

Supplemental Information “Multiple Mortality Events in Bats: A Global Review”, *Mammal Review* 2016, O’Shea, Cryan, Hayman, Plowright, Streicker.

We provide summaries of pertinent details regarding multiple mortality events of bats in a series of nine appendices. Appendix S10 lists all references cited in Appendices S1-S9. Events are given by region alphabetically, then chronologically within regions. The number of events entered into tallies are given in parentheses under the “Description” column. We attempted to be conservative in designating numbers of events. Unfortunately not all sources provide enough information to allow accurate judgments in each case. Generally we considered events extending over multiple years as one event per year, and events observed at more than one dispersed location as separate events. We considered events impacting more than one species of bat as separate events for each species, unless there was insufficient information on numbers per species. Events with insufficient information for each species were treated as single events. Scientific names follow Simmons (2005) in Wilson and Reeder’s (2005) *Mammal Species of the World*, 3<sup>rd</sup> edition (<http://www.vertebrates.si.edu/msw/mswcfapp/msw/index.cfm>), with the exceptions of *Myotis escalerai* (Ibáñez *et al.* 2006), *Perimyotis subflavus*, and *Parastrellus hesperus* (Hooper *et al.* 2006).

Appendix S1. Reports of multiple bat deaths due to intentional killing by humans, including counts of dead bats taken for use as food.

Region and Species	Date	Description	Location	Source	Case
<i>Africa</i>					
<i>Eidolon helvum</i>	Nov 1909	“Large numbers” killed by local people. (1 event)	Avakubi, Democratic Republic of the Congo	Lang & Chapin 1917b	S1-1
<i>Eidolon helvum</i>	May-Jun 1914	“Dozens of them were killed every day by natives with arrows and nooses.” (1 event)	Medje, Democratic Republic of the Congo	Lang & Chapin 1917b	S1-2
Unspecified molossids	ca. 1914	“Among the Mangbetu, the fat wrinkle-lipped bats (Molossidae) are often brought to the king as a special delicacy. Roasted and arrayed in rows of five and ten on a rod, they make a very welcome present” (1 event)	Democratic Republic of the Congo	Lang & Chapin 1917a	S1-3

<i>Neoromicia nana</i>	ca. 1914	“It was in the hands of boys that we saw the first fifteen of these bats...they were all mutilated” (1 event)	Uele District, Democratic Republic of the Congo	Lang & Chapin 1917b	S1-4
<i>Eidolon helvum</i>	Feb 1972	10 dead bats found on ground during weekend, killed during hunting for food, many more carcasses removed for consumption. (1 event)	University of Ife, Nigeria	Halstead 1977	S1-5
<i>Eidolon helvum</i>	Oct 1972 – Mar 1973	12,000 bats shot for nuisance control, and for market. (1 event)	University of Ife, Nigeria	Halstead 1977	S1-6
<i>Hypsignathus monstrosus</i> , <i>Epomops franqueti</i>	April-May 2007	During this period bats gather in migration and “hunters shoot them on a daily basis, a single shotgun cartridge killing up to several dozen animals.” (4 events, documented by authors but reported as an annual occurrence)	Ndongo and Koumulele Islands, Lulula River, Occidental Kasai Province, Democratic Republic of Congo	Leroy et al. 2009	S1-7
<i>Rousettus aegyptiacus</i>	Aug 2008	Thousands of dead bats were found piled in the forest, killed after deliberate exclusion and killing in nets at mine where people had contracted Marburg haemorrhagic fever. (1 event)	Kitaka Mine, southern Uganda	Amman et al. 2014	S1-8
<b>Asia</b>					
<i>Myotis emarginatus</i> , <i>Rhinolophus ferrumequinum</i>	Unspecified	Bats killed (“complete extermination”) during fumigation aimed at fruit bats ( <i>Rousettus aegyptiacus</i> ) as crop pests. (2 events)	Betan Aharon Nature Reserve, Israel	Makin and Mendelssohn 1987	S1-9

<i>Cheiromeles torquatus</i>	1950s	Killed by “sackfuls” for food. (1 event)	Caves at Sarawak, Malaysia	Medway 1958	S1-10
<i>Rousettus leschenaultii</i> , <i>Chaerephon plicatus</i> , and other species	1960s	Truckloads killed weekly to supply food markets. (2 events)	Cave near Kanchanaburi, Thailand	Stebbing 1987	S1-11
Multiple families of frugivores, nectarivores, and insectivores.	Ca. 1982	Monthly catches by poachers market-hunting exceeded 10,000 bats. (1 event)	Khao Chong Pran Cave, Ratchaburi, Thailand	Tuttle 1990	S1-12
<i>Pteropus vampyrus</i> , <i>P. hypomelanus</i>	1983-1984	“hunter reported that thousands of bats were killed annually during the 1983 and 1984 seasons” (4 events)	Sabah, Malaysia	Fujita & Tuttle 1991	S1-13
<i>Pteropus vampyrus</i>	1980s	“it is not uncommon for a group of hunters to bag several hundred in a single outing”. (1 event)	Peninsular Malaysia	Fujita 1988	S1-14
<i>Chaerephon plicatus</i>	1990s	“Several thousand bats per day” extracted and sold at market. (1 event)	Cave at Louang-Namtha, Lao PDR	Francis <i>et al.</i> 1999	S1-15
<i>Scotophilus kuhlii</i>	1990s	Boys killed 40 bats at emergence from tree roost in one night using slingshots. (1 event)	Savannakhet, Lao PDR	Francis <i>et al.</i> 1999	S1-16
<i>Chaerephon plicatus</i>	Apr/May 1999	Thousands were smoked and sold after being killed and carried from cave in large sacks. (1 event)	Ban Phoulan village near Louang-Namtha, Lao PDR	Francis <i>et al.</i> 1999	S1-17
<i>Eonycteris spelaea</i> , other species	Ca. 2011	> 1,000 left to die in nets set for orchard protection. (1 event)	Thailand	Anonymous 2012	S1-19

<i>Rousettus leschnaultii</i> , <i>Hipposideros armiger</i>	Oct 2013	12,000 bats killed by smoke in cave. (2 events)	Near Mimi, Nagaland, India	Anonymous 2014	S1-20
<i>Rousettus leschnaultii</i> , <i>Eonycteris spelaea</i> , <i>Hipposideros armiger</i>	Oct 2014	> 7,000 bats killed. Annual harvest has been ongoing for > 150 years according to oral history. (3 events)	Near Mimi, Nagaland, India	Dovih 2015	S1-21
<b>Australia</b>					
Multiple species	1800s to present	Explosions at day roosts (camps), shooting, and other methods, especially near orchards. Well-known records, including issuance of licenses and permits. (2 events)	Australia	Hall and Richards 2000	S1-22
<i>Pteropus poliocephalus</i>	1890	200 killed by shooting. (1 event)	Maclean, NSW Australia	West 2002	S1-23
<i>Pteropus poliocephalus</i>	1950	2,000 killed by shooting. (1 event)	Susan Island, Grafton, NSW, Australia	West 2002	S1-24
<i>Miniopterus schreibersii</i>	1965	Over 200 dead bats found in cave “assumed that humans were responsible as the bats had broken wings...as if they had been knocked from the roof and trodden on”. (1 event)	Fig Tree Cave, Wombeyan Caves, New South Wales, Australia	Dew 1965	S1-25
<i>Pteropus</i> sp.	Jun 1984	“Roosting area strewn with dead and dying bats” One person responsible admitted to legal	Queensland, Australia	Pierson 1984	S1-26

		killing as pests to fruit orchards. (1 event)			
<i>Rhinolophus megaphyllus</i> , <i>Taphozous georgianus</i>	Nov 1988	Unspecified number of deaths from blasting for mine development. (2 events)	Speaking Tube and Elephant Hole Caves, Queensland, Australia	Anonymous 1989	S1-27
<i>Pteropus poliocephalus</i>	1988-1993	Entanglement in netting at fruit orchards (46). (1 event)	Sydney, New South Wales, Australia	Tidemann 1999	S1-28
<i>Pteropus poliocephalus</i>	1990	Ca. 42 killed by illegal shooting. (1 event)	Maclean, NSW, Australia	West 2002	S1-29
<i>Pteropus poliocephalus</i>	Early 1990s	70,000 shot annually for orchard protection. (1 event)	NSW Australia	Vardon & Tidemann 1995 cited in McClelland <i>et al</i> 2011	S1-30
<i>Pteropus conspicillatus</i>	Nov-Dec 2000	1,510 deaths on electric grid in 4 nights. Estimated 21,000-23,000 killed in 8 weeks. (1 event)	North Queensland, Australia	Martin 2011; Mellwee and Martin 2002	S1-31
<i>Pteropus poliocephalus</i>	Spring 2013	“Dozens” of young dead from stress of roost destruction. (1 event).	Perrin Park, Toowong, Queensland, Australia	Anonymous 2013	S1-32
<b>Europe</b>					
<i>Rhinolophus hipposideros</i> , <i>Myotis myotis</i> , <i>Nyctalus noctula</i> , <i>Miniopterus schreibersii</i>	Unspecified	Several colonies in buildings killed, some by children with air guns. (4 events)	“Yugoslavia”	Stebbing 1988	S1-33
	1920s-1940s	Gassing of bats in church, ‘from the volume of dead bodies an	Near Douglas, Isle of Man, U.K.	Stebbing 1988	S1-34

Likely <i>Myotis nattereri</i> , other vespertilionids		estimate suggests between 12,000 and 15,000 bats were killed. (2 events)			
<i>Rousettus aegyptiacus</i>	1933	5,859 bats killed for bounties for fruit depredation control in 1933, fewer (1,516 to 253 annually) documented 1934-1938. (6 events)	Cyprus	Hadjisterkotis 2006	S1-45
<i>Rousettus aegyptiacus</i>	1955	1,100 bats killed for bounties for fruit depredation control. (1 event)	Cyprus	Hadjisterkotis 2006	S1-48
<i>Pipistrellus pipistrellus</i>	Aug 1964	74 bats that entered a room through an open window were gassed by an exterminator. (1 event)	Nordrhein-Westfalen, Germany	Roer 1981	S1-35
<i>Pipistrellus pipistrellus</i>	1971	2,000 killed by direct insecticide fumigation. (1 event)	Building at Dumfries, Scotland	Stebbing 1988	S1-36
<i>Rhinolophus ferrumequinum</i>	1978	35 killed by explosive fireworks. (1 event)	Southwestern England	Stebbing 1988	S1-37
<i>Myotis</i> sp.	1981	96 shot with pellets and set on fire. (1 event)	Eastern England	Stebbing 1988	S1-38
<i>Pipistrellus pipistrellus</i>	1985	Several thousand bats gassed at private dwelling. (1 event)	Norway	Stebbing 1988	S1-39
<i>Miniopterus schreibersii</i>	Ca. 1986	Colony of 5,000 smoked out and killed by youths. (1 event)	Martins Cave, Gibraltar	Stebbing 1988	S1-40
<i>Miniopterus schreibersii</i>	1986	600 bats killed by vandals. (1 event)	Cabrespine cave, Aude, France	Stebbing 1988	S1-41

<i>Myotis blythii</i>	1987	100 hibernating bats deliberately killed by fire lit beneath them. (1 event)	Malta	Stebbing 1988	S1-42
<b>Islands</b>					
<i>Pteropus tonganus</i>	Prior to 1923	Taken in nets from platforms high in roost trees. A night's catch "amounted to fifty, seventy, and even a hundred and fifty. An expert, Takopo of Alofi, caught two hundred in one night." (1 event)	Niue Island, South Pacific	Loeb 1926	S1-43
Unspecified pteropodids	1931	50 or more bats killed per night by one hunter. (1 event)	Northeast Sulawesi	Heinrich 1943 cited in Bergmans and Rozendaal 1988	S1-44
<i>Pteropus mariannus</i>	1950s	Seasonal harvest of bats in the hundreds at one village. (1 event)	Yap, Western Caroline Islands	Falanruw 1988	S1-47
<i>Brachyphylla cavernarum</i>	Dec 1955	About 2,500 bats killed by gassing roost in building with motor vehicle exhaust. (1 event)	St. Croix, U.S. Virgin Islands	Bond and Seaman 1958	S1-49
<i>Brachyphylla cavernarum</i>	Dec 13, 1956	Six wheel-barrow loads (about 2,000 bats) killed by gassing roost in building with motor vehicle exhaust. (1 event)	St. Croix, U.S. Virgin Islands	Bond and Seaman 1958	S1-50
<i>Macrotus waterhousii</i>	Nov 1965	Counted 323 dead bats killed in a building. (1 event)	Cienfuegos, Cuba	Silva Taboada 1979	S1-57
<i>Aproteles bulmerae</i>	1970s	On a single day hunters "fired a shotgun repeatedly into the mass of flying bats. Many hundreds were killed, and the people of	New Guinea	Flannery 1994	S1-58

		nearby villages enjoyed an enormous feast.” (1 event)			
<i>Pteropus seychellensis</i>	1977	Up to 5 bats per day purchased by one restaurant. (1 event)	Mahé, Seychelles	Racey 1979	S1-59
<i>Pteropus mariannus</i>	1978-1981	2,961 to 7,238 bats exported to Guam as delicacy each year (in monthly totals). (4 events)	Yap, Western Caroline Islands	Falanruw 1988	S1-60
<i>Pteropus alecto</i>	15 Jan 1982	100 bats taken the previous night by hunters. (1 event)	Bulukumba, Sulawesi, Indonesia	Bergmans and Rozendaal 1988	S1-61
<i>Pteropus</i>	Prior to 1984	“Up to 100” are killed for ceremonies when pigs are scarce. (1 event)	Vanuatu	Chambers and Esrom 1991	S1-62
<i>Dobsonia moluccensis</i>	1984-1987	“Hundreds of animals are often captured, which must contribute considerably to the diet of the local people at such times”. (4 events)	Nong River valley, Papua New Guinea	Flannery and Seri 1990	S1-63
<i>Pteropus giganteus</i>	1986-87	Killed 295 bats in 10 nights of netting for fruit depredation control on 5 islands. (5 events)	Maldives	Dolbeer <i>et al.</i> 1988	S1-64
<i>Pteropus conspicillatus</i>	1980s	“large numbers are shot with air rifles for consumption”. (1 event)	Bacan Islands, North Moluccas, Indonesia	Bergmans and Rozendaal 1988	S1-65
“Small bats” ( <i>Emballonura raffrayana</i> , <i>Mosia nigrescens</i> , <i>Hipposideros ater</i> , <i>Aselliscus tricuspis</i> , <i>Miniopterus</i> sp.)	1995	1,000 taken each month as food. (5 events)	Makira, Solomon Islands	Richardson 1996	S1-66



<i>Pteropus griseus</i> (1) <i>Pteropus pumilus</i> (25) <i>Pteropus hypomelanus</i> (6) <i>Acerodon humilus</i> (2) <i>Dobsonia viridis</i> (2)	20 Apr 1999	Bats taken for meals at small restaurant. (2 events)	Beo, Karakelang, Talaud Islands, Indonesia	Riley 2002	S1-67
<i>Pteropus sp.</i>	Dec 2001	Small colony ca. 50 bats killed for food following typhoon. (1 event)	Vava'u, Tonga	McConkey <i>et al.</i> 2004	S1-68
<i>Pteropus mariannus</i>	2002-2003	Ca. 273 killed by poachers interviewed in 2002, 365 killed by hunters after 2003 typhoon. (2 events)	Rota, Commonwealth of the Northern Mariana Islands	Esselstyn <i>et al.</i> 2006	S1-69
<i>Miniopterus manavi</i> <i>Myotis goudoti</i>	Prior to 2003	Teenage boys harvest up to 100 bats per visit as food. (2 events)	Midongy-Sud, Mount Papango, Madagascar	Goodman <i>et al.</i> 2008	S1-70
<i>Pteropus vampyrus</i>	2003	4,500 bats killed by hunters in one month. (1 event)	Kalimantan, Borneo	Struebig <i>et al.</i> 2007	S1-18
<i>Hipposideros commersoni</i>	2004	> 25 dead bats at roost. (1 event)	Grotte d'Andrafiabe, Ankarana, northern Madagascar	Cardiff <i>et al.</i> 2009	S1-71
<i>Rousettus madagascariensis</i>	2004	90 dead bats at roost. (1 event)	Grotte Milaintety, Ankarana, northern Madagascar	Cardiff <i>et al.</i> 2009	S1-72
<i>Hipposideros commersoni</i> , <i>Miniopterus gleni</i> ,	2005	One hunter used a baton to kill 68 bats in two nights during 45-minute emergencies; estimated	Grotte d'Androimpano, Mahafaly Plateau,	Goodman 2006	S1-73

<i>Triaenops rufus</i>		2,700 <i>H. commersoni</i> killed in 3 month season. (3 events)	southwestern Madagascar		
<i>Mops midas</i>	Mar 2005	“a considerable number ... were tapped with branches as they exited a diurnal roost site, collected, and then the cooked cadavers were fed to domestic pigs.” (1 event)	Ambondromamy, Madagascar	Goodman <i>et al.</i> 2008	S1-74
<i>Rousettus madagascariensis</i>	2006	“Up to ten bats per night were killed during the fruiting season by the family to protect their fruits.” (1 event)	Anosibe An’ala, Toamasina, Madagascar	Andrianaivoarivelo <i>et al.</i> 2007	S1-75
<i>Pteropus rufus</i>	2006	100 bats taken in canopy nets by hunters each visit of 2- 3-night duration. (1 event)	Lac Kinkony-Mahavavy Area, Western Madagascar	Rakotoarivelo and Randrianandrianina 2007	S1-76
<i>Rousettus madagascariensis</i>	2006	30-40 bats killed with sticks at cave in 1-hour weekly hunts during season. (1 event)	Ile Sainte-Marie, Madagascar	Rakotonandrasanand Goodman 2007	S1-77
<i>Pteropus dasymallus</i>	2008	About 100 bats killed in nets set for a two week period. (1 event)	Yaeyama islands, Ryuku Archipelago, Japan	Vincenot <i>et al.</i> 2015	S1-135
<i>Pteropus rufus</i> <i>Eidolon dupreanus</i>	2008	Hunters killed about 19 bats per night in season. (2 events)	Mahabo District, Madagascar	Randrianandrianina <i>et al.</i> 2010	S1-78
<i>Pteropus vampyrus</i>	2011	One hunter illegally killed 19 bats in one night, an example of much more intensive local hunting. (1 event)	Southern Luzon, Philippines	Scheffers <i>et al.</i> 2012	S1-136
<b><i>North America</i></b>					

<i>Tadarida brasiliensis</i>	1908	Destroyed “over two washtubfulls of the pesky critters”. (1 event)	Near San Antonio, Texas, USA	Campbell 1925	S1-79
<i>Corynorhinus townsendii</i>	Ca. 1914	Hundreds present until vandals set fires, these bats never found in the cave again. (1 event)	Cave near Portland, Oregon, USA	Bailey 1936, Perkins 1985	S1-80
<i>Eptesicus fuscus</i>	1940-1941	“boys holding burning newspapers close to hibernating masses and burning them to death”. (1 event)	St. Peter, Minnesota, USA	Rysgaard 1942	S1-81
<i>Myotis lucifugus</i>	Ca. 1944	“workmen had killed many bats by hosing the walls preparatory to reactivating the mine”. (1 event)	Craigmont Mine, Renfrew County, Ontario, Canada	Hitchcock 1965	S1-82
<i>Desmodus rotundus</i> ; other non-target species in roosts	1940s-1950s	Tens of thousands killed by flame throwers. (1 event)	Mexico	Brown 1994	S1-83
<i>Desmodus rotundus</i>	Unspecified	698 bats killed in mist nets at two ranches May to Oct. (1 event)	Mexico	Schmidt 1970 in Greenhall 1970	S1-84
<i>Desmodus rotundus</i>	Unspecified	Over 500 bats killed in harp traps in “several evenings”. (1 event)	Mexico	Greenhall 1970	S1-85
<i>Myotis yumanensis</i>	1950	Hundreds of dead bats found after the rooms of a hacienda were painted with DDT. [Unclear if painting was intentional to rid building of bats.] (1 event)	San Luis Potosi, Mexico	Dalquest 1953 in Clark 1981	S1-86
<i>Myotis grisescens</i>	Ca. 1950s	“...the owner of a commercialized cave personally described to me how he and his	Tennessee, USA	Tuttle 1979	S1-87

		assistants had killed bats with torches". (1 event)			
Unidentified	Ca. 1956	800 bats killed in "bat shoots" by Florida State Board of Health. (1 event)	Florida	Rice 1957	S1-88
Unspecified	Winter 1957	"hundreds of bats were killed by being stoned from the low ceiling". (1 event)	Carter Caves State Park, Kentucky, USA	Mohr 1972a	S1-89
Unspecified	Dec 26, 1960	Three boys killed an estimated 10,000 bats. (1 event)	Carter Caves State Park, Kentucky, USA	Mohr 1972a	S1-90
<i>Myotis lucifugus</i> , <i>Myotis sodalis</i>	Ca. 1960s	Vandals killed about 100 hibernating bats with flames of torches. (2 events)	Ray's Cave, Greene County, Indiana, USA	Humphrey and Cope 1976	S1-91
<i>Myotis sodalis</i> , others	Early 1960s	At the entrance to a closed hibernaculum, "bats became torpid and were scraped off and carted out by the thousands in wheelbarrows. Most apparently died". (2 events)	Coach Cave, Kentucky, USA	Murphy 1993	S1-92
<i>Myotis sodalis</i>	1961	About 10,000 bats killed by vandals. (1 event)	Bat Cave, Carter County, Kentucky USA	Humphrey 1978	S1-93
<i>Myotis lucifugus</i>	1962-1963	"many bats, including 146 banded ones, were removed...during an investigation of the incidence of rabies in bats". (1 event)	Craigmont Mine, Renfrew County, Ontario, Canada	Hitchcock 1965	S1-94
<i>Eptesicus fuscus</i>	1962-1963	Mine use as hibernaculum declined steeply after fires set; Bats found dead or moribund killed by pellet shot and burning. (1 event)	Abandoned mine near Leavenworth, Kansas, USA	Phillips 1966	S1-95

<i>Myotis lucifugus</i>	1963	1500 females and young exterminated. (1 event)	Columbus, Indiana, USA	Humphrey and Cope 1976, Humphrey 1964	S1-96
<i>Myotis grisescens</i>	Ca. 1963-1971	Hundreds of bats dead and dying from deliberate human attacks. (1 event)	Hubbard's Cave, Tennessee	Tuttle 1985	S1-97
<i>Myotis lucifugus</i>	1964	Colony exterminated with DDT. (1 event)	Tipton, Indiana, USA	Humphrey and Cope 1976, Humphrey 1964	S1-98
<i>Antrozous pallidus</i>	Nov 1964	Found scorched carcasses, reported that about 200 had been "burned out" by ranch hands. (1 event)	May Cave, Barber County, Kansas USA	Jones <i>et al.</i> 1967	S1-99
<i>Myotis sodalis</i>	1965	140 bats intentionally blinded by cauterizing eyes, then released in homing experiment with no returns. (1 event)	Kentucky, USA	Barbour <i>et al.</i> 1966	S1-100
<i>Myotis lucifugus</i>	1968	Sprayed directly with DDT at roost building, 650 killed. (1 event)	Brookville Indiana USA	Humphrey and Cope 1976	S1-101
<i>Myotis lucifugus</i>	1969	Hundreds killed from deliberate spraying of colony with DDT and exposure to concentrated automobile exhaust fumes. (1 event)	Shoals. Indiana, USA	Humphrey and Cope 1976	S1-102
<i>Myotis sodalis</i>	1970	A "bushel basket full" of bats killed by vandals. (1 event)	Little Mammoth Cave, Tennessee, USA	Humphrey 1978	S1-103
<i>Myotis grisescens</i>	Mar 1971	Burning of construction debris killed thousands of bats. (1 event)	Marvel Cave, Missouri, USA	Mohr 1972a	S1-104
<i>Myotis grisescens</i>	Ca. 1970-1976	"...teenage boys who shot large numbers of bats at their roosts and during evening emergence. Many	Cave 20, Alabama or Tennessee, USA	Tuttle 1979	S1-105

		spent cartridges in the cave verified the report". (1 event)			
Unspecified	Prior to 1972	"Over the years, I have several times seen the floor of the mine...littered with hundreds of dead bats." Killed by vandals. (1 event)	Hibernia, New Jersey, USA	Mohr 1972a	S1-106
<i>Eptesicus fuscus</i>	1972	DDT used to exterminate bats in building. (1 event)	Blades, Delaware USA	Mohr 1972b in Clark 1981	S1-107
<i>Antrozous pallidus</i>	1972	Eighteen dead adult and young of year bats killed by vandals. (1 event)	Verde Valley, Arizona, U.S.A.	O'Shea and Vaughan 1977	S1-108
<i>Myotis lucifugus</i> , <i>Eptesicus fuscus</i>	1973-1975	Hundreds of carcasses in barn after exterminators applied DDT and chlordane in 1973. Lethal concentrations found in brains. (2 events)	Amherst, New Hampshire USA	Clark <i>et al.</i> 1978a, Kunz <i>et al.</i> 1977	S1-109
<i>Eptesicus fuscus</i>	1978	Treated two colonies in buildings with DDT in experimental extermination, 8 dead found, one colony "disappeared", one reduced in number. (1 event)	Ottawa, Ontario, Canada	Barclay <i>et al.</i> 1980	S1-110
<i>Desmodus rotundus</i>	1980s	Administration of anticoagulants to bat fur or systemically in cattle, shown to cause primarily species-specific vampire bat mortality. (1 event)	Mexico through South America	Arellano-Sota 1988, Brown 1994	S1-111
<i>Myotis sodalis</i> , others	Jan 1987	"Heaps of bats were discovered on the cave floor, riddled with pellet holes or crushed." Criminal convictions resulted. (2 events)	Thornhill Cave, Kentucky, USA	Anonymous 1987, Murphy 1987	S1-112

<i>Eptesicus fuscus</i>	Summer 1990	19 dead adult females and young found beneath roost in bridge, shot and beaten by boys. (1 event)	Near Tombstone, Cochise County, Arizona, USA	Sidner 1997	S1-113
<i>Tadarida brasiliensis</i>	Jun 1991	> 575 dead bats on the ground under roosting bridge with firearm shells littering the area. (1 event)	Arizona, USA	Anonymous 1991	S1-114
Multiple species of vespertilionid bats	Ca. 1992	“The floor was littered with recently killed and dying bats and empty hair spray cans, which had been lit and used as torches”. (2 events)	Michigan, USA	Tuttle 1993a	S1-115
<i>Eptesicus fuscus</i> , <i>Antrozous pallidus</i> , <i>Tadarida brasiliensis</i>	Summer 1994	26 dead adults and young found beneath roost in bridge, killed by shotgun. (2 events)	Near Tombstone, Cochise County, Arizona, USA	Sidner 1997	S1-116
<i>Myotis sodalis</i>	Oct 2007	At least 105 beaten to death. Criminal convictions resulted. (1 event)	Laurel Cave, Kentucky, USA	Anonymous 2010a	S1-117
<i>Lasiurus borealis</i>	Jul 2008	10 dead bats, trauma. (1 event)	Elkton, Maryland, USA	U.S. Geological Survey 2015c	S1-118
<i>Myotis lucifugus</i> , <i>Eptesicus fuscus</i>	May-Sep 2009	12 dead bats, trauma. (1 event)	New Hampshire, USA	U.S. Geological Survey 2015c	S1-119
<i>Tadarida brasiliensis</i>	Jul-Aug 2009	300 dead bats, trauma. (1 event)	Beaver County, Utah, USA	U.S. Geological Survey 2015c	S1-120
<i>Tadarida brasiliensis</i>	Dec 2010	73 dead bats, gunshot. (1 event)	Tucson, Arizona, USA	U.S. Geological Survey 2015c	S1-121
<i>Antrozous pallidus</i>	Sep 2011	50 dead bats, trauma. (1 event)	Yavapai County, Arizona	U.S. Geological Survey 2015c	S1-122

<i>Myotis yumanensis</i>	Jun-Jul 2012	14 dead bats, trauma. (1 event)	Skagit County, Washington, USA	U.S. Geological Survey 2015c	S1-123
<i>Myotis austroriparius</i>	Jan 2013	41 bats dead, trauma. (1 event)	Live Oak, Florida, USA	U.S. Geological Survey 2015c	S1-124
<i>Myotis lucifugus</i>	Jul 2013	12 bats dead, suspected trauma. (1 event)	Clinton County, Iowa, USA	U.S. Geological Survey 2015c	S1-125
<i>Myotis lucifugus</i>	Jul-Aug 2013	16 bats dead from trauma. (1 event)	Thomson Illinois, USA	U.S. Geological Survey 2015c	S1-126
<i>Tadarida brasiliensis</i>	Jul 2013	24 bats dead from trauma. (1 event)	Cary, North Carolina, USA	U.S. Geological Survey 2015c	S1-127
<i>Eptesicus fuscus</i>	Jun 2014	15 dead bats, trauma. (1 event)	Meshoppen, Pennsylvania, USA	U.S. Geological Survey 2015c	S1-128
<i>Eptesicus fuscus</i>	Jul-Aug 2014	15 dead bats, trauma. (1 event)	Shickshinny, Pennsylvania, USA	U.S. Geological Survey 2015c	S1-129
<i>Tadarida brasiliensis</i>	Oct 2014	Ca. 25 dead bats, trauma. (1 event)	Tuscaloosa, Alabama, USA	U.S. Geological Survey 2015b	S1-130
<b>South America</b>					
<i>Desmodus rotundus</i> ; other species of bats in roosts	1940s	Extermination at many caves for rabies control using flamethrowers, poison gas, dynamite. (1 event)	Trinidad	Brown 1994	S1-46
Unspecified	Nov 1956	Ten dead bats found on floor after attic sprayed with Malathion. (1 event)	Suriname	Husson 1962	S1-131
<i>Molossus molossus</i> <i>Molossus rufus</i>	1958-59	Counted 1,931 dead bats after spraying of 15 houses with DDT, BHC, chlordane, dieldrin. (2 events)	Trinidad	Greenhall and Stell 1960	S1-51



<i>Desmodus rotundus</i>	Nov 1959	12 bats killed after ingesting strychnine painted on cattle wounds. (1 event)	Trinidad	Greenhall 1963	S1-52
<i>Desmodus rotundus</i>	Nov 1960	30 bats killed at a roost for rabies control. (1 event)	Trinidad	Greenhall 1963	S1-53
<i>Desmodus rotundus</i> ; other non-target species in roosts	1950s-1960s	Estimated 2,000 killed per year in control efforts. (~10 events)	Trinidad	Greenhall 1970	S1-56
<i>Desmodus rotundus</i>	Oct 1961	57 bats killed after capture in mist nets in 3 nights at a cow pasture. (1 event)	Trinidad	Greenhall 1963	S1-54
<i>Desmodus rotundus</i>	Mar 1962	29 bats killed after capture in mist nets. (1 event)	Trinidad	Greenhall 1963	S1-55
<i>Desmodus rotundus</i> ; other non-target species in roosts	1950s-1990s	Thousands of caves pumped full with poisonous gas and dynamited; diesel fuel and toxaphene fires. (~10 events, but likely extending to thousands of events)	South America	Brown 1994, Arellano-Sota 1988	S1-132
<i>Desmodus rotundus</i> ; other non-target species in roosts	1960s	Estimated 5,000 bats of several species killed when cave sprayed with aerosolized Newcastle's virus. (1 event)	Colombia	Brown 1994	S1-133
Multiple species in roosts in efforts to control vampire	1964 through 1966	900,000 bats per year destroyed through fumigation. (3 events, likely hundreds)	Venezuela	Dumith Arteaga <i>et al.</i> 1967 in Constantine 1970	S1-134

bats ( <i>Desmodus rotundus</i> )					
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