

**Carnivore – Visitor Use Patterns
within the
Long Beach Unit
of
Pacific Rim National Park Reserve
on the
West Coast of Vancouver Island**

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Carnivore - Human Interaction Research Project Report

Prepared For Parks Canada
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March 31, 2005

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Glossary

BGIU - Broken Group Islands Unit
COS - Conservation Officer Service
LBU - Long Beach Unit
PRNPR - Pacific Rim National Park Reserve
WCTU - West Coast Trail Unit

Executive Summary

There has been a noted increase in wolf-human and cougar-human encounters in the Pacific Rim National Park Reserve and adjacent areas in recent years. This has included increased wolf activity within the Long Beach and Broken Group Islands sections of the park and adjacent areas. Cougar activity has been sporadic with activity peaks occurring when one or more animals are frequenting an area. The question that this presents is what is causing this increase? The larger PRNPR carnivore project is seeking to answer these questions through a number of projects. The purpose of this section of the project is to update the wildlife and visitor databases, document the data and look for correlations between wildlife encounters and visitor numbers. The number of visitors to the West Coast Trail and Broken Group Islands unit of the parks has been relatively stable over the last 10 years. The number of visitors passing through the Long Beach Unit has seen a steady increase in traffic, with most traffic during July and August each year and annual visitation peaking at over 750,000 visitors to the Long Beach Unit in 2003. Activity in Barkley and Clayoquot Sounds outside of the park units has not been consistently documented. Visitors who travel to the region by boat are largely unrecorded with no recent data on boat traffic available. Based on the recorded wildlife observations in the region and visitor data, both the number of wolf and cougar observations and encounters have been increasing as have the number of visitors. Whether or not there is a causative relationship can not be determined with the available data. The increased number of visitors coupled with improved wildlife encounter recording likely accounts for some of the observed correlation. Aggressive wolf activity is known to have increased in recent years separate from improvements in reporting and visitor numbers and can be strongly tied to feeding and intentional habituation of wolves both within and outside of the park.

Introduction

There has been a marked increase in wolf and cougar carnivore activity in and around Pacific Rim National Park in recent years. There have been a number of high profile wolf incidents, including an attack on a visitor in Clayoquot Sound in 2000 who suffered serious injuries in the incident. There have also been a number of fatal attacks by wolves on dogs. Habituation and food conditioned behaviour in the Broken Group Island culminated in 2004 with the destruction of a wolf by a park warden. There has also been increased wolf activity in the adjacent villages which has been a source of concern for local residents. The cougar incidents have included stalking incidents on the West Coast Trail, standoffs and the starvation death of a young cougar that was subsequently found by hikers on the trail.

These incidents have led to questions about the cause of these increased encounters. It could be changes in the surrounding habitat, including increased building and encroachment by humans into previously uninhabited areas. It could be the hundreds of thousands of people who visit the park and surrounding area annually. It could be learned behaviour. It could be feeding and intentional habituation of wild animals by humans, of which several incidents are known.

Human - carnivore conflicts have been an ongoing problem globally for many years with many different actions taken to resolving this problem ranging from the establishment of protected areas to the deliberate extermination of carnivore species (Treves and Karanth 2003). The wolf was once widely despised and hunted but in recent years has come to symbolize wildness and be viewed more affectionately by the general public (Kellert et.al. 1995). The changing view on the role of wolves in the ecosystem has afforded it some protection but may also encourage deliberate seeking out of wolves and habituation.

Previous work on bears has found a connection between population increases and the number of bear attacks in BC (Herrero and Higgins 1999). This work found that the vast majority of the attacks occurred with small groups of 1 or 2 people in back country areas. It was thought that the increased human activity in previously uninhabited back country areas was a contributing factor to the increased attacks. Human sourced food and garbage was found to contribute to only a small proportion of the bear attacks.

Methodology

Area of Study

The Pacific Rim National Park Reserve is along the outer coast of Vancouver Island, spanning from Port Renfrew in the South to Tofino in the north (Figure 1). The park is split into three management units - Long Beach Unit (LBU), Broken Group Islands Unit (BGIU) and the West Coast Trail Unit (WCTU). Adjacent to the park are a number of

communities, including Port Renfrew and Bamfield near the WCT unit and Tofino, Esowista, Ucluelet and Ittattsoo near the LBU.

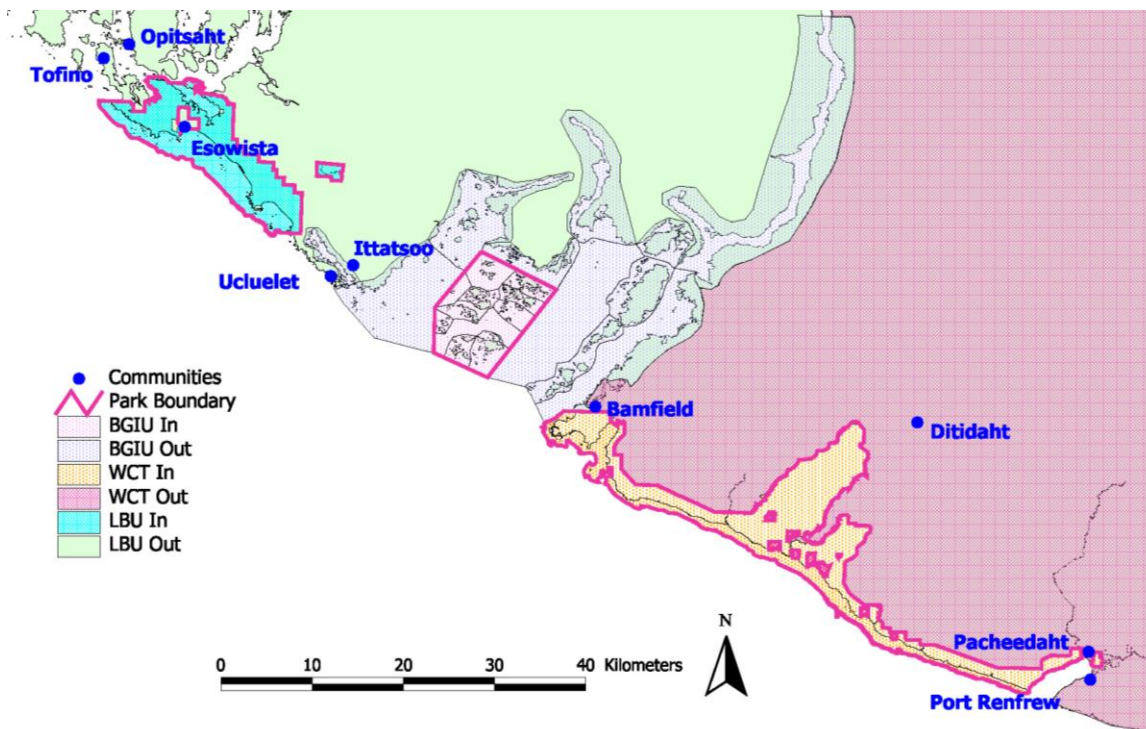


Figure 1. Location of Pacific Rim National Park Reserve park units in relation to Vancouver Island.

The units used for analysis correspond to the three major park units, identified as LBU - In, BGIU - In and WCTU - In to indicate the park unit and that it is within the park boundaries. The other three units refer to the adjacent areas to these park units and are identified as LBU - Out, BGIU - Out and WCTU - Out to indicate the park unit that the area is next to and that it is outside of the park boundaries. Port Renfrew and Bamfield are in the WCTU - Out, all of Barkley Sound except the BGI is in the BGIU - Out and the remainder, all of the communities on the northwest side of Barkley Sound, including Clayoquot Sound, are in the LBU - Out area (Figure 2).

Figure 2. Location of Pacific Rim National Park Reserve park units, inside and outside of park boundaries, with locations of communities (see Figure 3 – combines all information).

Within each unit are a number of subunits. These subunits indicate the within unit areas used in management actions and for wildlife analysis (Figure 3). Subunits are also being developed for the area outside of the park, but have not been finalized.



Location of Pacific Rim National Park Reserve park units, inside and outside of park boundaries, with locations of communities.

Figure 3. Location of Pacific Rim National Park Reserve park subunits, inside and outside of park boundaries for LBU (a), BGIU (b) and WCTU (c).

Visitor Data

Visitor data in the PRNPR region has not been consistently and methodically collected over a long period of time with a few exceptions. Long Beach Unit traffic counter data has been collected since the inception of the park with data collection beginning in 1972. However, the interpretation of this data has not been standardized. Since all traffic to Tofino and Clayoquot Sound must pass through the park, the counter data is confounded by resident traffic. There are also gaps in the data when the traffic counter was not operational. The most significant gap was from December 1999 through to June 2001 during which time the counter was not operational. Upon resumption of this service, modifications were made to more accurately reflect visitor numbers. This included the addition of a traffic counter at the west entrance to the park and counts of traffic travelling in both directions. These numbers are used with a formula based on visitation numbers generated from the 2001 visitor survey to calculate the number of visitors who stop in the park.

Within the Long Beach Unit there are also a number of other data sources for visitor information. Trails have counters at their entrances. However, this counter data is not calibrated and as such is of limited value at this time. There are plans to calibrate the

counters and begin collecting usable data in the coming year, but the data from previous years will likely not be salvageable. A trail use estimate was completed in 1998 that graded the trails based on usage categories. This provides a general estimate of visitor use in specific areas of LBU.

The surfguards at Long Beach collect beach and water use data. This information provides numbers of people in the water and on the beach at Long Beach. In recent years, the specific water activities have also been recorded (i.e. surfing, kayaking).

An exit survey was completed in 2001 that queried visitors to LBU about their activities in the park and a number of other questions about park use and impressions / knowledge about the park (Thomlinson 2002).

Permits have been the most consistent means of tracking visitors to the WCT and BGI. For the BGI, this provides information on group size, the number of visitors and the length of stay. What is missing from the BGI data is the number of visitors that come on boats and are either day visitors or stay overnight on vessels. It has been estimated that nearly half of the visitor traffic to the BGI is part of this non-permit boat category that is not counted in the permit information.

Non-park visitor data has been collected at the visitor information centres in Ucluelet, Tofino and at the junction info centre near the entrance to the Long Beach Unit. The visitor centres in the region have experienced a number of changes in the last several years, with extended closures, new construction and expanded services confounding the interpretation of the data. Furthermore, this data only records actual visitors to the information centres and there is no information available on what proportion of visitors to the region visit these centres. The centres also record information on what types of information has been requested. This provides an idea of what activities people are interested in pursuing when visiting the region. The information is collected by the Chamber of Commerce in each town and forwarded to Tourism BC where it is collated and stored for use in their general annual statistics reports.

The changes in collection methods of visitor data over time in the different units of the park and the surrounding areas makes it difficult to compare the regions over an extended period of time. There is no non-park visitor data available for Port Renfrew or Bamfield and the data available for Tofino and Ucluelet does not provide overall visitor numbers to the region. This necessitates that only park visitor data can be used when evaluating overall numbers of visitors to the region. While the park does account for a large number of the visitors to the region, not all visitors to the region will be included in this group, and for the Broken Group Island Unit this underestimate of overall visitor numbers could be significant due to unaccounted for boat traffic.

Carnivore Data

Wildlife observations have been recorded for PRNPR from the inception of the park. A wildlife database program was developed in the mid-1990's and these historical records were added to the database. These early records usually refer to an occurrence report and

do not contain detailed information within the database. General observation and encounter records were first recorded in large numbers using the database in 1996. A more concerted effort to track wildlife other than bears began with 1999 records following the wolf attack in Clayoquot Sound in 2000. The wildlife database has undergone many changes since 1999. Additional fields have been added each year to refine the tracking of specific events and an effort has been underway to improve reporting of both observations and encounters, with deployment of the database to all PRNPR park wardens in 2003 and to other park staff in 2004 to encourage prompt reporting of all sightings and incidents. Historical records also continue to be entered and existing records are updated on an ongoing basis with the additional fields.

Conservation Officer Service records have been incorporated into the database in recent years for the areas surrounding the park. Most of the areas adjacent to PRNPR are covered by the Port Alberni office of the COS. The exception is Port Renfrew which is covered by the Victoria office. The COS implemented a web-based province-wide wildlife occurrence tracking program in mid-2002. This streamlines the process of querying wildlife occurrences across regional lines. Prior to the current web-based system, each office maintained its own records. Records from the COS were obtained and entered into the PRNPR Wildlife Database. Port Alberni region records (for Ucluelet, Tofino, Esowista, Ahousaht, Bamfield and the surrounding areas) for 1997 through 2004 were incorporated into the database. Port Renfrew records for mid-2002 through 2004 were incorporated.

The detail that is recorded for the wildlife observations includes the numbers of animals seen, the number of animals based on sign only (for tracks or scat, etc.), reaction behaviours, location, the identity of the reporting person (both their name and type - ie resident, visitor), mortality incident and food conditioning behaviours. Additional encounter information is also recorded to characterize encounters based on where the animal was, more specific reaction behaviour and who controlled the encounter. The intention with the database is to encourage various data entry people to enter observations as they occur but for only trained wildlife wardens to enter specific encounter information to ensure that the encounter information can be used with certainty to inform wildlife management decisions. Each field and table in the database is documented within a metadata table in the database that will be included in the data compendium. Parks management actions are recorded in the wildlife database with three main action types - advisories, warnings and closures.

The wildlife observation locations are based on a locations list with over two thousand location entries with the goal of recording locations to within 100m of the actual location. Many of the observations are recorded with this detail with a few exceptions due to insufficient data. There are four levels of location detail recorded - park unit, indicating which of the three park units the observation occurred in or adjacent to (Figure 2), subunit corresponding to a subunit list for each park unit (Figure 3), location corresponding to the locations list and actual UTM coordinates. For many of the locations in the locations list, UTM coordinates are automatically entered. The option is also available to enter UTM's for a specific location when available. This level of location

detail is being encouraged to retain as much detail as possible to track animal movement and especially to note areas of high activity and encounters to better inform management actions.

Visitor / Carnivore Correlations

Due to the limitations of the visitor data and to provide a general overview of the wildlife situation, the wildlife observations were grouped into 6 major units for this report, the 3 park units and the adjacent areas (Figure 2). Furthermore, since there is no overall visitor data for the region outside of the park, and to control for observations in residential areas, for the comparison only wildlife observations and encounters that occurred with the park boundaries was used. Total number of animals and number of animals from encounters were compared to visitor data for each of the three main within park units. Wildlife observations and encounters are recorded year round, but activity peaks are in July and August and regular service begins in March or May and extends to September. Due to the seasonal nature of the PRNPR operations, the average number of visitors and the average number of animals was compared per month to control for this.

Results

Visitor Data

Within Park visitor data shows a consistent increase in cars entering the park in the LBU based on the traffic counter data from 1972 through to 2004 (Figure 4). Car traffic is consistently higher in July and August with June and September as season shoulder months (Figure 5). The number of visitors to the long beach unit has increased in all months in the last several years (Figure 6). The number of visitors in recent years exceeds 1 million visitors that stop within the park and continues to rise (Figure 7). The number of user nights in the BGIU has been stable over the last ten years, even declining somewhat in the last couple of years (Figure 8). These user nights are based on the number of visitors to the BGI who purchase permits for a set number of nights. Non-permit visitors such as boat traffic are not represented in this dataset. This traffic may have increased in recent years with the addition of services at the Toquaht campsite and with the development of the Salmon Beach vacation destination, both on the north-west side of Barkley Sound, but there is no available data on this. The number of overnight hikers on the West Coast Trail declined from the mid 90's, stabilizing over the last four years at about 5,500 overnight hikers annually (Figure 9) and about 33,000 user nights annually.

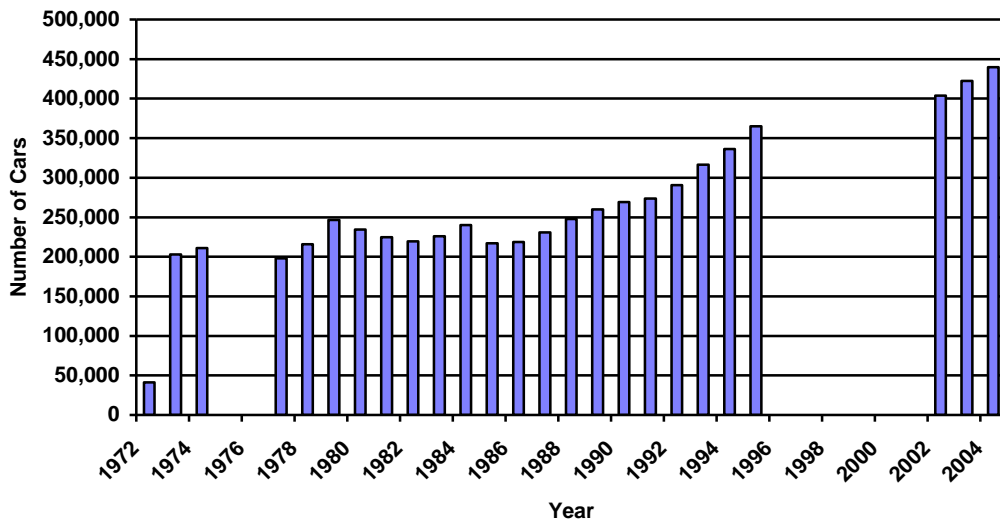


Figure 4. Number of cars entering the Long Beach Unit, 1972 to 2004. The number of cars entering the long beach unit per year based on the car counter for the west bound traffic at the east entrance of the park. The number represents the total number of cars entering into the park via the east entrance, not the number of cars that stopped in the park or the number of people. Years 1972 to 2004 were used, with some omissions during that period due to the problems with the functioning of the car counter. Only years in which all months were completed were used.

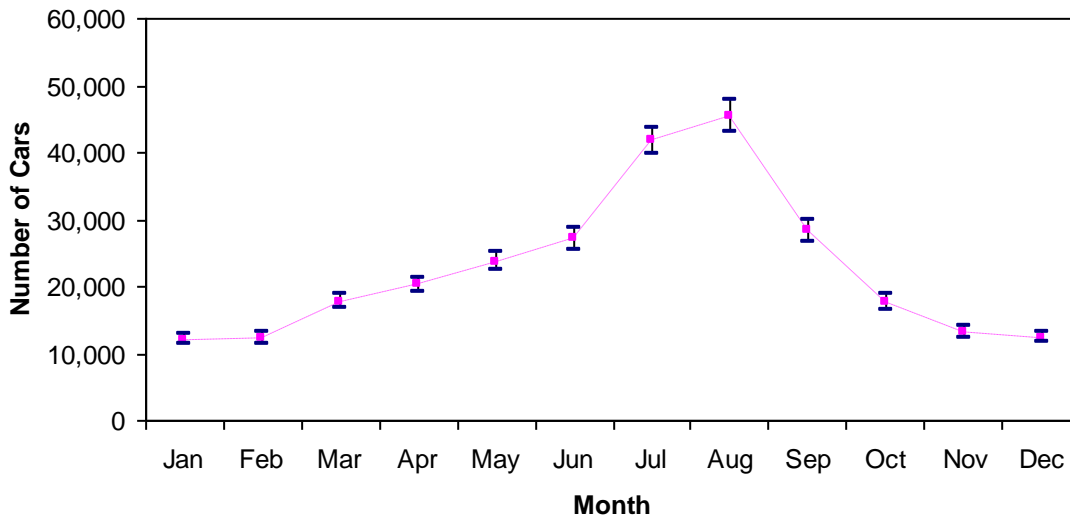


Figure 5. Average of cars entering the long beach unit per month with standard error bars based on the car counter for the west bound traffic at the east entrance of the park. The number represents the total number of cars entering into the park via the east entrance, not the number of cars that stopped in the park or the number of people. Years 1972 to 2004 were used, with some omissions during that period due to the non-functioning of the car counter, most notably between December 1999 and June 2001. Months with incomplete data were omitted.

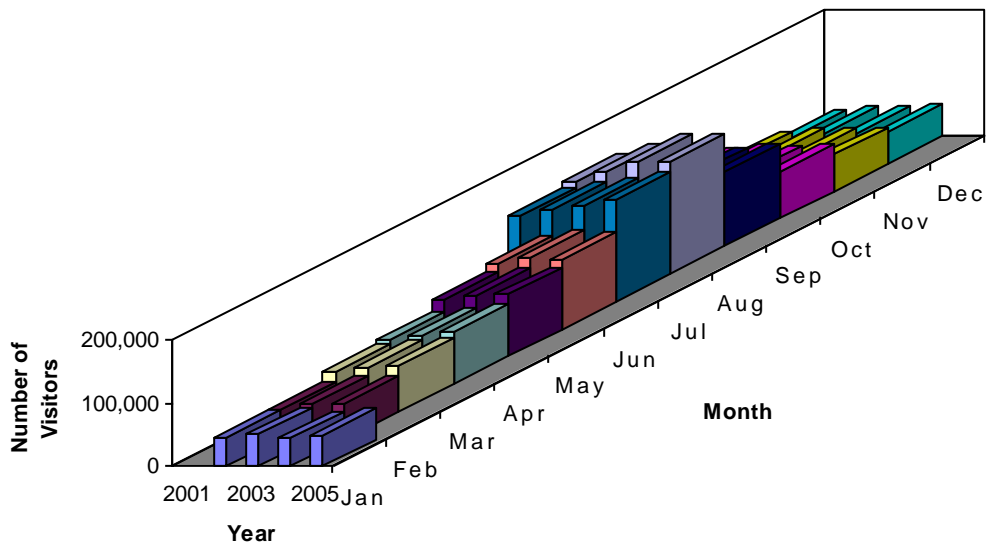


Figure 6. Number of visitors stopping in the long beach unit per month based on the car counter and visitor calculation derived using visitor stoppage data from the 2001 Entrance Survey. The data for this calculation began to be collected in mid-June 2001. Months with incomplete data were omitted.

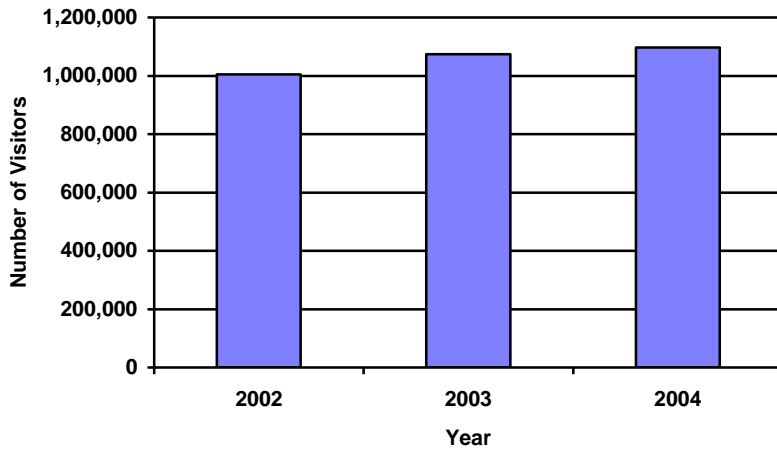


Figure 7. The annual number of visitors stopping in the Long Beach Unit of PRNPR. The number of visitors was calculated based on the car counter at both entrances to the park and the visitor calculation based on visitor stoppage from the 2001 Entrance Survey. Only years in which all months were completed were used.

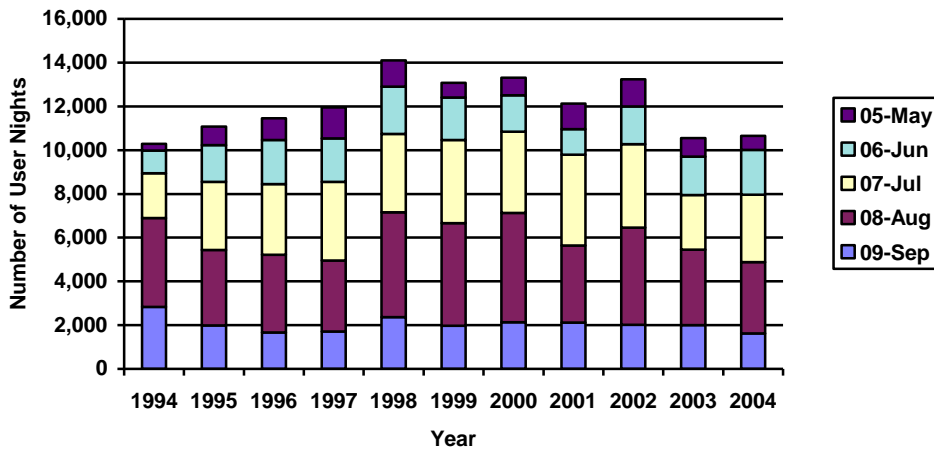


Figure 8. The number of user nights in the Broken Group Islands Unit of PRNPR from 1994 through to 2004. The number of user nights was calculated by multiplying the number of people in each group by the number of nights each group stayed in the BGIU. The numbers reported are suspect and should be regarded as relative estimates. User nights is based on permits and does not include the number of people staying on boats, which has been estimated to be about 10,000 people per year.

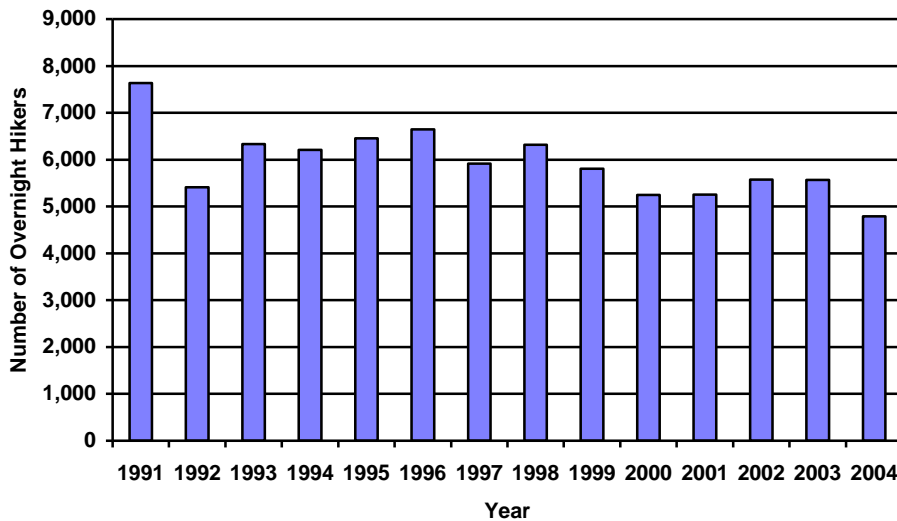
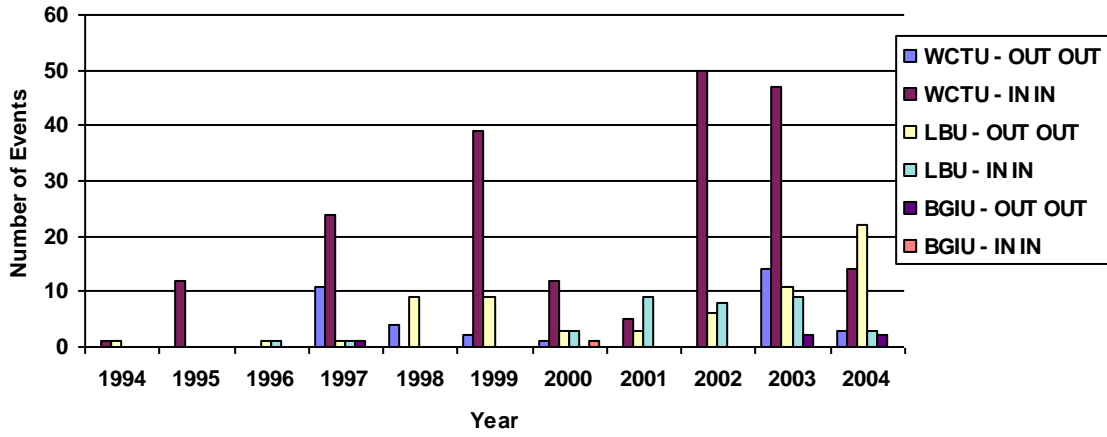


Figure 9. The number of overnight hikers on the West Coast trail from 1991 through to 2004. The number represents the total number of overnight hikers who purchased permits to use the trail, not the number of user nights.

Carnivore Observations

The number of wolf and cougar encounters has increased dramatically since 1994. Cougar observations occur sporadically at somewhat regular intervals, but wolf observations and encounters began in large numbers for the first time in and around the park in 1999. Observations dropped in 2000 and have risen each year since (Figure 10). Encounters have been more consistent. Cougar encounters were high in 1997 and fluctuated annually since then, with no discernible trend evident. Wolf encounters began in 1999 and have also fluctuated since then with no discernible trends. The exception is with the Broken Group Island Unit which has only had wolf encounters in the last three years with high levels of activity in the last two years (Figure 11). Looking at the wildlife observations based on main reaction behaviour shows no discernible trends for the cougars. Wolves do exhibit an increasing trend of indifference and attack, follow and approach behaviour that centre around two peaks, one in 1999/2000 in the Long Beach Unit and the other continuing to increase in the Broken Group Island Unit (Figure 12).

(i) cougar



(ii) wolf

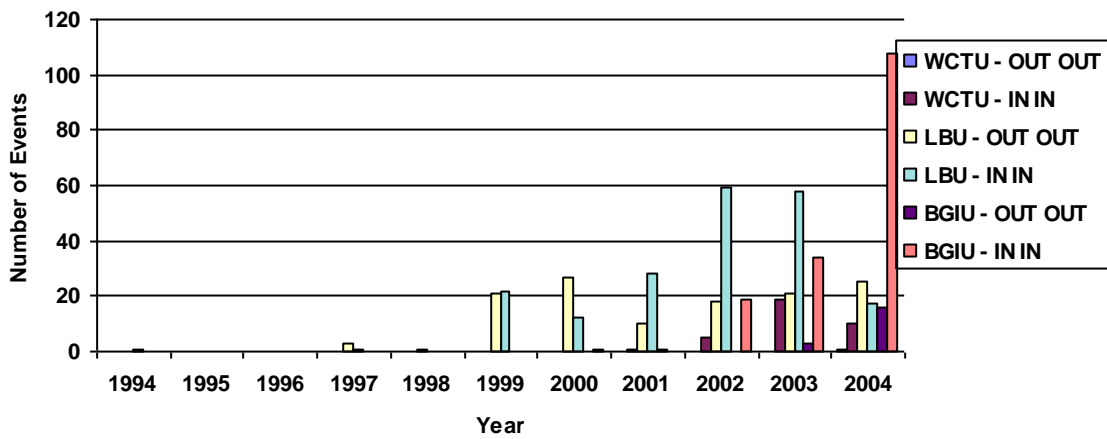
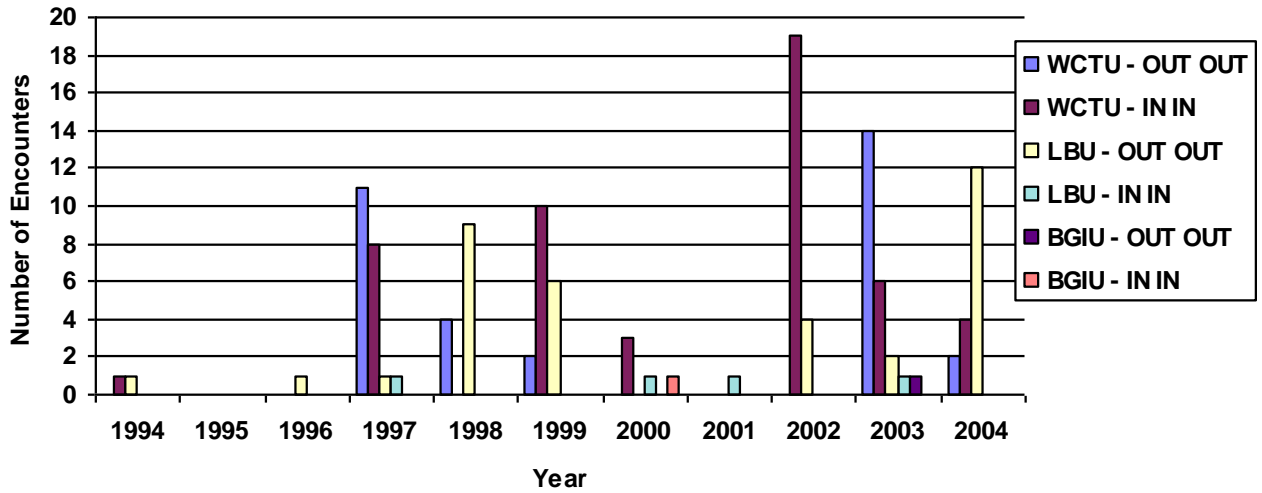


Figure 10. The total number of observation and encounter events (i - cougar, ii - wolf), either observed animals or observed sign, within the six park units for the years 1994 through 2004.

(i) cougar



(ii) wolf

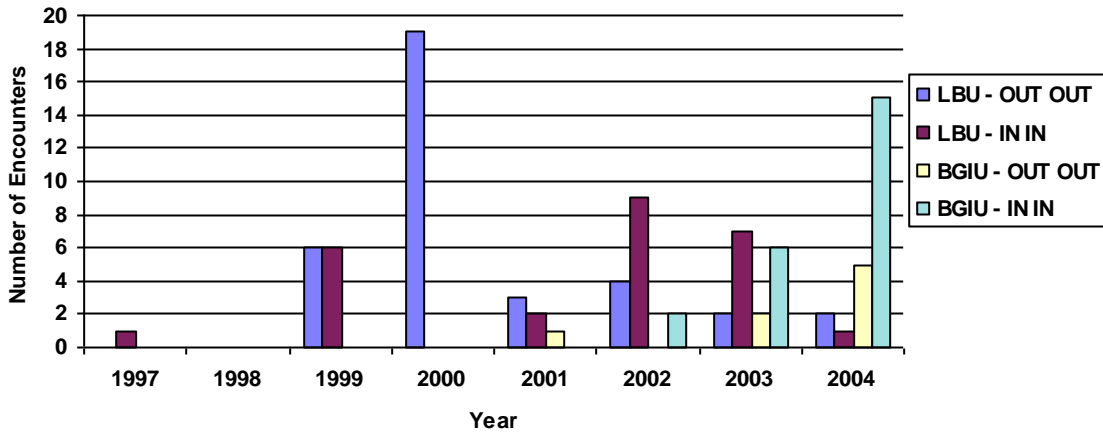
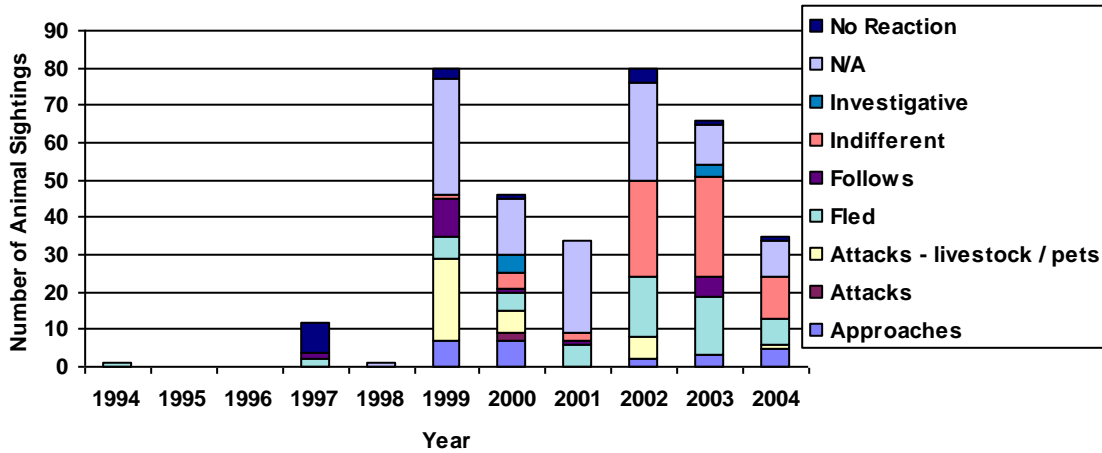


Figure 11. The number of encounters (i - cougar, ii - wolf) during the years 1994 through 2004 for the six main analysis units. Encounters refer to both encounters with people such as predatory stalking and attacks as well encounters of place including carnivore presence around tents and near residences.

(i) wolf LBU



(ii) wolf BGIU

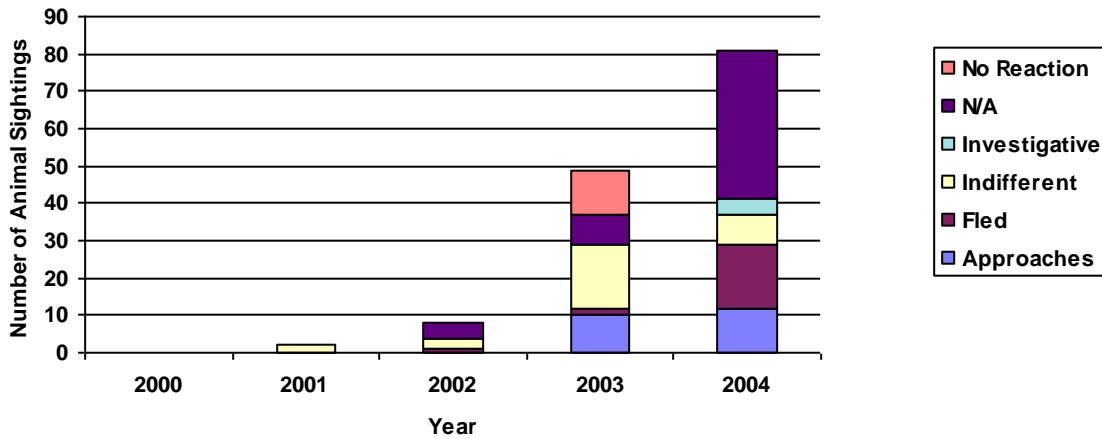


Figure 12. The number of animals (i - wolf in LBU, ii - wolf in BGIU) actually observed during the years 1994 through 2004 grouped into the main reaction categories. N/A refers to reactions that were either unknown or other that did not fall into a main category type.

Visitor Responses to Wildlife

There have reports of feeding of wolves in the Broken Group Islands and in Clayoquot Sound, with the resulting outcome of habituation and eventual destruction of wolves in response to aggressive and predatory stalking behaviour.

There was one incident in 2003 where 20+ people watched as a cougar came into a campsite area on the West Coast Trail. This interaction occurred for an extended period of time before a single hiker took action to scare the animal away, thus incurring the anger of his fellow hikers. This was despite a cougar alert and education package distributed to all hikers on the trail due to cougar behaviour including stalking and

apparent habituation. There was another instance in the LBU where a visitor only reported an encounter with a cougar after the fact for fear that the animal would be destroyed if she informed park staff.

These incidents clearly indicate a lack of understanding about the dangers of wildlife and the dangers of promoting or allowing wildlife to become comfortable around humans, both the danger to humans and to the animal. How widespread this is amongst visitors to the park can not be determined with the available information, but it continues to occur despite attacks and increased education and awareness programs.

Management Responses

Responses to the wolf incidents in the BGI consisted of closures to the areas frequented by the wolves such as the island with the den site, the issuance of warnings and educating visitors to the area and overall monitoring of the situation. The response of Parks Canada to the cougar incidents on the WCT involved expanding the education package distributed to hikers and monitoring of the situation.

Other than area closures, education and monitoring of the situation, there are few other options available. In 2000, the COS set leg traps in Ucluelet in response to the wolf activity and the fatal attacks on a number of pets in the region. This action prompted a complaint from an animal rights group from outside of the region and was not effective at capturing any of the wolves.

Table 1. Description of management actions in response to cougar and wolf activity in and adjacent to Pacific Rim National Park Reserve as recorded in the PRNPR Wildlife Observation Database.

Species	Date	Location	Description of Management Actions
Wolf	February 1999	LBU	First ever PRNPR wolf advisory issued. Information posters put up at all parking lots, trailhead and facilities (40 signs).
	March 1999	LBU	Second wolf advisory issued in response to attacks on dogs in areas adjacent to park. Second advisory warned of difficulty chasing off wolves and particular risk to dogs off-leash.
	February 2000	Ucluelet - Outside of PRNPR	COS set leg traps out for 6 days - no wolves captured.
	March 2001	LBU	Goldmine trail was closed after an encounter and warnings were posted at Wickaninnish, Florencia and Willowbrae.
	December 2002	LBU	Advisory issued and maintained until March 2004 due to persistence of wolves around areas with high human activity. Wolves were non-yielding and one approached a stopped vehicle prompting concerns that it may have been fed.
	July 2003	BGI	Clarke Island Campground closure following non-yielding behaviour by 2 wolves at the campground.
	July 2003	BGI	Gibraltar Island Campground closure due to wolves denned on Gibraltar.
	June 2004	BGI	Wolf advisory issued for entire BGI due to habituated wolves. Wolves travelling through campsites and not wary of human presence. Reports of food conditioned behaviour and confirmed reports of feeding of wolves over the past winter.
Cougar	May 2003	WCT	In response to predatory stalking behaviour of two cougars on the WCT a trail advisory was issued, lone hikers were monitored, an advisory was issued to local schools and officials and a cougar hunter was brought in. The advisory ended when one cougar was found starved to death and the second was also believed to have starved to death.
	May 2003	WCT	Advisory issued and an intensive effort launched to advise hikers of cougar hazard and to provide education on prevention and safety.
	July 2003	LBU	Warning issued for Wickaninnish area trails after a cougar encounter on the Nu-u-chah-nulth trail.

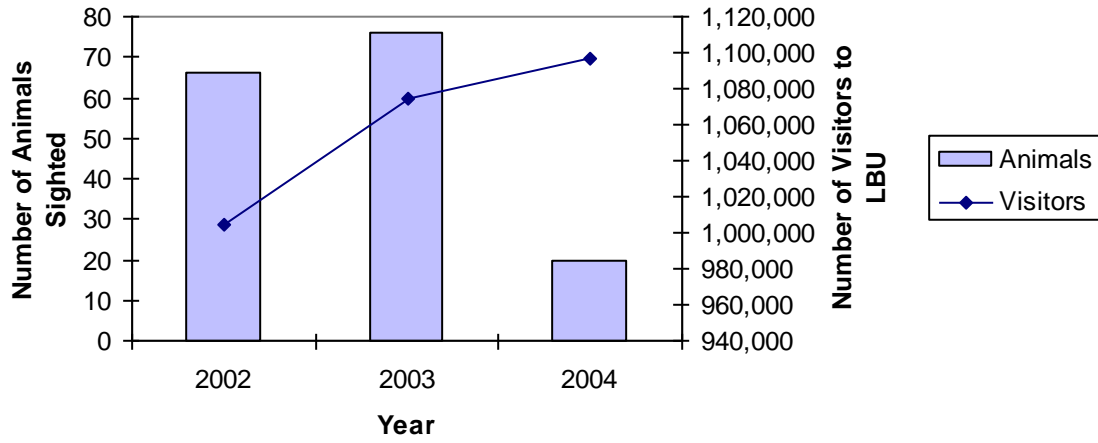
Table 2. Description of mortality incidents of cougar and wolves in and adjacent to Pacific Rim National Park Reserve as recorded in the PRNPR Wildlife Observation Database.

Species	Date	Location	Description of Mortality Incident
Wolf	July 2000	Clayoquot Sound - Outside of PRNPR	Two wolves destroyed by conservation service officers after attack on camper on Vargas Island in Clayoquot Sound. Prolonged period of aggressive behaviour of animals towards people leading up to attack. Reports of feeding of animals.
	September 2003	BGI - Inside PRNPR	The carcass of a small wolf was found in the BGI by visitors to the region. The carcass was not recovered and no cause of death was determined.
	May 2004	BGI - Inside PRNPR	Wolf destroyed by Parks Canada warden in response to series of aggressive actions and habituation behaviour. Reports of feeding of the BGI wolves during the winter months.
Cougar	May 1988	Clayoquot Sound - Outside of PRNPR	Cougar was destroyed at Catface Mountain in Clayoquot Sound following a fatal attack on a boy.
	August 2002	Clayoquot Sound - Outside of PRNPR	Cougar was destroyed by a resident of Hot Springs Cove after the cougar followed a young girl around the village and then attacked a dog.
	June 2003	WCT - Inside PRNPR	Cougar found dead from starvation. The cougar was found by hikers on the WCT.

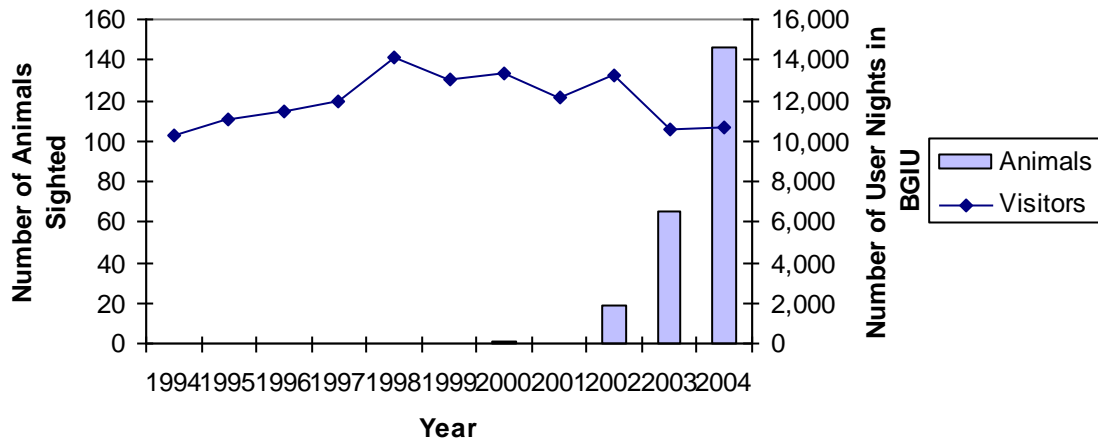
Carnivore - Visitor Correlation

There are no evident correlations between the number of visitors to any of the park units and the number of carnivore reports. In the LBU, as the number of visitors has increased, so has the number of observations until 2004 (**Error! Reference source not found.**). There is no correlation evident for the BGI or WCT observations. In both units, the visitor numbers have been stable or declining and the observation numbers have been increasing. For monthly averages, there are monthly trends evident in both the visitor numbers and the wildlife numbers, but neither a positive nor a negative correlation is evident (Figure 14).

(i) wolf LBU



(ii) wolf BGIU



(iii) wolf WCTU

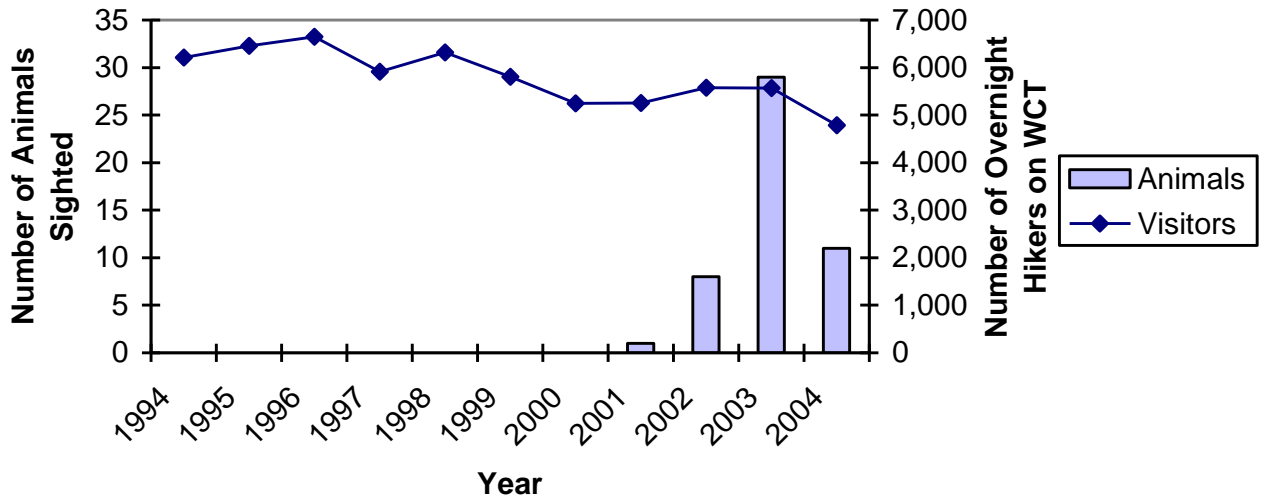
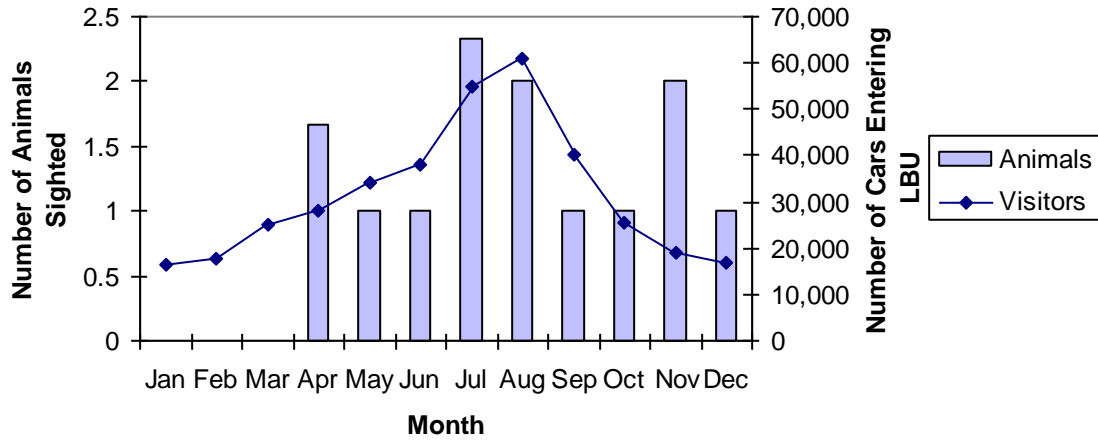
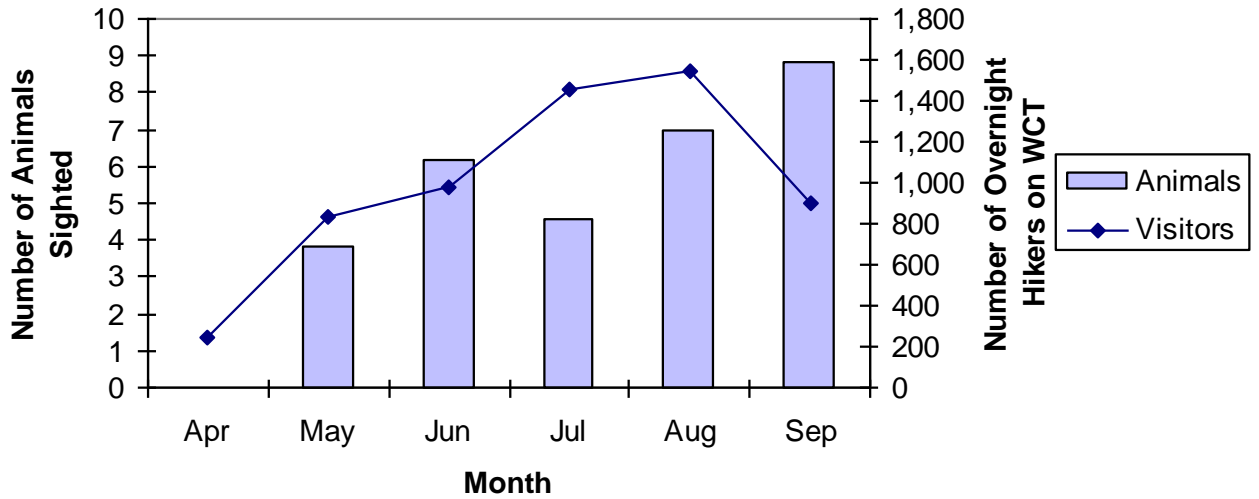


Figure 13. The number of visitors to the Long Beach Unit, the number of user nights in the Broken Group Island and the number of overnight hikers in the WCTU plotted against the number of wolves observed (either observed animals or observed sign) within the park boundaries.

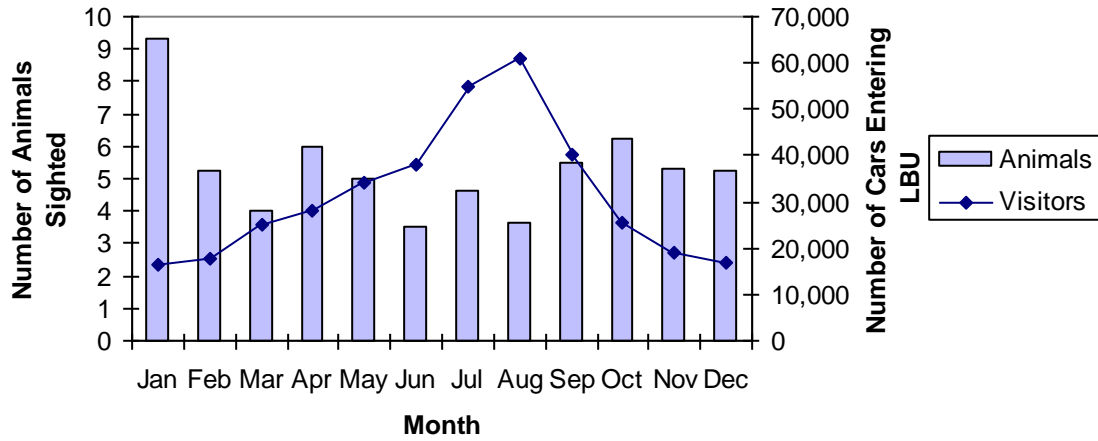
(i) cougar LBU



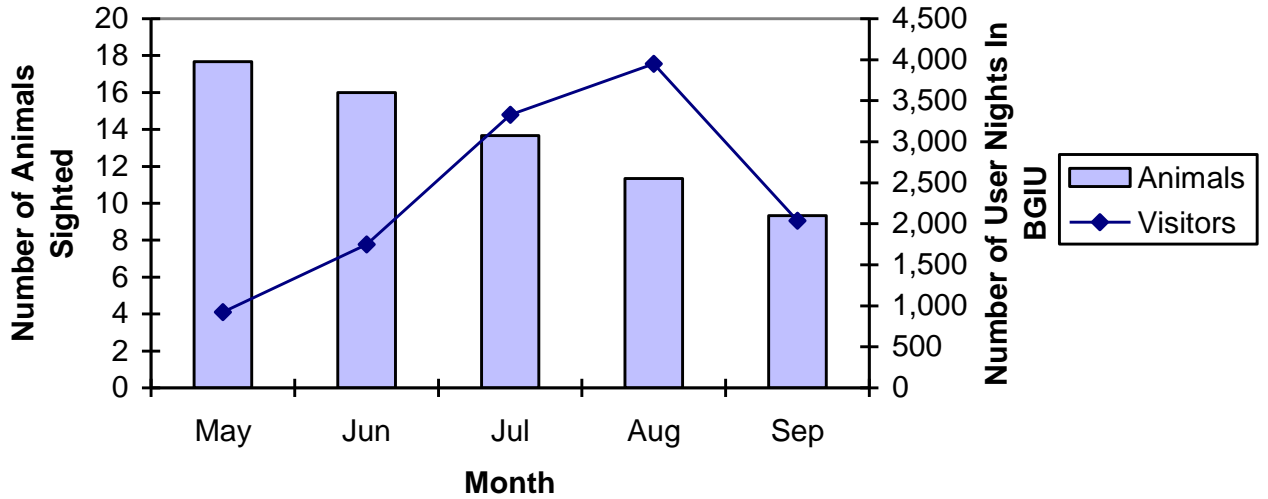
(iii) cougar WCTU



(iv) wolf LBU



(v) wolf BGIU



(vi) wolf WCTU

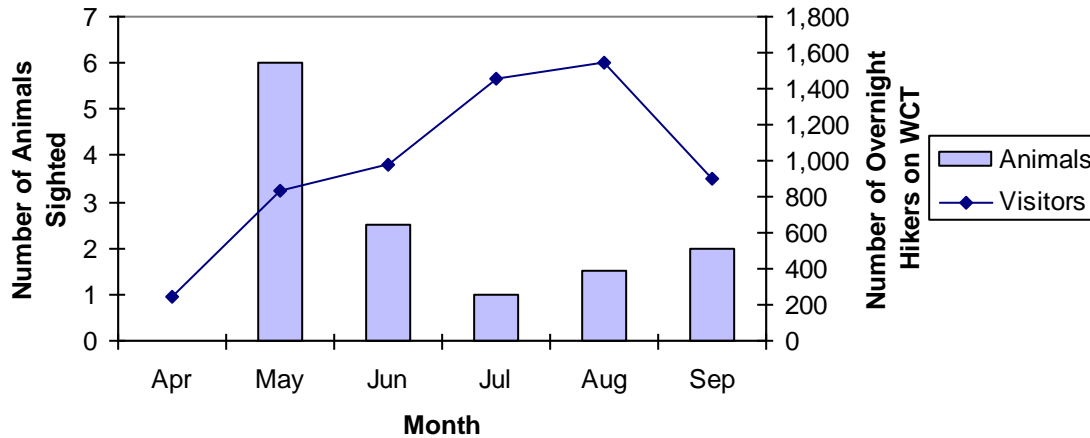


Figure 14. For the years 1994 - 2004, the average number of cars entering the east entrance of the Long Beach Unit, the average number of user nights in the Broken Group Island and the average number of overnight hikers in the WCTU for each month plotted against the number of animals, cougar and wolf, observed (either observed animals or observed sign) within the park boundaries. BGIU cougar is excluded as there was only a single observation in the ten year time period.

Discussion

There have been several encounters with wolves in recent years resulting in the destruction of three wolves. While the number of visitors to the LBU has been increasing, no causative relationship can be confirmed. This is further supported by increasing wolf observations on the West Coast Trail and increasing wolf encounters in the BGI, despite the stable and even declining visitor numbers in these units.

The tracking of wildlife and wildlife encounters has increased as encounters have increased, with the most marked change occurring in 1999 when the wolf attack occurred in Clayoquot Sound. This focussed attention on the developing wildlife conflict situation and the need to better track sightings and encounters within the park and in the areas adjacent to the park. At the same time, communications between parks staff and the COS improved to address these overlapping wildlife issues. It is likely that the increase in overall number of observations of carnivores can be attributed to improved reporting and communications. However, the number of encounters is likely not due to improved reporting but rather to an actual increase in encounters. Prior to the full implementation of the wildlife tracking database, extraordinary encounters were still reported to parks staff and situations monitored. The increased wolf encounters, especially, are unprecedented and not connected to improved reported.

Wolf activity in and adjacent to the park has increased with habituation and attacks more common than prior to 1999. The changing view of the wolf to be more affectionately

regarded by many brings up the question of whether this has led to greater respect for the wolf's place in the wild or to the breaking down of barriers between humans and wild wolves. There certainly is evidence that individuals are regarding the wolf affectionately to the point that they approach these animals and feed them, seemingly without recognition that this ultimately leads to encounters and often the destruction of the wolf. The destruction of wolves in recent years, of the two wolves in Clayoquot Sound and the one wolf in the BGI, both can be traced back to the practice of feeding the wolves in the previous months, leading to a well known path of habituation and food conditioning through to aggressive behaviour, and in the case of the Clayoquot Sound wolves, an attack on a human and ultimately in the destruction of the animal.

There is no strong indication that cougar activity has increased beyond the activity peaks observed when one or more animals begin to frequent an area. These activity peaks may be connected to a convergence of the reproductive cycles of two or more female cougars, resulting in juvenile cougars seeking territories at the same time. The last extended period of cougar encounters on the West Coast Trail involved two young male cougars and at least one of them died of malnutrition. Due to the sporadic observation and encounter record, a longer time series would aid in better determining if activity is in fact increasing over activity in previous decades or if the recent sightings and encounters are typical. There has not been little evidence of intentional habituation of cougars. There has been reluctance in reporting encounters attributed to the perceived risk that parks or conservation officer staff would destroy the animal if they were made aware of the situation. This seems to disregard any risk to humans associated with the animal behaviour and a lack of understanding of the intermediate management actions that can be implemented when a carnivore first exhibits risk behaviour such as frequenting high activity areas. There has been evidence of passive habituation, with observers enjoying the experience of viewing wildlife 'up close' to the point that they do not attempt to scare the animal away or otherwise discourage it from approaching humans.

Conclusion

There is increased vehicle traffic to the LBU. Visitors to the WCT are relatively stable, in response in part to the quota system that limits the number of overnight visitors on the trail. The number of visitors to the BGI seems to be relatively stable as well. Whether or not visitors were increasingly seeking wildlife encounters could not be determined with the available information. There are definite indications that some visitors to the park are participating in activities detrimental to the health and well being of wolves and cougars, with sporadic reports of feeding and encouraging habituation. Whether or not these actions are increasing or decreasing can not be determined at this time, but they are still continuing despite attacks on humans and dogs.

The wildlife database has already had extensive work done to improve reporting and data retrieval from the database. Additional development of the visitor database would be useful to consistently record visitor data within the park. A component of this project was to compile the existing visitor data into a single database and provide the data framework for future data entry and storage. Further work on developing user interfaces and training visitor centre staff and other data managers in the park will ensure that future data is

entered into this database. This will be important to guard against data loss and provide a means to effectively evaluate visitor data in the future.

There are already plans to calibrate the trail counter data within the LBU. This will allow visitor data analysis at a finer scale than is currently possible and will further quantify some of the activities that visitors to the region are engaging in. Exit surveys at the trails will also be useful to further determine who is frequenting the trails and other information useful for evaluating visitor characteristics.

Standardized boat surveys in Barkley Sound can be used to estimate non-permit visitors to the park. In the past this has been estimated at 10,000 in each year but no recent surveys have been conducted.

The addition of reporting functions to both the wildlife and visitor databases and linking the two databases also provides a valuable function for informing future management decisions. This should be refined in the coming years to ensure that the reporting functions meet the changing needs of wildlife managers.

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Appendix/Compendium:

See compendium document "CarnivoreReportDataCompendium.doc" to view all graphs generated for this project and descriptions of all data tables compiled. This information is also available within the Visitor Database "PRNPRVisitor_DB" and the wildlife database "Wild_DB".