamebirds	8,899 (60.7)	2761 (18.8)	422 (2.9)	2567 (17.5)	14,649
Hummingbirds	1,086 (74.9)	158 (10.9)	38 (2.6)	168 (11.6)	1,450
Seabirds	4,666 (64.6)	899 (12.4)	216 (3.0)	1445 (20.0)	7,226
Shore/groundbirds	1,032 (63.9)	217 (13.4)	66 (4.1)	300 (18.6)	1,615
Songbirds	25,967 (59.7)	10272 (23.6)	1662 (3.8)	5615 (12.9)	43,516
Waterfowl	4,532 (25.1)	11765 (65.3)	201 (1.1)	1523 (8.5)	18,021
MAMMALS					41,202
Aquatic	5 (18.5)	17 (63.0)	4 (14.8)	1 (3.7)	27
Bats	937 (45.2)	466 (22.5)	34 (1.6)	638 (30.7)	2,075
Bears	2 (50.0)	1 (25.0)	1 (25.0)	0 (0.0)	4
Canids	375 (59.4)	193 (30.6)	9 (1.4)	54 (8.6)	631

Felids	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1
Hares/Rabbits	6,467 (50.0)	5210 (40.3)	377 (2.9)	880 (6.8)	12,934
Opossums	590 (43.2)	702 (51.4)	25 (1.8)	48 (3.5)	1,365
Raccoons	1,608 (30.8)	2785 (53.4)	192 (3.7)	633 (12.1)	5,218
Rodents	4,465 (27.3)	9336 (57.0)	1364 (8.3)	1209 (7.4)	16,374
Skunks	461 (32.3)	877 (61.5)	28 (2.0)	60 (4.2)	1,426
Ungulates	312 (45.2)	311 (45.0)	39 (5.6)	29 (4.2)	691
Weasels/Otters	151 (36.0)	219 (52.3)	20 (4.8)	29 (6.9)	419
Unknown mammals	8 (21.6)	19 (51.4)	0 (0.0)	10 (27.0)	37
AMPHIBIANS	99 (66.4)	29 (19.5)	0 (0.0)	21 (14.1)	149
REPTILES	4,931 (72.5)	1028 (15.1)	139 (2.0)	704 (10.3)	6,802
Unknown species	16 (35.6)	8 (17.8)	3 (6.7)	18 (40.0)	45
TOTAL	73,194	48,602	5,069	17,981	144,846