A REVIEW OF EVIDENCE AND FINDINGS RELATED TO THE DEATH OF KENTON CARNEGIE ON NOVEMBER 8, 2005 NEAR POINTS NORTH, SASKATCHEWAN

by

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AFFIDAVIT

The following report is the original written by Mark E. McNay related to the death of Kenton Carnegie near Points North, Saskatchewan. Pages 1–45 have been initialed by the author.

AUTHOR'S SIGNATURE:

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On this ____ day of _____, 2007, _____ personally appeared before me,

___ who is personally known to me

___ whose identity I proved on the basis of _____

___ whose identity I proved on the oath/affirmation of _____, a credible witness

To be the signer of the above document, and he/she acknowledged that he/she signed it.

_____
Notary Public

SEAL

My commission expires _____

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BACKGROUND

Kenton Carnegie, age 22, was a geology student working at Points North, Saskatchewan in autumn 2005. On 8 November 2005 at about 1530 hr, Kenton told coworkers he was going for a walk and that he would be back before dinner about 1700 hr. When he did not return, coworkers began a search and found his body about 1 km south of Points North at 1900 hr. From the postmortem examination conducted at Victoria Hospital in Prince Albert, Saskatchewan it was concluded that Kenton Carnegie died from injuries inflicted during an animal attack. The species of animal involved in the attack was not identified. On 8 August 2006 a report entitled, "Review of Investigative Findings Relating to the Death of Kenton Carnegie at Points North, Saskatchewan" authored by Dr. Paul Paquet and Dr. Ernest Walker was submitted to the Office of the Chief Coroner, Regina, Saskatchewan. That report determined that:

> "Gray wolves and black bears are the only known large predators in northern Saskatchewan. Accordingly, the preponderance of indirect evidence suggests Carnegie was attacked and killed by a black bear rather than by wolves. The evidence casts doubt on initial claims that wolves were responsible for Carnegie's death. The environmental circumstances preceding the attack, the presence of bear tracks at the accident scene, the condition and position of the victim's body when found, the manner in which the victim's clothes were removed from the body, dragging of the body, the feeding pattern, and type of injuries detailed by autopsy and forensic reports have all the characteristics of well documented black bear attacks. In addition, all outside experts who examined the evidence concluded independently that the most probable predator was a black bear.
>
> We cannot, however, exclude absolutely the possibility of a wolf attack, given that wolves were at the scene of the accident and fed on the body." (Paquet and Walker 2006:17–18)

Appendix 1 of the report (Paquet and Walker 2006:28–29) lists 14 experts that were consulted. Among those are some of the most well known wolf and bear biologists in North America and Europe. However, the report does not specifically identify which of those experts actually examined the evidence.

On 18 January 2007 I was asked by Lori and Kim Carnegie, the parents of Kenton Carnegie, to provide an independent review of the evidence and of the findings of Paquet and Walker (2006). The Paquet and Walker report, and other printed material relevant to the case was faxed to my office on 19 January. I received the photographic evidence on a compact disc via express courier on 27 January 2007. The material that I examined is listed in Appendix A. This material included all 76 photographs taken at the scene of the attack on 8 and 9 November 2005 by Royal Canadian Mounted Police (RCMP) Constable Al Noey, and 4 photographs taken on 4 November 2005 by Kenton Carnegie's coworker Chris Van Galder. The Van Galder photographs depict 2 wolves that were encountered near the Points North Airstrip by Van Galder and another coworker, Todd Svarckopf.

On 21 February 2007 I talked with RCMP Constable Noey via telephone and reviewed the photographs with him. He informed me that the photographs in my possession included all photographs that he had taken at the scene. On 12 March 2007 I conducted telephone interviews

with Rosalie Tsannie-Burseth, the Wollaston Lake Coroner, and Bob Burseth, an employee at Points North Camp, both of whom assisted in the recovery of Kenton Carnegie's body. On 19 February 2007 I talked with Conservation Officers Warner Carlson and Mario Gaudet, both are officers with Saskatchewan Environment and Resource Management (SERM). On 13 March 2007 I talked with SERM Officer Kelly Crayne. Officers Crayne and Gaudet investigated the scene on 10 November, 2 days after the incident. Although Officers Crayne and Gaudet declined to answer detailed questions about the incident because of the pending inquest, they assured me their findings were included in their Intelligence Report dated 1 August 2006. I have reviewed that report.

The timeline of events related to the incident are given in Paquet and Walker (2006). I base my conclusions related to timing of events on their report, and upon the written testimony of the witnesses. Other facts related to the case are cited where appropriate.

REVIEW OF EVIDENCE AND FINDINGS

ENVIRONMENTAL CIRCUMSTANCES

The attack on Kenton Carnegie occurred near Points North Landing, an airstrip and remote exploration camp 35 miles northwest of Wollaston Lake, Saskatchewan (latitude 58°15'N). On the day of the attack the large lake south of the Points North Airstrip was frozen and snow covered. Ice thickness was sufficient for foot traffic and the surrounding landscape was generally snow covered with some protruding vegetation, rocks, and ground litter (Figure 1). Weather records from Collins Bay, Saskatchewan, 15 miles east of Points North, indicated that snow accumulated beginning in mid October and that minimum temperatures had been below freezing on all but 2 nights between 15 October and 8 November 2005, average daily temperature during that period was 0° C. It snowed on 5 and 6 November, therefore on the day of the attack there was a base of old snow covered by 4 cm of fresh snow.

FIGURE 1. Looking toward Points North camp from the lakeshore; Kenton's footprints can be seen on the ice (left). His body was found about 10 m off the trail shown at right. The elevated trail parallels the lakeshore. (Photos 948 and 949 by Al Noey, RCMP, 9 November 2005).

Based on published black bear denning dates (Table 1), the expected mean denning date for black bears living in a continental climate at 58N is 13 October (regressed as days after 10 September; $y = -1.61 \times +126.24$, $r^2 = 0.94$). Assuming a 4-week denning period similar to that observed in the published studies, most bears should be in their dens by 27 October, 12 days before the attack on Kenton Carnegie. Bears in poor condition do sometimes emerge from dens during winter (Schwartz et al. 1986), and if food remains available into late autumn, denning may be delayed (Beecham et al. 1983). However, at Points North in 2005, natural black bear foods (berries, vegetation, insects, carrion, small mammals) were covered by snow beginning in mid October; any bear that remained out of a den would likely be attracted to garbage disposal sites. There was an open garbage dump site approximately 2 km from the site of the attack. Yet neither in the month before, nor anytime after the attack did camp employees note the presence of black bears at the dump site (Al Noey and Robert Burseth, personal communication). Nor did any employee see a black bear near the camp, along the road system surrounding the camp, near the airstrip, or near the location of the attack. The only reported sighting of a black bear was in late summer 2005 when a bear was shot and killed near the camp kitchen (Robert Burseth, personal communication).

TABLE 1. Published records of black bear denning dates in northern continental climates.

Location	Latitude (Deg N)	Mean date	Range	Source
Lake Nipissing, Ontario	46	27 Oct	20 Sept–29 Nov	Kolenosky and Strathearn 1986
Okanogan, Washington	48	3 Nov	15 Oct–19Nov	Gaines 2003
Cold Lake, Alberta	54	18 Oct	1 Oct–6 Nov	Tietje and Ruff 1980
Susitna River, Alaska	62	9 Oct	21 Sep–9 Nov	Schwartz et al. 1986
Tanana River, Alaska	64	1 Oct	19 Sep–19 Oct	Bertram and Vivion 2002
Yukon River, Alaska	66	27 Sep	19 Sep–8 Oct	Bertram and Vivion 2002

Paquet and Walker (2006) asserted that "fatal bear attacks often occur in late afternoon and in the fall before denning. No similar pattern of attacks has been shown for wolves." Unfortunately, that assertion provides no evidence for black bear vs. wolf predation, for several reasons. First, there is no clear documentation of fatal wolf attacks on people in North America by healthy wolves in the last 150 years, and hence no pattern. Yet, there are old accounts of fatal attacks that cannot be verified with physical evidence (Young 1944; McClellan 1975). Secondly, as obligate carnivores, wolves are very capable of killing their prey at any time of day or in any season. Non-fatal wolf attacks on people have been documented during the late summer/autumn season and during evening hours in both Ontario and Alaska (McNay 2002*a*: Cases 6, 23). More recent examples include a man attacked by a single wolf on the evening of 31 December 2004 at Key Lake, Saskatchewan, 91 miles southwest of Points North, and 2 separate attacks in the late afternoon of 4 September 2006 when a single wolf inflicted bite wounds on 6 people, mostly children ages 3–14 at Katherine's Cove, Lake Superior, Ontario (Canadian Press 2006). In the Key Lake incident the wolves had been attracted to the industrial site by an open garbage dump

(CBC 2006). Finally, among 195 cases of predation by wolves on children in Hazaribagh, India between 1989 and 1995, most attacks occurred at dusk (Rajpurohit 1999).

PRESENCE OF HABITUATED, FOOD CONDITIONED AND POTENTIALLY AGGRESSIVE WOLVES NEAR POINTS NORTH

During late summer and autumn 2005, 4 wolves commonly scavenged at the Points North dump site, and were seen along the airstrip adjacent to the camp. (Robert Burseth, personal communication). Testimony from camp workers revealed that wolves at the dump often ignored workers and walked near front-end loaders that were carrying garbage. The wolves tore into garbage bags as soon as they hit the ground, uninhibited by the presence of people or loud machinery (Appendix A: Document 13).

As noted by Paquet and Walker (2006:15), aberrant behavior of a predator can provide circumstantial evidence for causes of an attack by a predator on a human. An encounter between 2 of Mr. Carnegie's coworkers and a pair of wolves that occurred 4 days before Mr. Carnegie's death provides such circumstantial evidence as to the potential danger posed by at least 2 wolves near Points North. A description of the encounter was relayed via telephone on 13 March 2006 to Corporal William Marion of the RCMP by Todd Svarckopf, one of the men involved in the incident. From that transcript, I wrote a narrative summarizing the incident (Appendix B). Photos taken by Chris Van Galder at the time of the incident illustrate the behavior of the wolves (Figure 2).

FIGURE 2. Todd Svarckopf confronts 2 bold, fearless wolves near Points North Airstrip on 4 November 2005. (Photo by Chris Van Galder). See summary in Appendix B.

An issue in this investigation is whether the encounter by Mr. Van Galder and Mr. Svarckopf was actually a threatening encounter, or simply a benign experience with 2 food conditioned and habituated wolves. The behavior observed by Mr. Van Galder and Mr. Svarckopf is consistent with food conditioned wolves that had been fed, and expected a food reward. Similar behaviors were noted in several cases of food conditioned or habituated wolves in Algonquin Park, and at

various industrial sites and National Parks throughout Alaska and Canada where wolves bit people (McNay 2002*a*: Cases 1, 4, 5, 6, 9, 10, 12, 15, 16, 19, 21, and 24). In 2 of those cases that involved children, encounters with habituated wolves quickly transitioned from apparently benign encounters to predacious attacks (McNay 2002*a*: Case 16; McNay and Mooney 2005). At Points North, the fact that 2 men were present and that they defended themselves with spruce poles, tipped the balance in their favor. Also, they did not run; Svarckopf and Van Galder acted aggressively, thereby diminishing the wolves' opportunity to become fully aroused into a predation response. If alone and if running away, the outcome of this encounter could have been very different.

It is clear from Mr. Svarckopf's description of the encounter that the wolves were habituated to humans. If the wolves were fearful or felt threatened, they would have simply trotted away. In contrast, the posture, the movement in the tail (inferred from blurred image), and the eye contact exhibited by the dark wolf in the Van Galder photographs are behaviors indicative of a wolf that is in an aroused state and capable of an attack. This incident occurred on 4 November about 1 km from the location where Kenton Carnegie was attacked and killed on 8 November.

PRESENCE OF BEAR TRACKS AT THE SCENE

Although Paquet and Walker (2006:15, 17, and 18) assert that there were prominent black bear tracks near the attack site, I found no photographic evidence or testimony indicating the existence of black bear tracks. I examined all of the photographs taken by Constable Noey at the scene, none showed bear tracks, but wolf tracks are apparent in at least 7 of the RCMP photos (950, 952, 978, 986, 987, 988, and 989). I also conducted telephone interviews with Constable Noey, Officers Gaudet and Crayne, Coroner Tsannie-Burseth, and Bob Burseth; all had been present at the kill site. None of those witnesses had identified bear tracks either on the night of 8 November or during their investigations of the scene during the daylight hours of 9 and 10 November 2005.

If present, it is unlikely that bear tracks would go unnoticed by those individuals. Constable Noey and Coroner Tsannie-Burseth grew up in northern Saskatchewan and are familiar with local animals and their tracks. Bob Burseth is a hunter and has killed several nuisance black bears near Points North since 1988; he has frequently seen black bear tracks. Officers Crayne and Gaudet are wildlife conservation officers and regularly identify tracks of bears, wolves, and other wildlife as part of their jobs. They told me they had searched the area in a large radius around the attack site. Their report concluded there were "…. numerous wolf tracks in the area. No other large animal tracks could be found." (Appendix A: Document 16).

RCMP Photo 978 taken by Constable Noey shows tracks near the edge of the lake. With a cursory examination, 3 or 4 of those tracks could be misidentified as bear tracks based on their shape (Appendix C: Figure 9). However, it is apparent in the photograph that pooled water was trapped on top of the lake ice below an overlying blanket of snow. That "overflow" condition is common on northern lakes during winter. Tracks in overflow do not show the actual footprint because the bottom of the track quickly fills with water. Instead a misshapen, eroded outline of the track remains at the snow surface as underlying water seeps into and melts the exposed snow, exaggerating the size of the track.

In Photo 978 there are 17 individual tracks that can be discerned (Appendix C: Figure 11). Although 3 or 4 of those have a triangular shape reminiscent of the shape of a bear track in mud, the remaining 13 do not resemble bear tracks. However, any similarity in the shape of any of those tracks to a either a bear or wolf foot is purely coincidental, because the overflow obliterated the true foot shape. If one assumes the tracks are those of a bear, that assumption is quickly rejected by noting the direction in which the animal was traveling. If it was a bear, the track shape dictates that the animal was moving toward the position of the photographer, i.e., toward the near shoreline, but close examination of the photograph reveals that the animal was traveling away from the shoreline.

There are a number of clues that allow determination of direction of travel. For example, when a moving animal lifts its foot from snow or slush it sometimes deposits snow or slush in front of the track. Short drag marks are present on some tracks behind the track, longer toe drags may appear between and in front of tracks, especially from hind feet (Appendix C: Figures 5, 6, 7, 13, and 14). To further confirm the direction of travel I showed Photo 978 to 5 experienced Alaskan Pilots and wolf trackers (Jack Whitman, Mark Keech, Craig Gardner, Marty Webb, and Rick Swisher). The first 3 are also biologists with the Alaska Department of Fish and Game. All have conducted research on both bears and wolves and all have over 2000 hours of pilot time surveying wildlife in Alaska. Mr. Webb and Mr. Swisher are commercial survey pilots that are routinely contracted by ADF&G to conduct game surveys, they are also experienced wolf trappers and each has over 10,000 flight hours tracking wolves, bears and other wildlife from the air. Mr. Webb and Mr. Swisher are acknowledged as 2 of the most skilled wolf trackers in Alaska. They were chosen as the survey pilots that tracked and located the wolves that were translocated to Yellowstone Park from Alberta and British Columbia in 1995 and 1996. In the opinion of all those experts, the numbered tracks in Figure 11 (RCMP Photo 978) are consistent with those of a single wolf traveling away from the lake shore.

Although the shape of the tracks and the direction of travel both suggest the tracks in Photo 978 were not made by a bear, the most conclusive evidence for wolf tracks is found in the track pattern. Wolves have a narrow chest and their tracks fall close to the center line of the animal (Appendix C: Figures 8 and 10). The tracks in Photo 978 are very close to the centerline, bear tracks would be more wide apart. Also the tracks are in pairs, that is the typical track of canids moving at a trot or fast walk (Appendix C: Figure 8; Murie 1974:45[e]). Bears either walk, lope, or run more commonly leaving single tracks or tracks that fall in sets of 4, (Murie 1974:26[c] and 30[a,b,e]; Appendix C: Figures 15–19). The track pattern in Photo 978 is entirely consistent with wolves, but is inconsistent with bear tracks. Given the effects of overflow, the track shape becomes irrelevant, but the pattern of the tracks is typical of a trotting canid.

Although the report by Paquet and Walker (2006) refers to a “bounding” bear track and to the prominence of bear tracks in the photographs, none of the tracking experts that I consulted found evidence of a bear track in any of the photographs, nor could I. Similarly, none of the experienced investigators on the scene (Constable A. Noey and Officers M. Gaudet and K. Crayne) identified bear tracks, but positively identified tracks of wolves and foxes. Also on the night of the incident Mr. Eikel, Mr. Van Galder, Mr. Svarckopf, Ms. Tsannie-Burseth and Mr. Burseth all identified wolf tracks at the kill site and on the trail leading to the kill site, none

of those witnesses identified bear tracks. Bear tracks would have been readily visible in the fresh snow if a bear had been involved in the attack.

PATTERNS OF KILL

A bruise on Mr. Carnegie's right lower leg measured 4 × 2.5 cm. Examination of Photos 926, 931 and 932 reveals what appear to be bite mark impressions associated with the bruising. The position of the marks on the right shin indicates a bite was inflicted from the front or side. (Appendix D: Figures 22 and 23). In many cases where aggressive wolves bit humans, the initial bites were fleeting, occurred in the hands or legs, and left only torn clothing, scratched skin, or minor puncture wounds (McNay 2002*a*: Cases 1, 5, 6, 8, 9, 10, 11, 12, 13, 19, 20, 21, and 24; Canadian Press 2006; Appendix D: Figures 21 and 25). The apparent bite marks and bruise on Kenton Carnegie's lower leg coupled with disturbance sites in the snow and running footprints, suggest that Kenton Carnegie encountered and then ran from a small pack of wolves. It is quite possible he encountered the same wolves that had acted aggressively toward Chris Van Galder and Todd Svarckopf only 1 km from the attack location 4 days earlier (Appendix B). Additional wolves may have been present.

As noted by Paquet and Walker (2006), black bears tend to attack the upper body, head and neck. Death can result from blows from the front paws that breaks the neck or back, or from bite wounds to the head and neck. Bruises with extensive shoulder and back injuries are frequent (Herrero 1985). Claw marks are common on the face, shoulders, back, and chest. Wolves may also bite the head and neck, but wolves do not use their feet in the process of grasping or killing prey so prominent claw marks would not be expected on a human killed by wolves. In my examination of RCMP Photos 931–933 and 942, I saw no marks on Kenton Carnegie's body that would be definitive, or even suggestive, of bear claw marks. Examples of bear claw marks on humans are shown in Appendix E: Figures 27–29.

THE CONDITION AND POSITION OF THE VICTIM'S BODY WHEN FOUND

The skeletal structure of Kenton Carnegie's body was not damaged, there were no broken bones, skull punctures, or displaced vertebrae. There was no sign of penetrating or blunt injury into the chest cavity or into the cranial cavity. The autopsy report noted that there was skin and soft tissue remaining on the upper back and shoulders with multiple superficial scrapes, but those scrapes were not identified as claw marks (Appendix A: Document 17). Those superficial scrapes would be expected if the body was dragged across the ground. In a separate report, "furrows," one on the nose and one above the left eyebrow, were identified as being consistent with claw marks (Appendix A: Document 2). A portion of Mr. Carnegie's face had been removed and the small cuts on the intact portions of the face could have been from either claws or teeth, but the furrows on the bridge of the nose and around the eyes as seen in Photo 935 are not consistent with deep slashing marks of bear claws inflicted during the predation phase of an attack (Appendix E: Figures 27 and 28). The furrows could be claw marks incidental to feeding, but are also consistent with small tooth inflicted lesions documented in other wolf attacks (Appendix D: Figure 25).

The remains of a completely consumed wolf kill is often scattered and the skeletal structure is at least partially disarticulated. However, wolves cannot disarticulate the skeleton of large prey

until most of the muscle mass has been removed, therefore disarticulation would commonly occur 1 to several days after a kill, except on small prey. Both bears and wolves eat the internal organs.

On moose calves, bears progressively invert the hide while feeding (Appendix E: Figure 26), but wolves also pull the hide off ungulate prey to feed on the underlying viscera and muscle mass (Appendix D: Figure 20). It is common to find large uneaten portions of the hide of moose discarded near the kill sites of both bears and wolves (Mark Keech, ADF&G biologist, personal communication). Bears feed on their prey alone and so the feeding pattern on the body is often at a single feeding site (Appendix E: Figures 28–30). In contrast, wolves usually feed in groups. If the prey is large enough to accommodate several wolves, an entire pack may feed simultaneously, but on different portions of the prey. If the prey is small and there is room for only a few animals to feed, dominant animals may feed first or they may rest if they were exhausted by the chase and the kill (Peterson and Ciucci 2003). As a result, prey killed by wolves often has tissue removed from various parts of the body. For example, Magoun (1976) observed 2 wolves feeding on a fresh caribou carcass; in 2 hours meat from the back, the ribs, and the legs were eaten as well as portions of the internal organs. Depending on the size of the wolf pack and the size of the prey, large ungulates can be consumed by wolves in a few days or it may take a week or more. Wolves may cache edible portions of their prey, but that is less common in winter than summer especially among large packs (Magoun 1976; Peterson and Ciucci 2003).

With large ungulate prey, wolves do not eat the stomach contents because it consists of masticated vegetation which is inedible to wolves, but wolves do eat the stomach tissue (Peterson and Ciucci 2003:123). In my experience in Alaska, when wolves consume other carnivores (e.g., wolves, lynx, wolverine), stomach contents are normally eaten. Paquet and Walker (2006:16) cite an undocumented reference to Bibikov (1983) that described consumption by wolves of the bodies of soldiers killed in Russia during war. Allegedly wolves in those cases did not feed on the stomach or intestines of the dead soldiers. Lack of feeding on the gut content in those cases may have been related to putrefaction, it is unknown when those soldiers were killed, how long before they were scavenged, and at what ambient temperatures. Therefore the implication that feeding on the stomach contents of a human is not a wolf trait is not well founded. In the Carnegie case, the body was freshly killed and the stomach contents would be entirely edible since Mr. Carnegie had presumably eaten earlier in the day, and the wolves were conditioned to eating human foods.

The feeding on Kenton Carnegie's body was extensive, most of the viscera (including the stomach) below the diaphragm was eaten, and a large portion of the muscle mass from the ribs to the knees was consumed. Mr. Carnegie’s remains were not weighed at the autopsy, but from the photographs it appears that over half of the tissue body mass of the victim was removed. Mr. Carnegie’s live weight was approximately 145 lb (Lori Carnegie, personal communication). Although it remains unknown, I estimate that roughly 70–80 lb of the body weight had been removed. It is unlikely that a single black bear would have removed that amount of tissue within the known time frame of 5 hours.

Studies of maximum consumption rates in brown bears indicate a bear could consume up to 15% of its body weight in a 24-hour period and that amount of food could be ingested in as little as 12

hours by an extremely hungry bear. (Dr. Charles Robbins, Professor, Washington State University, personal communication). Maximum consumption of approximately 7% of a bear's body weight would be expected during a 4–5 hour period. (John Hechtel, ADF&G biologist, personal communication). A large, 300 lb bear therefore would eat about 21 lb in 4–5 hours, far less than was removed from Kenton Carnegie's body. Therefore, the amount of tissue loss and the patterns of tissue removal from multiple sites as shown in RCMP Photos 934, 937, and 929 are most consistent with simultaneous feeding by multiple predators. Wolves can consume 15–20 lb each during a single feeding bout (Peterson and Ciucci 2003:124) so the amount of tissue loss from Mr. Carnegie's body in this case is consistent with feeding by 2–4 wolves.

There would have been no opportunity for other scavengers, particularly birds, to remove tissue in the presence of either wolves or a bear at night. Food eaten by wolves normally passes through the digestive tract within 48 hours (Kreeger et al. 1997), but wolves may cache portions of a fresh kill at a site well removed from the kill and feed on that cached material at a later time. The finding of "plasticized nylon" in the lower digestive tract of 1 wolf and hairs consistent with human origin in the lower digestive tract of both wolves killed on 10 November near the site of Mr. Carnegie's death (Appendix A: Documents 5 and 6) is further evidence that at least 2 wolves fed on the body or on the cached remains.

THE MANNER IN WHICH THE VICTIM'S CLOTHES WERE REMOVED FROM THE BODY

Most of the victim's clothes remained with the body but torn pieces of clothing were scattered nearby as seen in Photos 957 and 959. Mr. Carnegie was wearing lined "sweat pants" and did not wear a belt. It is evident that Mr. Carnegie's pants (Photo 922) were snagged on a tree stump of approximately 10–15 cm diameter while the body was being dragged. As a result the pants were pulled tight around the ankles. The inversion of the pants undoubtedly resulted from the body being dragged over the tree stump. In Photo 922 (Figure 3) it is apparent that considerable tension in the stretched pant leg remained when the body was found, suggesting the body had been pulled to a stop just prior to its discovery. Significant movement and feeding on the body would have likely caused a relaxation of the tension in the pant leg.

FIGURE 3. The peeling of clothing referred to by Paquet and Walker (2006:19) occurred when the pants were snagged on a small tree stump while the body was being dragged. Considerable tension remained on the pant leg when the body was found, indicating little movement of the body occurred after the pants were pulled tight.

Although in some cases bears have stripped clothing from victims, in other cases they have not (Herrero 1985). For example, in a June 2006 incident where a grizzly bear killed and fed upon a man and woman in northern Alaska, the man's body was largely stripped of clothing, but the woman's body was not. Over a 2-day period, the bear fed on the woman's hips, buttocks and ribs, but the woman's pants and shirt remained in place on her body (Appendix E: Figure 30).

We know little about patterns of clothing removal in cases where wolves killed and then fed upon humans. Where wolves scavenged soldiers killed in battle, Paquet and Walker (2006) cite an undocumented reference to Bibikov (1983) which presumably describes clothing being torn from bodies, but the pattern of removing a belted, heavy woolen uniform from a corpse that was exposed to unknown levels of damage, decomposition or rigor mortis, may not be indicative of what would occur if wolves fed on a recently killed human who was wearing loose fitting clothes made of lightweight, synthetic fabric. In the case of Kenton Carnegie, it is apparent that the pants were pulled to the ankles as a result of being dragged. Clothing from the upper part of the body was pulled up around the neck and left shoulder, some of the clothing had been ripped and torn from the body (Photos 957 and 959). Mr. Carnegie wore no belt and multiple layers of loose clothing, the clothing would easily have been pulled off with minimal tearing by either wolves or a bear.

DRAGGING OF THE BODY

Constable Noey and Coroner Tsannie-Burseth searched the area surrounding the location of Kenton Carnegie's body both on the night of the incident and in the daylight the following day. It was apparent from bloody drag marks in the snow that the body had been dragged 20–50 m from where Mark Eikel and 2 other men (C. Van Galder and T. Svarckopf) first discovered the body to where it was found 3 hours later by the final search party. The distance estimates varied between observers. Constable Noey's map of the incident scene lists 20 m, but Bob Burseth during an interview the following day estimated roughly 50 yards.

After first finding the body at approximately 1900 hr, Mr. Eikel and his 2 companions returned to Points North to contact the RCMP. Then Mr. Eikel and Mr. Burseth returned to the kill site at approximately 1930 hr. At that time the body remained at the initial kill site, but it had been fed upon. Mr. Burseth reported that he could see the exposed ribs and flesh from the waist up, but the victims pants were still on. However, at both the 1900 hr and 1930 hr visits, no one approached the body, instead they remained on the trail 10 m away and viewed the body in the beam of their flashlights (Appendix A: Document 11). After viewing the body at 1930 hr, both Mr. Burseth and Mr. Eikel left the kill site and the body was unattended until 2150 hr when a larger search party consisting of Constable Noey, Coroner Tsannie-Burseth, Mr. Eikel, and Mr. Burseth returned. During the intervening 2 hours and 20 minutes, a large portion of the muscle mass between the knees and the waist had been consumed as well as most of the viscera and the flesh of the lower back, ribs, and abdomen. The body had also been dragged to its final location.

The position of the body and clothing, and the condition of the surrounding vegetation indicate the body was dragged to that final location immediately before the arrival of the search party. Because the victim's pants had been snagged on a tree stump (Photo 922), the legs were in line with the direction of dragging and were together. The right arm of the body was extended over

the head. The left arm was wrapped in clothing and was positioned out and down at about a 45 degree angle (Photos 934 and 942). The tension on the pants leg indicates the body had been pulled from the top, and stretched by the tension of pulling on the body after it was anchored to the tree stump. The right side of the body appeared to be stretched upward toward the right arm (Photo 942). Lacerations on the right forearm are consistent with canine tooth wounds and with the body being dragged by the forearm. Except for a small amount of tissue missing from the lower left calf, the legs below the knees had not been fed upon. It is likely the lower legs were covered by the pant legs until the body was dragged, just before the search party arrived.

Much of the fresh snow on the small trees to the left of the body (i.e., left side of Photo 927) and beyond the head of the body was undisturbed (Photo 923) indicating there had been minimal animal activity around the body after it was dragged. Branches of small ground shrubs were not trampled and the head of the victim was lying underneath small branches, dried leaves remained on the branches that extended over the body also indicating minimal disturbance and trampling around the body (Photos 942 and 935). Again this evidence indicates the body was dragged to its final position after it had been fed upon, and significant feeding on the victim had not occurred after the body was dragged.

Dragging of the body was cited as evidence of a black bear attack by Paquet and Walker (2006:18–19). Bears commonly drag their prey and in cases of bear attacks on humans, bears typically drag their prey immediately after the victim is brought to the ground (Herrero 1985; Smith 2007). On the day of the attack Kenton Carnegie left camp for a short walk at 1530 hr and he told a coworker he would return about 1700 hr. Therefore, it is likely that Kenton Carnegie's body remained at the original kill site for at least 2 hours by the time the body was discovered by Mr. Eikel at 1900 hr and that it remained at that location for at least an additional 30 minutes between the time of the initial discovery and Mr. Eikel's return with Mr. Burseth (1900–1930 hr). Also, during that period the upper body, but not the legs, had been fed upon. (Appendix A: Document 11). When he investigated the kill site the following day, Constable Noey noted the widespread footprints of Kenton Carnegie with pooled blood on aerial vegetation and on the ground immediately adjacent to the kill site. That indicates that Mr. Carnegie was brought to the ground at the original location of the body, that the body remained there for at least 2.5 hours and that it had been fed upon at that location. Obviously the body was not immediately dragged away from the kill site.

Although wolves do not typically drag large prey away from a kill site, wolves are capable of dragging their prey and in cases where wolves seriously attacked humans, they attempted to drag or carry their "prey" as rescuers approached (McNay 2002*a*: Cases 1, 4, 15, 16, and 17). Similarly, in 195 cases of predation by wolves on children in India the children were carried as far as 2.5 km from the attack site. Some of those victims were equal to half the wolf's body weight (Rajpurohit 1999). Clearly, in the case of the attacks in India and with small natural prey (Fox 1971), wolves often carry their prey away from the attack site.

Wolves are also capable of carrying or dragging prey of weights equal to or greater than their own. For example, in September 2006 near McGrath, Alaska ADF&G research biologist Mark Keech walked in on the signal of a radio collared moose calf killed by 2 wolves. The calf remains, weighing approximately 150 lb, had recently been dragged 20 m up hill over dry

ground from the kill site, possibly in response to the biologist's approach (Appendix D: Figure 20).

In the case of Kenton Carnegie, the physical evidence at the site and the observations by witnesses Mr. Eikel, Mr. Burseth, and Constable Noey suggest that the victim was killed and fed upon at the original kill site then dragged 20–50 m to the final location before the arrival of the final search party. When the body was found at 2150 hr, most of the soft tissue and internal organs had already been removed from the body. The lack of disturbance in the surrounding vegetation indicates that extensive feeding had not occurred at the final resting site. Therefore when moved, the victim's body weight was substantially reduced and a single wolf could have easily dragged the body 20–50 m over relatively flat terrain in a more or less straight line.

Immediately upon finding the body, Constable Noey raised his flashlight and saw the eye shine of 2 wolf-sized animals a few meters away. He continued to hear the animals move in the surrounding brush even as the investigation and body recovery commenced (Al Noey, personal communication). During the body recovery, Coroner Tsannie-Burseth reported that wolves howled frequently nearby and although the distance to the howling wolves was unknown, Bob Burseth who was also present, felt confident that they were within 400 m of the kill site. To dissuade the wolves from approaching, the search party built a fire and periodically fired shots into the air during the body recovery. Therefore we know with certainty that at least 2 predators, likely wolves, remained near the body even as rescuers approached within a few meters. Based on the position of the body, the position of the clothing, and the condition of surrounding vegetation and undisturbed snow, it is apparent the body was dragged by those wolves immediately before the arrival of the final rescue party, and probably in response to the rescue party's approach. That behavior is entirely consistent with dragging or carrying of victims in other documented cases where wolves attacked humans and rescuers approached (McNay 2002*a*).

The evidence at the site of Kenton Carnegie's death is highly consistent with the patterns characteristic of wolf predation. Constable Noey noted that Mr. Carnegies' tracks reversed course from the lake, the tracks moved up the trail a short distance and then there was a large disturbance in the snow as if something rolled in the snow. That may have been where Mr. Carnegie was first attacked and possibly bitten in the leg or shin early in the encounter. Beyond the disturbed snow in the trail, Kenton's track breaks into a run and ventures off the trail into the surrounding muskeg and forest. At that point he was being pursued, or possibly the act of running stimulated the pursuit. In either case, after a short distance there is a disturbance in the snow and blood begins to appear. Then there is a lot of blood in the snow, both drops and pooled blood. Constable Noey said it appears Kenton stood at that point for some time because Kenton's wide-stanced footprints straddled a large amount of blood on the vegetation and on the ground. That sequence is exactly what we would expect with a wolf attack, i.e., initial attack, pursuit, wounding bites inflicted, then a retreat of the wolves while the prey is weakened by blood loss. The drops and undisturbed pooling of blood do not suggest a bear attack where the bear would maintain constant contact with its prey and overpower it with physical force.

If a black bear had killed Mr. Carnegie, but then wolves later fed on the carcass, there would have been a period of prolonged confrontation between the bear and wolves; the tracks of each would be well represented around the kill site. Additionally, bears often defend kills against

approaching humans, wolves do not, instead wolves would be expected to retreat some short distance from the kill when people approached. A predatory bear at night on a fresh kill might charge intruders, vocalize or otherwise make its presence known, but the only vocalization was of howling wolves.

CONCLUSIONS

Contrary to the findings of Paquet and Walker (2006:17), my review of the evidence related to the death of Kenton Carnegie near Points North, Saskatchewan leads to the conclusion that Mr. Carnegie was killed and partially consumed by wolves in the late afternoon/evening of 8 November 2005 (Table 2). I found nothing in the evidence related to the environmental conditions, presence of animal tracks, patterns of feeding, position of the body, dragging of the body, removal of clothing, or types of injuries that are inconsistent with wolf predation, and I believe all of these categories of evidence, strongly favor the conclusion of predation and feeding by wolves, rather than by a black bear. Any remaining arguments about specific patterns of feeding, body position, clothing removal, and wounds will likely not be resolved because the patterns of wolves killing and feeding on humans as live prey are undocumented, and because even with natural prey the patterns related to those factors overlap between wolves and bears.

What we do know is that wolves were present near the body when it was discovered; numerous wolf tracks were found near the body and in a large area surrounding the body. Gut contents of wolves later killed near the site contained human remains and clothing, and within the previous 4 days wolves had approached and acted aggressively toward people in the vicinity of the Points North camp. We also know that there was a total lack of evidence that a black bear was present at the kill site, near the kill site, at the open garbage dump site, or anywhere in the vicinity of Points North camp for at least a month before and after the incident. There was simply no opportunity for a black bear to kill Kenton Carnegie.

The wolves involved in this case were conditioned to the use of human foods and were habituated to the presence of people. This incident was entirely preventable, and to some degree predictable. A documented increase in aggressive behaviors by wolves toward people has occurred during the last 30 years in North America, particularly when wolves were food conditioned and habituated to people in National or Provincial Parks and at remote industrial sites such as Points North (McNay 2002*a*). Documentation of this increase has been accompanied by published warnings that assert, “Habituation of wolves can lead to agonistic or predatory aggression toward humans with some risk of serious injury or death….” (McNay 2002*b*:840).

TABLE 2. Summary of 12 key points of evidence leading to the conclusion that wolves killed and partially consumed Kenton Carnegie.

No.	Key points of evidence
1.	The environmental conditions and latitude dictated bears would be in dens at the time of the attack.
2.	There were no sightings of bears or bear tracks near Points North camp for at least 1 month prior to and after the attack, despite the presence of fresh snow since mid October.
3.	There were no bear tracks depicted in any of the evidence photographs or identified by any of the investigators or other witnesses.
4.	There were 4 wolves known to frequent the garbage dump site before the attack that exhibited fearless behavior in the presence of humans.
5.	There were no indications of claw marks, broken bones, or other signs of strong physical force present on the victim's body that were consistent with a bear attack.
6.	There were bite marks on the victim's body consistent with those identified in other wolf attacks on humans.
7.	There were numerous wolf tracks near the body and in the surrounding area.
8.	The feeding pattern on the body and the amount of tissue removed were consistent with feeding by multiple predators simultaneously.
9.	There were wolves within a few meters of the body when the body was discovered, and the continued presence of vocalizing wolves during the body recovery.
10.	The snow and vegetation surrounding the body when it was discovered at its final location was undisturbed. That indicates the partial remains of the body, consisting of roughly half of the initial body mass, were dragged from the kill site just prior to the arrival of the final search party. Therefore the body was not dragged immediately after the kill, nor fed upon at its final location.
11.	Plasticized fabric was recovered from the gut of 1 of 2 wolves killed near the attack site 2 days after the incident. Human hairs were recovered from the gut of both wolves killed after the incident.
12.	Aggressive behavior by 2 habituated wolves directed at 2 men had been documented and reported within 1 km of the attack site 4 days before the attack.

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APPENDIX A. Unpublished documents examined by Mark McNay during preparation of the attached report.

1. Report by Dr. Paul Paquet and Dr. Ernest Walker: "Review of Investigative Findings Relating to the Death of Kenton Carnegie at Points North, Saskatchewan." 8 August 2006. 29 pp.
2. Forensic Diagnostic report – Dr. Ernest Walker. 2 pp.
3. Notification of Death – Coroner Rosalie Tsannie-Burseth, 12 December 2005, 1 pp.
4. Genetrack Biolabs DNA Forensic Identity Documents – Dr. Edmond Wong. 13 March 2006. 3 pp.
5. Letter from Chris Darimont, Department Biology, University of Victoria, to Dr. Ernest Walker regarding identification of hairs found in gut of wolves killed near Points North. 8 June 2006. 1 pp.
6. (2) Wildlife Diagnostic Reports regarding necropsy of wolves. Reports #D0535454 and #DO535455. University of Saskatchewan – Dr. Ted Leighton. 21 November 2005. 4 pp.
7. Hand drawn map of incident scene drawn with notes – Investigating Officer Constable Noey, 9 November 2005.
8. Email message from Tim Trottier, SERM to Kevin Callele SERM, regarding investigation of incident and probable cause. 4 August 2006. 4 pp.
9. Typed transcripts of recorded witness statements of Mark Eikel recorded by Constable Noey, 9 November 2005. 11 pp.
10. Typed transcripts of recorded witness statements of Chris Van Galder recorded by Constable Noey, 8 November 2005. 4 pp.
11. Typed transcripts of recorded witness statements of Robert Burseth recorded by Constable Noey, 9 November 2005. 8 pp.
12. Handwritten transcript of witness statement of Todd Svarckopf recorded by Constable Noey, 8 November 2005. 4 pp.
13. Typed transcript of recorded telephone interview of Todd Svarckopf by Constable Marion regarding encounter with wolves near Points North airstrip on 4 November 2005. 13 March 2006.
14. Typed notes detailing the timeline and activities of the RCMP investigation of Kenton Carnegies' death between 8 November 2005 and 21 November 2005. The document included typed paraphrase of witness statements of Mark Eikel, Chris Van Galder, Todd Svarckopf, and Bob Burseth. 15 pp.
15. Email from Constable W. Marion to Fran Stevenson re: Sudden death – Wollaston Lake Det File #2005864612. 10 November 2005.
16. Saskatchewan Environmental Intelligence Report detailing timeline, and activities of investigation of Kenton Carnegie's death at Points North by Officers Kelly Crayne and Mario Gaudet. 1 August 2006. 3 pp.

17. Necropsy report, Lab No. ML-PM-109-05 by Dr. M. Brits, pathologist. Revised 12 January 2006. 5 pages accompanied by cover letter from Kent Stewart, Chief Coroner to Ms Lori Carnegie, Oshawa, Ontario.
18. Report of Coroner, accompanied by cover letter from Kent Stewart, Chief Coroner to Mr. and Mrs. K Carnegie, Oshawa, Ontario. 6 pp.
19. Email correspondence between Lori Carnegie and Dr. Vince Crichton, regarding presence of bear tracks near the scene of the incident. 4 pp.
20. Seventy-six digital photographs taken at the scene of the incident by Constable A. Noey on 8 and 9 November 2005. Photos were numbered PICTO914 through PICTO989.
21. Four digital photographs taken by Chris Van Galder of wolves encountered near the Points North Airstrip on 4 November 2005. Photographs were numbered Van Galder Wolf 1 through Van Galder Wolf 4.

APPENDIX B. Description of encounter between 2 wolves and Todd Svarckopf and Chris Van Galder that occurred on 4 November 2005 at Points North, Saskatchewan. This description was written by Mark McNay based on the transcript of a taped telephone conversation of 13 March 2006 between Todd Svarckopf and Corporal W. Marion of the RCMP.

Todd Svarckopf and Chris Van Galder were stationed at the Points North camp near Wollaston Lake, Saskatchewan in autumn 2005. They were employed by Sanders Geophysics, their jobs were aviation related and on 4 November 2005 flights from Points North were canceled because of poor weather. On that day, the 2 men decided to walk out to a nearby junkyard to look at several old, abandoned aircraft. They crossed the camp's runway about midpoint and continued into an extensive area of boreal forest. Only a few hundred meters from the camp compound, they were approached by a large dark wolf. They started to retrace their steps toward the camp, but the wolf walked directly up to Todd, who told Chris, "whatever we do, we don't turn and run." Todd yelled at the wolf and it retreated a few steps. The men continued to back away but the wolf pressed forward. When a second, light grey wolf appeared; Todd turned to face it. The dark wolf focused its approach on Chris Van Galder, the smaller of the 2 men. It walked directly to Chris and did not retreat when Chris yelled, instead it approached to within a meter and sat in front of Chris who called out to Todd. When Todd turned, the grey wolf advanced toward his back, so Todd turned and confronted the wolf causing it to retreat. Todd made his way over to Chris and handed Chris a length of a dead spruce dead limb. Todd also armed himself with 2 solid spruce limbs, about a meter long and 4 cm in diameter. He poked one at the wolves and used a swinging motion with the other to keep the wolves at bay. With Chris behind him Todd was able to confront both wolves and they moved toward the edge of the brush line along the runway. The animals remained beyond the reach of the sticks but pressed toward the 2 men. Todd had the feeling the wolves were trying to separate them. Upon reaching the edge of the brush line the wolves positioned themselves between the men and the runway as if trying to herd the men back into the heavier cover, but Todd and Chris moved out of the forest and onto the open runway. At that point Todd expected the wolves to retreat into the forest, but instead the wolves remained with the men as they moved toward the camp. The men kept the wolves at bay with the spruce poles until they reached the camp compound where the wolves finally stopped and retreated. Chris took several pictures near the end of the encounter to document the wolves' behavior. The men reported the wolves never growled or barked, but snapped their teeth and jaws, and a snarling behavior can be seen in the photographs. The entire incident lasted 10–15 minutes. The men reported the encounter at the camp, trying to warn their coworkers about the aggressive nature of the wolves, but the others jokingly accused them of teasing the wolves. In the minds of both Svarckopf and Van Galder, their lives had been threatened and they felt lucky to have returned unharmed.

Todd also told Corporal Marion that the staff who took the Points North camp garbage to the dump reported seeing 4 wolves feeding on the garbage including the lighter colored wolf and the larger dark wolf. (Note: Todd described wolves as 1 grey and 1 white, photos of wolves showed one to be a dark charcoal wolf with white saddle, white tip on tail, grizzled whitish muzzle, and grizzled white feet. I have described the wolves as darker and lighter colored wolves in my description to substitute for Todd's description of a grey (dark: charcoal/blue) and white (light: grey/tawny).

(Photographs by Chris Van Galder)

APPENDIX C. Analysis of wolf and bear track patterns.

FIGURE 4. Author used his dog at different gaits to illustrate typical canid track patterns at walk, slow trot, and faster trot. The dog is a tall, 85 lb male with a 26-inch trotting stride. Note the flexibility in the front foot vs. that of the hind foot. That stiff hind foot position often results in long thin drag marks between track pairs as seen in Figures 5–7. (Photograph by Mark McNay, Fairbanks, Alaska, March 2007)

FIGURE 5. Fresh tracks of author's black Labrador dog trotting in approximately 4 cm of fresh snow. Direction of travel is noted by arrow at bottom of picture. Note paired tracks typical of trotting canid. Bottom pair is right front and right rear. Long thin drag mark to the left of bottom track is from left hind foot, (left tracks are second pair from bottom). Note short drag marks at back of some tracks, not others. Also light powder snow deposited in front of track. (Photograph by Mark McNay, Fairbanks, Alaska, March 2007)

FIGURE 6. Walking track of author's black Labrador dog in 4 cm of fresh snow. Hind foot tracks fall into front tracks. Hind foot drag marks are seen as a thin line between tracks. Note the short drag marks behind tracks. If the placement of a hind foot into the front track is not exact, an enlarged misshapen track results, as illustrated by the middle track above. Coincidentally, in this case the track takes the shape of a small bear track. (Photograph by Mark McNay, Fairbanks, Alaska, March 2007)

FIGURE 7. Dog tracks at a slow trot. Front and rear tracks in each pair are only slightly offset from a centerline of travel. The hind foot thin-line drag in front of the track is often of different size and shape. Here, it is pronounced in the middle track, but not in the other tracks. (Photograph by Mark McNay, Fairbanks, Alaska, March 2007)

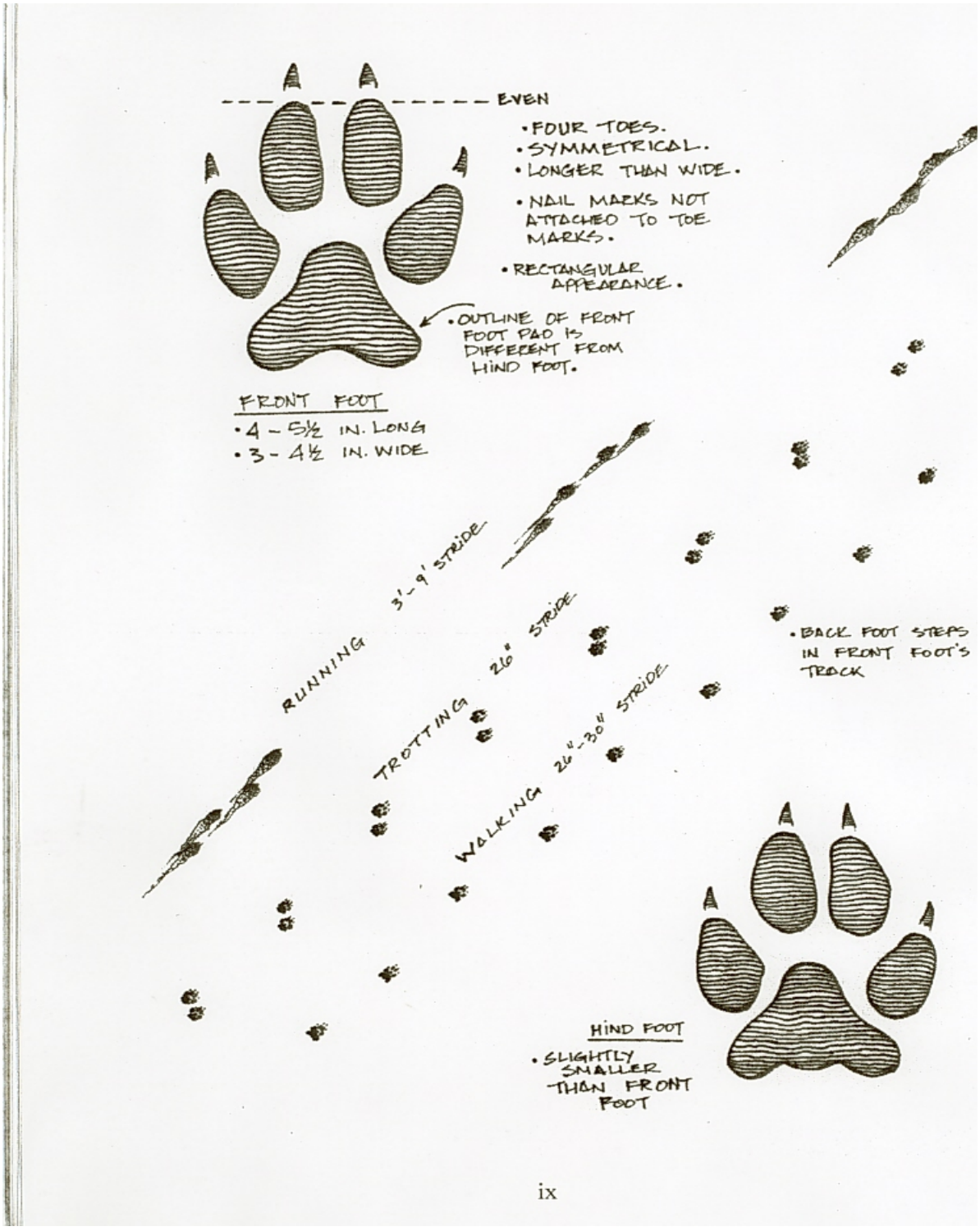

FIGURE 8. Track patterns of wolves moving at different gaits. Walking wolves typically leave a single track impression evenly spaced, trotting wolves leave paired track impressions also evenly spaced and close to the line of travel, running wolves leave 4 tracks also close to the line of travel. Note how these patterns differ from those of a walking, loping, and bounding grizzly bear shown in Figures 15–19. (Alaska Trappers Association, 2006.)

FIGURE 9. RCMP Photo 978 taken by Constable Noey on 9 November 2005 near the location of Kenton Carnegie's death. This photo shows slush-filled tracks on a lake adjacent to the attack site. A single wolf track can be seen in the near foreground (lower left corner of the photograph, also see A in Figure 11).

The shape of the large tracks on the ice in the lower right part of the picture is similar to the shape of a bear track in mud. It is apparent from drag mark patterns that the animal was traveling away from the shore. Therefore, if the tracks were made by a bear, it was moving backwards. Regardless of the individual track shape, the paired pattern of tracks moving to the left is typical of a trotting canid. Two sets of fox tracks can be seen on the ice closer to the shoreline and partially obscured by shrubs.

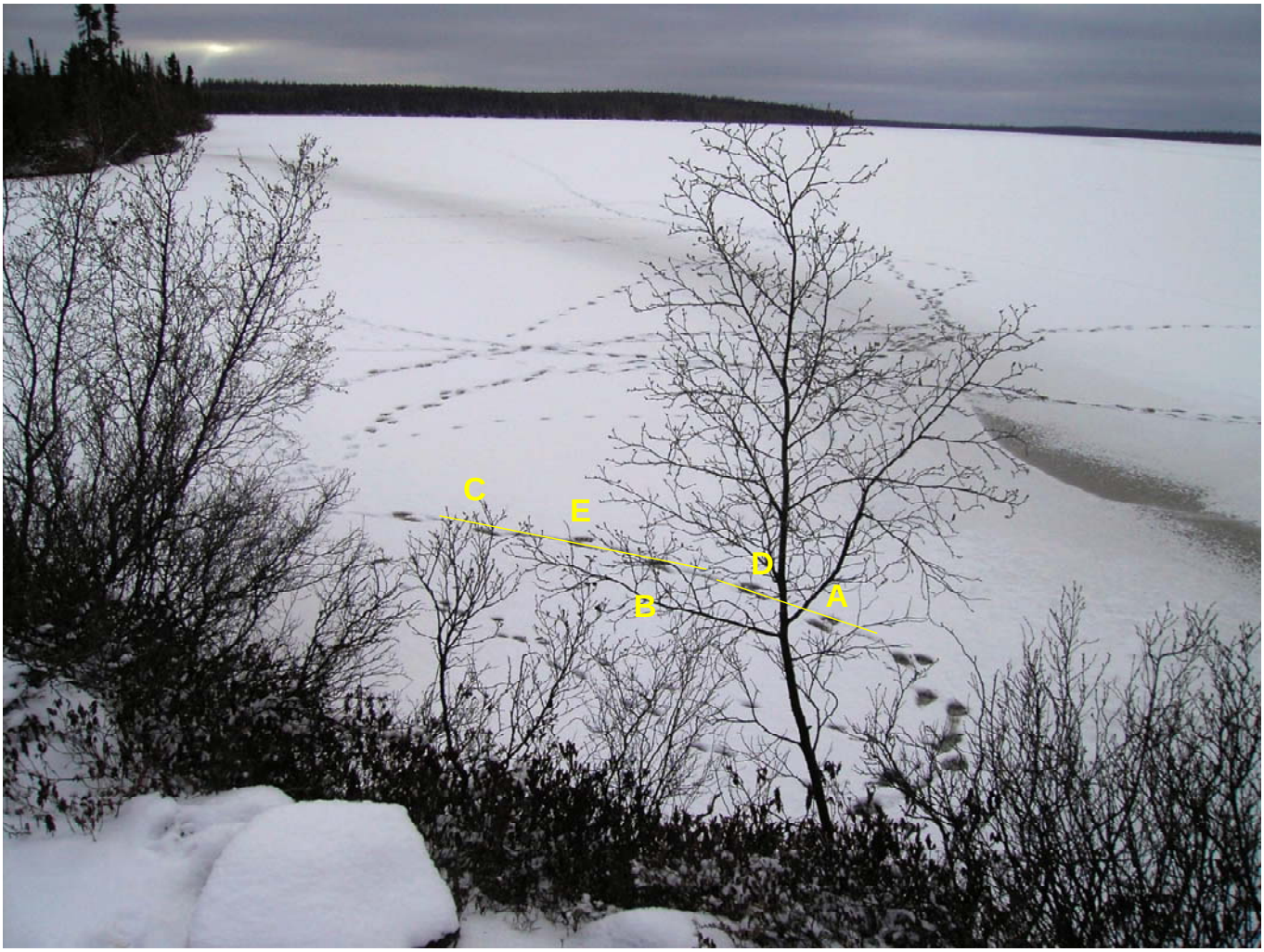

FIGURE 10. Traveling away from the lake shore, the animal turns left and trots on a slightly curved path toward dry ice (seen in the left hand portion of the photo where overflow is not seeping into tracks). The tracks fall close to a straight line but are offset slightly. The pairs of tracks at A, B, and C are left tracks (left front and left rear), the tracks at D and E are right tracks (right front and right rear).

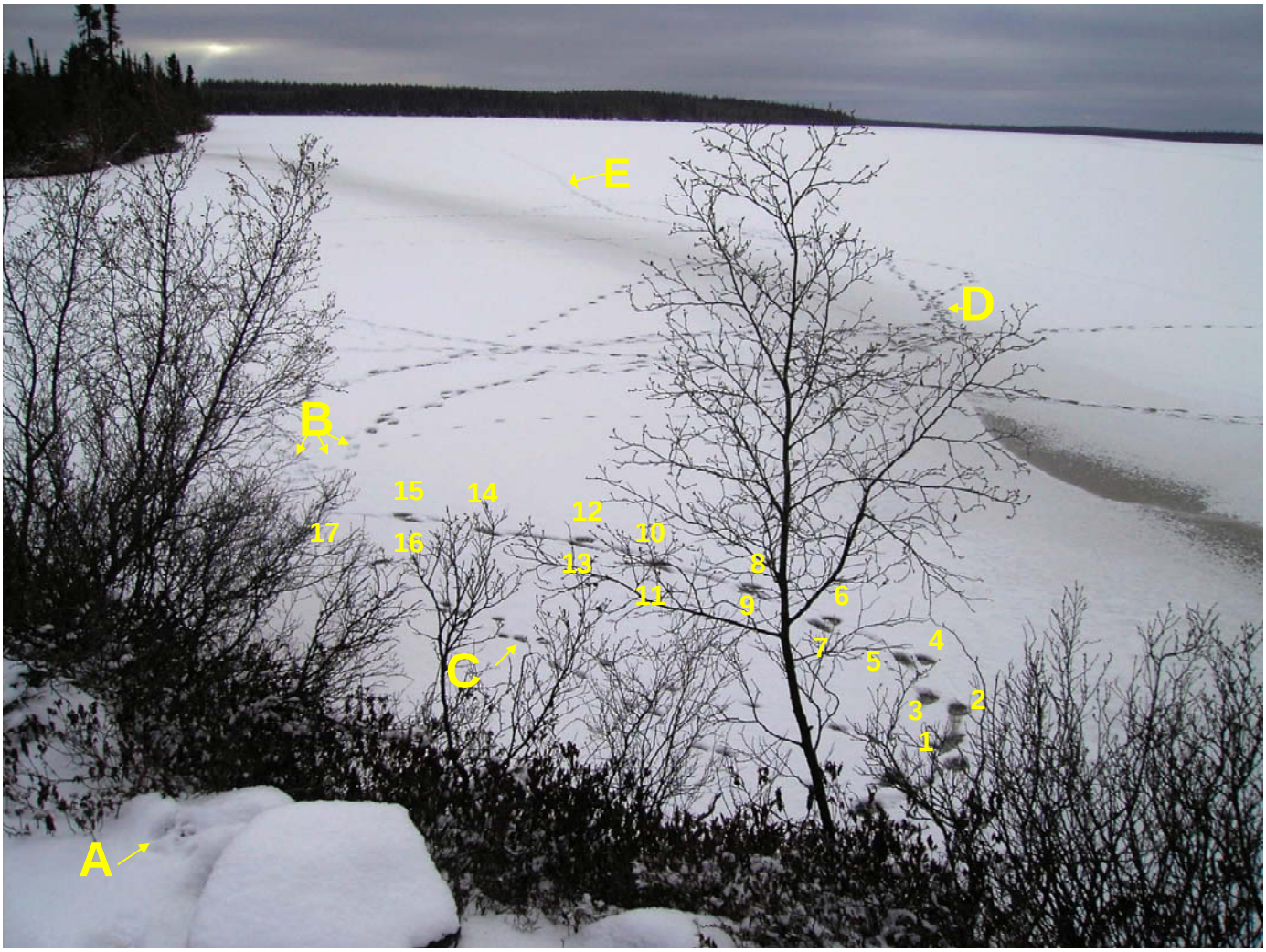

FIGURE 11. RCMP Photo 978 showing what appears to be a wolf track in lower left corner (A). Tracks on the ice are those of wolves and foxes. Numbered wolf tracks 4–17 show typical trotting pattern of canid. Track 1, 2, and 3 are walking tracks of a wolf as it steps through deep water that was under the snow surface. Large size of tracks 1, 2, 3 resulted from overflow melting snow and because 1, 2, and 3 represent both a front and rear foot in the same track.

The typical canid trotting pattern begins with track pair 4, 5 and continues to 17 where the animal walked onto dry ice/snow. Drag marks between tracks are typical of hind foot dragging. When the animal emerges from the overflow at 17, the size of track is same as tracks shown at B. All of those appear to be wolf tracks (Figure 12). At tracks 10, 11, and 14 the hind foot track merges with the front track, so that it appears a single track, similar to the pattern seen in Figure 7.

At least 3 track sets can be discerned at D, single line of paired trotting tracks typical of canid can be discerned at left edge of D track set. Track at E is typical of several wolves traveling single file in the same track trench. Tracks at C represent 2 fox tracks, one a walking track (upper) and the other a typical paired trotting track (lower).

FIGURE 12. Close-up of tracks at B from Figure 11. Those appear to be wolf tracks based on approximate size and shape. Track at 17 is consistent with those tracks at B.

FIGURE 13. Close-up of track pairs 4–5, 8–9, and 10–11 from Figure 11 showing drag marks which reveal direction of travel.

FIGURE 14. RCMP Photo 987 taken on 9 November 2005 by Constable Al Noey. This photo was taken near the kill site, further along the trail than tracks shown in Photo 978 (Figures 9–11). The wolf tracks shown here on lake ice depict movement both to and from the shoreline. The location of drag marks relative to direction of travel is clearly seen. Fox tracks are also apparent in several locations in this photo mixed among the wolf tracks.

FIGURE 15. Grizzly bear traveling at a walk in fresh snow (top). The large size of tracks, shuffling gait, considerable drag between tracks, and wide stance of tracks are illustrated in bottom photo. (Photograph by Patty Del Vecchio/Marty Webb, ADF&G; 8 May 2007; Ribdon River, Alaska)

FIGURE 16. Grizzly bear on a muskox kill. The wide stance characteristic of a bear track is illustrated by looking directly down track line leading to the kill. Tracks of a walking wolf would appear in a line, each track almost directly in line with all other tracks. (Photograph by Patty Del Vecchio/Marty Webb, ADF&G; 8 May 2007; Franklin Bluffs, Alaska)

FIGURE 17. Aerial view of grizzly bear tracks crossing a creek in shallow snow. The bear was at a lope when it reached the creek bank (A), as it stepped onto the ice it slipped and slid (B), after regaining its balance the bear broke into a faster, bounding gate (C) until it reached the opposite bank. After climbing atop the bank the bear walked through scattered brush exhibiting the characteristic wide-stanced walking gait (D) and began a slow trotting/loping gait across the open tundra (E). Note typical loping gait of a bear produces tracks in sets of 4 (A), while trotting gait of a canid produces tracks in sets of 2 as seen in Figures 5 and 9. The trotting gait that is commonly used by wolves and other members of the canid family, is not a normal gait used by bears; instead bears walk, lope, or run. (Geoff Carroll/Marty Webb, ADF&G; 23 April 2007; Brooks Range, Alaska)

FIGURE 18. Aerial view of bear tracks in shallow snow. Note occasional “pigeon-toed” placement of feet (A), and pattern of 4 tracks per grouping during a slow loping gait. (Photograph by Geoff Carroll/Marty Webb, ADF&G; 23 April 2007; Brooks Range, Alaska)

Fast Lope Walking

FIGURE 19. Tracks of a black bear at different gaits. Murie 1974 (pp. 28–30).

APPENDIX D. Dragging of large prey by wolves and characteristic patterns of wolf bites on humans.

FIGURE 20. A large moose calf killed by 2 wolves near McGrath, Alaska, August 2006. Portions of the nose, head, and hind legs were consumed in a few hours. A blood trail between the carcass and the stomach indicated this animal was dragged uphill about 20 m after it was eviscerated. The biologist who investigated this kill site estimated the carcass, in the condition shown here, weighed approximately 150 lb. (Photograph by Mark Keech, ADF&G).

FIGURE 21. Bite mark and bruising in shin of Canadian biologist Robert Mulders. The wolf that inflicted this bite approached Mulders and a companion as they were processing a live-captured caribou. After briefly circling, the wolf rushed forward and bit into Mulders leg (McNay 2002*a*: Case 19; Photograph courtesy of Robert Mulders). This bite mark is similar in size and location to that seen on the leg of Kenton Carnegie (Figure 23).

FIGURE 22. Bruise and apparent bite marks on the right shin of Kenton Carnegie, (RCMP Photo 926).

FIGURE 23. Close-up showing small bite mark type lesions on right shin of Kenton Carnegie's body (RCMP Photo 932). Note similarity to bite marks in Figures 21 and 25.

FIGURE 24. Bite wounds and bruising on the lower back and buttocks of a 6-year-old boy attacked by a wolf near Icy Bay, Alaska in April 2000. The wolf attempted to carry and then drag the boy away from approaching rescuers (McNay and Mooney 2005). The bite marks in this photograph are between ½ and 3 cm in length; many are similar to those found near the nose, eyes, and right arm of Kenton Carnegie's body in RCMP Photos 934 and 935. (Photograph courtesy of Alaska Department of Public Safety).

FIGURE 25. Bite wound and bruising behind the knee of a 25-year-old woman that was chased and bitten by a lone wolf at milepost 115 on the Dalton Highway in northern Alaska, July 2006 (Alaska Department of Fish and Game Files, unpublished). As in other initial wolf bites, the wound is relatively small, and is similar in size to the lesion seen on Kenton Carnegie's right shin in RCMP Photo 932.

APPENDIX E. Characteristics of wounds and feeding patterns caused by bear predation.

FIGURE 26. Typical feeding pattern of a black bear on natural prey (moose calf). Feeding is focused on only a portion of the carcass, and the hide is inverted and peeled back as feeding progresses, not stripped away before feeding. (Photograph by Mark Keech, ADF&G)

FIGURE 27. Wounds inflicted by a young polar bear on an Inuit hunting guide near Kimmirut, Baffin Island, September 2003. Claw marks typical of bear attacks are clearly shown. None of the marks apparent on the body of Kenton Carnegie (RCMP Photo 929) were similar to the distinct parallel patterns of claw marks shown in this photograph. (Information regarding this attack provided by Dean Cluff, Department of Resources, Wildlife and Economic Development, Yellowknife, Northwest Territories).

FIGURE 28. Claw marks on the body of a man killed by a grizzly bear near the Hula Hula River in northern Alaska, June 2006. None of the superficial marks on the body of Kenton Carnegie shown in RCMP Photo 929 resemble the well-defined claw marks apparent in this photograph. Also note that the left arm and the groin are partially buried by vegetation, a characteristic common to bear predation. (Photograph courtesy of Alaska Department of Public Safety).

FIGURE 29. Right side of the body of the same victim shown in Figure 28, illustrating claw marks and a focused pattern of feeding on a single site of the body. This body was found an estimated 2 days after the incident. A woman was also killed by the same bear in this incident (Figure 30). (Photograph courtesy of Alaska Department of Public Safety).

FIGURE 30. The remains of a woman killed by a grizzly bear near the Hula Hula River in northern Alaska June 2006. The bear focused its feeding on the pelvic area (A), and did not strip the clothing from the legs which remained intact (B). Partially burying prey is a common characteristic of bear predation and can be seen here (C). The feeding pattern shown both in this figure and in Figure 29 are dissimilar to that found on the body of Kenton Carnegie where predators fed on virtually the entire body within a few hours, and where none of the remains were buried. (Photograph courtesy of Alaska Department of Public Safety).