LASKEEK BAY CONSERVATION SOCIETY

EAST LIMESTONE ISLAND FIELD STATION
2007 FIELD SEASON REPORT

Photo courtesy of Jen Rock, LBCS

SUMMARY

The Laskeek Bay Conservation Society's 18th field season brought 27 volunteers and 13 visiting groups to East Limestone Island. In response to the Ancient Murrelet population decline at Limestone monitoring activities were limited to conducting chick work at Cabin Cove and no banding was done. Between May 15th and June 14th 166 chicks were weighed. Breeding season was late this year, with the latest start and peak dates for chick departures on Limestone since 1990. The chick total from funnels five to eight marked a 15% decrease from last year's number and comparing totals from funnel 5 and 6 across years, 2007 produced the fewest chicks since 1990. A raccoon was present on the island throughout the breeding season. It was responsible for excavating burrows, predating eggs, chicks and adults. Raccoon predation could explain the decline in numbers that were observed this year although it is not clear whether additional factors are contributing to the population decline. Despite efforts to capture the raccoon it was not removed until June 20th. This experience highlighted the need for LBCS to adopt an early detection approach for raccoons, ideally starting before birds arrive at the colony.

The LBCS field staff identified 36 Black Oystercatcher breeding territories in Laskeek Bay, 29 of which produced eggs or chicks. A Glaucous-winged gull colony census revealed a total of 276 nests in Laskeek Bay with 86% counted at the Lost I. Pigeon Guillemot nest boxes located at Lookout Point had the highest occupancy rate to date with eight out of 10 boxes containing chicks or eggs. This year was a productive year for marine mammal encounters with frequent sightings of Humpback whales (203 sightings), successful Id photos taken of Orcas and a few reports of California Sea Lions in the area. Staff identified 13 active wildlife trees containing 14 nests belonging to three species of cavity nesting birds.

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INTRODUCTION

Through research and education programs Laskeek Bay Conservation Society (LBCS) aims to improve appreciation for and understanding of Haida Gwaii's natural environment. Visitors and volunteers assist researchers in collecting data to build on long term data sets that detail various aspects of abundance, distribution, life history, and population dynamics of different species that inhabit Laskeek Bay. The information collected is essential to understanding natural fluctuations in marine and terrestrial ecosystems, which in turn will help to detect changes that take place as a consequence of introduced threats such as predation by non-native species, contamination from pollutants such as oil and disturbance associated with developments such as wind turbines. This year marks the 18th field season on Limestone Island.

EDUCATION AND INTERPRETATION PROGRAM

LBCS is committed not only to long-term research in Laskeek Bay, but also to providing opportunities for members of the public to participate in this research and learn about local conservation issues. During the course of the season a diverse range of volunteers, school groups, and visitors come to the island to learn about our work and how it serves to increase our understanding of the surrounding ecosystem. LBCS believes long-term commitment to environmental education and public involvement is key to conveying the importance of our research to the public.

Changes in 2007

The Ancient Murrelet program on Limestone has undergone some major changes this season and this has in turn affected the education and interpretation program. As of this season all chick capture work ceased at North Cove funnels, student night-time visits take place at the cabin funnels and the maximum group size was reduced to 10. Following night work, groups now spend the remainder of the night in the visitor interpretation centre, instead of walking across the island at night to the tent platform as was done in the past. As well, night time visits by tour boats were phased out this year in a move to further reduce the impact of night work within the colony.

Project Limestone

This was the 18th year of Project Limestone, a program that brings local students to the island to participate in Ancient Murrelet work. An afternoon interpretive tour introduces the students to the island and provides them with an overview of our research and activities. The group then assists in capturing Ancient Murrelet chicks at night, typically from 10:30 pm to 2:30 am. Due to the new location this year there were fewer opportunities for students to capture and handle chicks, however they were still thrilled with the experience and gave positive feedback. Smaller group sizes meant that the students had more opportunity to interact with staff and ask questions. The students enjoy participating and some students return several years in a row. Despite program changes, Project Limestone continues to be an important outdoor education experience for students, as it makes them more aware and appreciative of the environment which they live in.

This season saw a total of 10 groups of students visit the island representing five different schools. The number of students participating continues to increase, 66 (19 teachers/ chaperones) this season as compared to 50 (13) in 2006. This reflects the continuing popularity of the program as well as the reduced group. Four local schools visited the island this year: GM Dawson Secondary School, May 11th; Living and Learning School, May 20,21st; Queen Charlotte Secondary School, May 23rd to 25th; and Agnes L. Mathers School, May 28th and 29th. Northwest Community College (Prince Rupert) also visited for the first time this year as part of their coastal ecology course. They brought two groups on island, May 15th and 16th. A total of 473 students have participated in the program since it started in 1991.

Volunteers

LBCS is committed to having volunteers in camp working alongside field staff, and this is an integral part of the operation of the field camp. Members of the public have the unique opportunity of working in a field camp and participating in a variety of research projects on and around Limestone Island. This is one of the few places in the province where the public are invited to be a part of research and their contribution of time and energy each season continues to be invaluable to operations on the island.

A total of 27 volunteers visited the island this year, contributing 237 volunteer days to various projects throughout the season. Of these volunteers six had been on the island in previous years, and 21 were new to the island. LBCS director Keith Moore and LBCS executive director Lisa McKnight-Yeates both visited on two separate occasions during the field season. Eleven volunteers were on island for less than a week, eight for one week, seven for two weeks and one for three weeks. As in past years, volunteers hailed from diverse locals: 10 were from Haida Gwaii, eight from other areas of BC and the remainder from places such as France, Saskatchewan, Ontario, Washington, and Hawaii.

Visitor Program

The visitor program on Limestone provides opportunities for tour groups to stop on the island and learn about LBCS research. This is an activity provided by the society at no cost, with the aim of raising public awareness and interest in local conservation issues on the island. The majority of guests are not local and are very excited to learn about the island's ecosystem, and the Ancient Murrelets in particular.

Although night time visits by tour groups were phased out this season, groups are still being welcomed for day-time interpretive tours, and in total 36 guests from two vessels visited the island this year: *S/v Island Roamer* stopped on two separate occasions, May 17th and 31st, and *s/v Island Odyssey* on one occasion, May 22nd. A group of seven students and one instructor from Langara College was given a tour of the island on June 8th.

The camp on nearby Reef Island was very active this year from March 30th to June 21st. Both Tony Gaston (Environment Canada) and Jean-Louis Martin (Research Group on Introduced Species) were on the island, along with: Akiko Shoji, Jennifer Provencher, Thibaut Vergoz, Tim Lash, Sophia Colantino, Steve Stockton and others. Thanks from the Limestone staff for some great dinners and good company. Thibaut also spent three weeks as a volunteer on Limestone from June 23rd to July 13th.
Other visitors that dropped in for short visits over the course of the ELI season were Bart DeFreitas, Brad Setso and Sean Edgars of Haida Fisheries, Viv Pattison, and Ralph Nelson.
The LBCS field staff had several opportunities to visit Skedans village. Thanks to Haida Gwaii watchmen Ben & Isabel Levesque and Laura Beaton & David Dixon for their hospitality.

Staff

This year's field staff included: Jen Rock (camp supervisor / biologist) and Jake Pattison (assistant biologist / interpreter). The field season on Limestone Island spanned 11 weeks in 2007. Camp opened April 28 and closed on July 13, a total of 76 days. At LBCS headquarters in Queen Charlotte, Lisa McKnight-Yeates replaced Greg Martin as LBCS executive director in 2007; Greg retired in February after 11 years as executive director.

RESEARCH AND MONITORING PROGRAMS

Ancient Murrelets *Synthliboramphus antiquus*

Monitoring activities

In response to the declining in Ancient Murrelet population on Limestone Island, in 2007 LBCS adopted measures to reduce the potential for negative interactions between birds and our research activities. In the fall of 2006 researchers and directors decided that a series of precautionary measures be adopted including:

- For the fourth consecutive year there would be no adult capture work or burrow monitoring on East Limestone Island;
- North Cove area would be off limits for any activity during the Ancient Murrelet breeding season;
- Night-time visits by tour boats would be terminated;
- Visiting school groups would stay overnight at the Visitor's Centre to lights in the colony at night;
- Predation transects would be reinstated (to monitor predation pressure on Ancient Murrelets).

Through these changes LBCS hopes to minimize its impact on the breeding colony and to gain insights in to what factors are causing the Ancient Murrelet population decline on Limestone.

Recaptures
Although there was no directed effort to capture adults, individuals that staff opportunistically came across (ie: that fly in to staff or are sitting on the trails) were checked for bands. This year four adults previously banded on Limestone: three were banded as adults (1999, 2000, 2002) and one was banded as a chick (2006) were encountered.

Researchers on Reef Island were conducting adult capture work this season and among their recaptured birds was an individual banded as an adult in 1987 meaning that this bird was at least 22 years old, the oldest known age Ancient Murrelet to date.

Band recoveries
Because predation is a fact of life at seabird colonies staff is always on the lookout for banded legs among the remains of dead Ancient Murrelets that are found. This year five bands were recovered from birds originally banded on Limestone: three birds were banded as adults (2002, 2003 x 2) and two were banded as chicks (2004, 2005).

Recapture data and band recoveries can teach about the life history of species for example, how long these birds live and whether they return to their natal colony to breed. This type of information is key to understanding the dynamics of breeding populations and in turn, helps researchers identify measures that will effectively protect them.

Chick capture work
Each night from May 7th to June 14th staff monitored four funnels (funnels 5 to 8) located at Cabin Cove for Ancient Murrelet chicks. Following the usual protocol funnels were closed between 22.30h and 02.30h and after May 19th the start time was pushed back to 23.00h to accommodate for longer daylight hours. Chicks first arrived at the funnels on May 15th and funnel work continued until the first two consecutive nights when no chicks arrived at any of the four funnels (Figure 1).

All 166 chicks that passed through the funnels were weighed, in addition to seven chicks caught after 02.30h or outside of the funnels (Table 1). The distribution of chick departures was different this season compared to most years that characteristically have a distinct, single peak surrounded by a shoulder period on either side. In contrast, this year's chick activity came in two waves of departures periods (Figure 1). The 2007 chick total from funnels 5 to 8 marks a 15% decrease from last year's total of 197 chicks (Table 1).

Trends in chick departures across years from funnels 5 and 6 (funnels 7 and 8 were new in 2006) show that this year's total was the lowest since 1990 (Fig.2). Compared to last season, there were 31% fewer chicks at funnels 5 and 6 (Table 2).

The timing of chick departures in 2007 indicated a generally late breeding season with later than average dates for first departure and peak count (Table 2). Concurrent research at Reef showed that the timing of breeding for Ancient Murrelets at that colony was also late this year, indicating that this behaviour was not particular to Limestone birds.

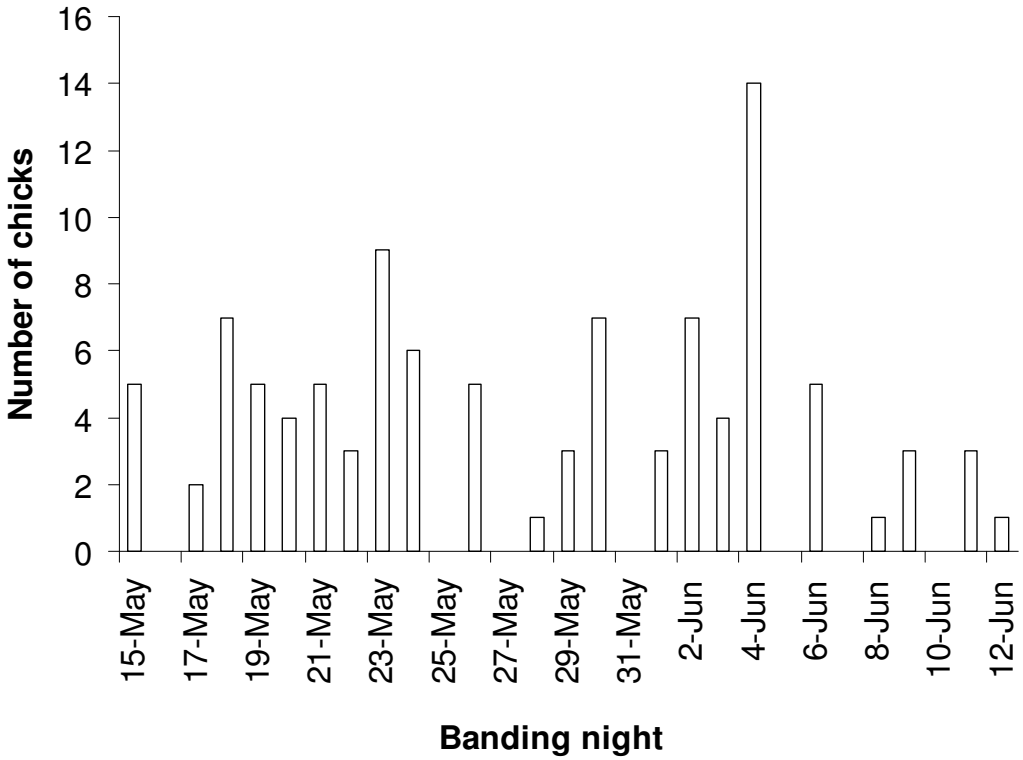

Figure 1. Number of chicks per night caught at funnels 5 to 8 on Limestone Island, May 15th to June 12th, 2007.

Table 1. Summary of chick departures, peak nights and totals from Cabin Cove funnels 5 to 8 on Limestone Island 2006 to 2007.

Year	Opening night	First night with chicks	Last night	Peak night	Peak count	Total days	Total chicks
2006	5-May	10-May	30-May	21-May	24	21	197
2007	7-May	15-May	12-Jun	4-June	16	29	166

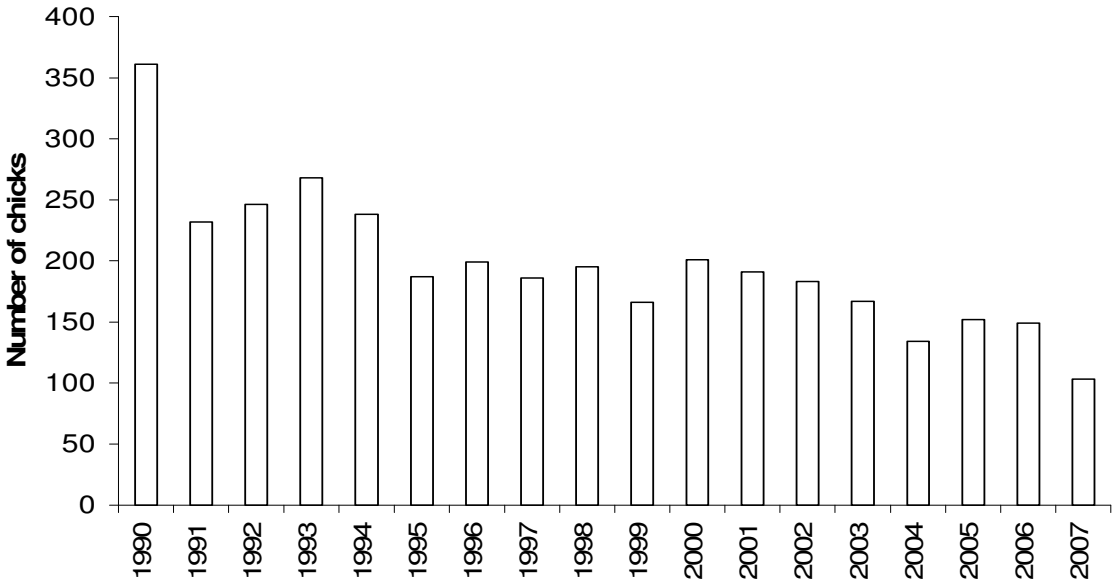

Figure 2. Total number of Ancient Murrelet chicks caught at funnels 5 and 6 on Limestone Island from 1990 to 2007.

Gathering Grounds

Before coming in to the colony at night Ancient Murrelets congregate at a site just west of Low Island, known as the 'gathering grounds'. From April 30th to June 20th , five minute counts of birds on the gathering grounds approximately two hours before sunset were conducted. The peak count was 239 birds on May 14th. Poor weather conditions prevented counts on 15 days and an additional five days were missed because of reduced visibility or because the crew was absent during gathering ground hours.

Point Counts

At 2.30h point counts to determine the number of birds heard calling and the number of calls made over a single, five minute period were done. Staff conducted point counts from May 21st to June 2nd, at a site located behind the cabin. The maximum number of birds heard calling was eight individuals on May 9th and the maximum number of calls heard was 79 calls on June 6th.

By conducting both gathering ground counts and point counts LBCS hopes to examine whether these measures can be used to monitor colony attendance.

Squirrel Surveys

Squirrels were introduced to Haida Gwaii by the BC Forest Service in the late 1940s as a means to facilitate cone gathering for the forestry industry. The introduction these non-native species has negatively impacted Haida Gwaii's ecosystem both directly and indirectly (http://www.rgisbc.com/squirrel.htm) however, the consequences of squirrel introduction are only partially understood and the interactions between introduced squirrels and burrow nesting birds have yet to be explored.

Because of the declining Ancient Murrelet population at Limestone LBCS wanted to examine potential interactions between squirrels and burrow nesting birds. This year LBCS re-instated squirrel surveys in order to monitor squirrel population changes across years and thus providing a baseline from which to evaluate the relationship between seabirds and non-native squirrels.

Table 2. Summary of chick departures, peak nights and totals from funnels 5 and 6 on Limestone Island 1990 to 2007.

Year	Opening night	First night with chicks	Last night†	Peak night	Peak count	Total days	Total chicks
1990	12-May	13-May	15-Jun	20-May	28	33	361
1991	08-May	10-May	05-Jun	25-May	22	26	232
1992	12-May	14-May	02-Jun	22-May	29	19	246
1993	09-May	12-May	04-Jun	18-May	39	23	268
1994	07-May	08-May	06-Jun	20-May	29	29	238
1995	07-May	11-May	12-Jun	23-May	18	32	187
1996	10-May	11-May	07-Jun	18-May	17	27	199
1997	08-May	13-May	05-Jun	28-May	22	23	186
1998	07-May	11-May	20-Jun	20-May	23	40	195
1999	09-May	11-May	09-Jun	21-May	22	29	166
2000	11-May	11-May	06-Jun	21-May	22	26	201
2001	08-May	11-May	15-Jun	19-May	21	35	191
2002	07-May	09-May	01-Jun	21-May	33	23	183
2003	10-May	11-May	03-Jun	21-May	19	23	167
2004	08-May	08-May	01-Jun	16,17-May	15	24	134
2005	07-May	07-May	05-Jun	19,23-May	12	29	152
2006	05-May	10-May	31-May	21-May	20	21	149
2007	07-May	15-May	12-Jun	04-Jun	16	28	103
Average (± SD)	8-May ± 2d	10 May ± 2d	7-Jun ± 6d	22 May ± 4d	23 ± 7 chicks	27 ± 5 chicks	198 ± 58 chicks

†Last night of chick work was determined differently depending on year. From 1990 to 2006 the date of 'last night' was determined by the first night when no chicks arrived at funnels 1 to 6. In 2007 the date of 'last night' was determined by the first two consecutive nights with no chicks at funnels 5 to 8.

Predation Transects

Last year's population census of the Ancient Murrelet colony revealed that although the number of occupied burrows on Limestone had declined over time, predation levels (measured concurrently) had not decreased. These data suggest that predation on Ancient Murrelets may be an important factor contributing to the population decline at Limestone and in response to this, predation transects were reinstated in order to measure and examine changes in predation pressure across years (last surveyed in 1995).

Once per week, during the Ancient Murrelet breeding season staff counted the number of carcasses, feather piles, wings, and dug-up burrows located along five, 20m wide transects. Counts were started at first light in order to find any evidence of predation before scavengers altered or removed evidence.

The second survey of the season on May 19th turned up a handful of dug up burrows and six headless Ancient Murrelet adult carcasses located in two separate areas. River otters *Lutra canadensis* that live on Limestone will predate on adult birds and may dig up burrows however, previous experience with raccoons *Procyon lotor* at this colony suggested that the decapitated and otherwise intact state of the murrelets indicated that a raccoon was responsible. Despite efforts to locate and remove the raccoon from the colony, it was not until June 20th that the raccoon was caught, after the majority of Ancient Murrelets had left the colony.

Black Oystercatchers *Haematopus bachmani*

Occupancy and Reproductive Success

LBCS has been monitoring Black Oystercatcher breeding activity in Laskeek Bay since 1992. Each season LBCS field staff searches coastal areas extending from Cumshewa Island to the Lost Islands in Gwaii Haanas National Park/ Haida Heritage Site to identify breeding pairs and to measure eggs and chicks. This year 36 territories were identified that were occupied by pairs and 29 of these sites were active with eggs or chicks at some point of the season. Staff banded 14 chicks from nine breeding territories: eight chicks from Reef, five chicks from Kingsway Rk. and one chick from Low I. Banded chicks received a uniquely numbered metal band in addition to a colour band combination that indicates where chicks were banded (ie: Laskeek Bay) and the year they were banded. In 2007 staff re-sighted 12 banded birds, ten of which occupied breeding territories that we were monitoring and two were spotted among groups of birds loafing on islands in Laskeek Bay (Table 3).

Table 3. Banded Black Oystercatchers re-sighted in Laskeek Bay 2007.

Band Combination*	**Location seen (Territory site)**	**Year Banded**	**Banded as Adult or Chick**
AL – BK / M	Reef I. (REE-1)	2000	adult
UB – R / M	Reef I. (REE-2)	2003 or 2004	chick
UB – BK / M	Reef I. (REE-2)	2000	unknown
UB - M	Low I. (LOW-3)	unknown	unknown
W- R/M	E. Limestone I. (ELI-2)	2003	chick
W-M	Skedans I. (SKE-6)	unknown	unknown
W-BK/M	Skedans I. (SKE-6)	2000	chick
UB-BK /M	S. Low (SLW-1)	2000	unknown
UB – W	S. Low (SLW-8)	1994	chick
UB- M	Kingsway Rk. (KNG-3)	unknown	unknown
UB – DB / M	W. Limestone I.	2006	chick
UB – R / M	Islet off Louise, SW of Skedans Village	2003 or 2004	chick

* W = white, M = metal, BK = black, R = red, DB = dark blue. Birds can lose colour bands, ie: UB = unbanded.

Diet

For a fourth consecutive year staff collected information on Black Oystercatcher chick diets. Adults provision chicks with marine invertebrates at the breeding territory until the chicks fledge (approx. 40 d.) making it possible to infer chick diet composition based on prey remains recovered at the breeding territory.

Staff collected 1358 prey remains from 17 nest sites [mean number of prey (±) SD per territory = 79.9 ± 49.5] that we later identified and measured. Based on the mean proportion of prey remains collected from each breeding territory, limpets were the most common type of prey fed to chicks followed by mussels and chitons (Figure 3).

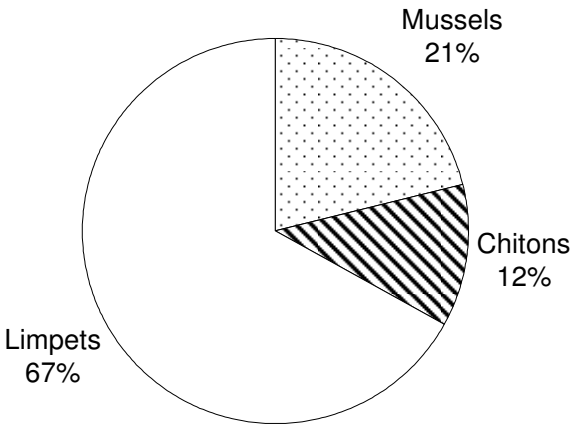

Figure 3. Average composition of Black Oystercatcher chick diets determined from prey remains collected at nest sites in Laskeek Bay (n = 1358 prey from 17 nests).

Glaucous-winged Gulls *Larus glaucescens*

LBCS has been censusing Glaucous-winged Gull colonies in Laskeek Bay since 1992. Between 14 and 19 June we counted the number of adults, nests and eggs at Kingsway Rock, Lost I., Low I., Skedans I. and Cumshewa I. As usual the largest colony was Lost I. with 238 active nests followed by Kingsway Rk. with 30 nests. Two breeding pairs were counted at Skedans I., six at Low I., and zero at Cumshewa I. (Figure 4). Overall, the total number of number of nests counted in Laskeek Bay this year (n = 276 nests) was consistent with the average counted across years [mean number of nests (±) SD per year = 253 ± 74].

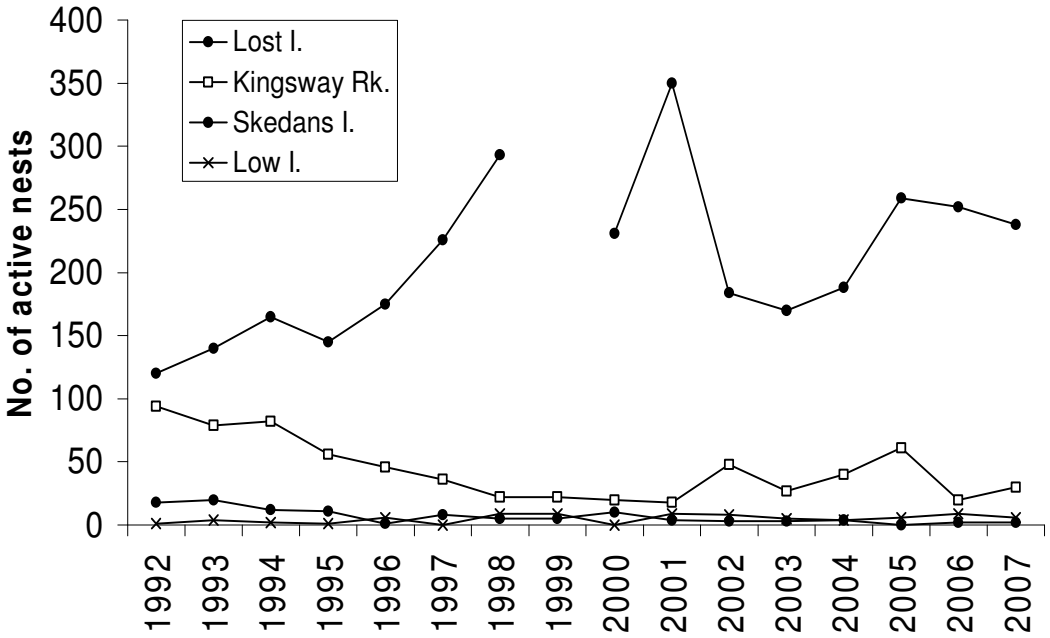

Figure 4. Number of active Glaucous-winged Gull nests in Laskeek Bay 1992-2007.

Pigeon Guillemots *Cepphus columba*

At the end of each field season the contents of each of the ten wooden Pigeon Guillemot nest boxes installed at Lookout Point in 2001 is checked. Staff determines occupancy rates and reproductive success. On July 12th, eight active nest boxes were found. Seven contained one or two chicks (eleven chicks total) and one contained a single egg, marking the highest occupancy rate to date (Fig 5).

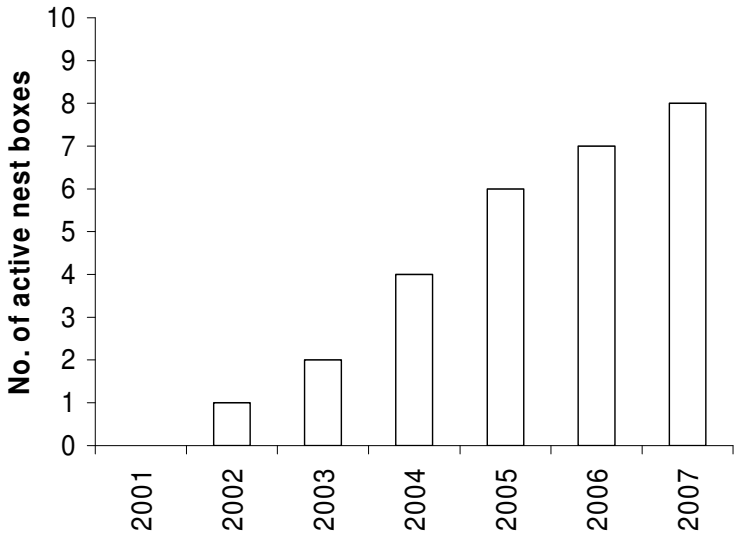

Figure 5. Number of Pigeon Guillemot nest boxes active with either eggs or chicks from 2001 to 2007, East Limestone Island.

Cassin's Auklets and Fork-tailed Storm Petrels *Ptychoramphus aleuticus and Oceanodroma furcata*

To monitor Cassin's Auklet breeding activity LBCS staff conducted weekly checks for knockdowns at burrow and nest box entrances. The site formerly called the 'North Shore' was renamed the 'East Coast' in 2007. Of 25 burrows, 15 were active with more than two records of knockdowns or having distinct tell-tale odors. None of the 24 nest boxes were active and staff determined this could be because the boxes were relatively exposed. In an effort to increase the appeal of nest boxes to breeding birds the boxes were re-installed by embedding them in to the ground and covering them with soil and moss. Fifteen more nest boxes were installed in the same way just south of this site, in an area where a few Cassin's Auklet pairs were already nesting. In addition, 25 nest boxes were installed at the Lookout, another area where Cassin's Auklets are known to be breeding.

Birds that eventually occupy these nest boxes will provide good opportunities for researchers to monitor reproductive success and chick growth rates.

This year monitoring efforts were scaled back at burrows located on Cassin's Tower in order to limit disturbance to a pair of Bald Eagles that were nesting on top of the Tower. Based on knockdowns and characteristic smells staff determined that at least 26 burrows were active with Cassin's Auklets and 11 were active with Fork-tailed Storm Petrels.

At-Sea Surveys

To describe the abundance and distribution of different marine birds across seasons and years staff carry out regular boat based surveys that follow a series of transects located throughout Laskeek Bay.

Near shore surveys

In 2007 five near shore surveys were conducted on May 8, 9, 22, June 6, 24 and July 6. During the five surveys 16 different marine bird species were counted including: Ancient Murrelets, Marbled Murrelets *Brachyrhynchus marmoratus*, Rhinoceros Auklets *Cerorhinca monocerata*, Pigeon Guillemots, Pelagic *Phacrocorax pelagicus*, Pacific Loons *Gavia pacifica*, Glaucous-winged Gulls, White-winged Scoters *Melanitta fusca*, Long-tailed *Clangula hyemalis* and Harlequin Ducks *Histrionicus histrionicus*, Common Loons *Gavia immer,* Herring gulls Black-legged Kittiwakes *Rissa tridactyla*, Red-necked Grebes *Podiceps grisegena*, Common Murres *Uria aalge*, and Black Oystercatchers.

LBCS is particularly interested in counts of Marbled Murrelets because this bird is provincially red listed and is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The peak count of Marbled Murrelets during the near shore surveys was 85 birds on May 22nd.

Hecate Strait surveys

Staff carried out two Hecate Strait surveys on May 12th and July 7th. These 'off shore' surveys are less frequent because they require especially calm conditions. Thirteen different marine bird species were encountered during the two offshore surveys including: Ancient Murrelets, Marbled Murrelets, Rhinoceros Auklets, Pigeon Guillemots, Glaucous-winged Gulls, Sooty Shearwaters *Puffinus griseus*, Tufted Puffins *Fratercula cirrhata*, Herring Gulls, White-winged Scoters, Cassin's Auklet, Black Turnstones, Common Murres.

Marine Mammals

Throughout the field season staff keeps track of any marine mammal encounters (Table 4) that result from observations made during sea surveys, sea watches or opportunistically.

This season the crew was treated to some incredible Humpback whale *Megaptera novaeangliae* encounters. Humpbacks were common throughout the spring and there were numerous sightings of groups of whales feeding, displaying and on a few occasions the sounds of humpbacks could be heard echoing throughout Laskeek Bay! Records indicated staff counted 203 humpback whales over the course of the field season, however; encounters may have been under reported because the crew became so accustomed to their presence. Staff could not photos of tail flukes for individual Id because whales either did not cooperate or sightings occurred from a distance, from land or during poor weather conditions.

Staff had four encounters with Killer whales *Orcinus orca* this season. On two occasions groups were spotted as they traveled by Limestone Island, (four and seven individuals). The last two encounters were boat based and provided excellent opportunities to take pictures of dorsal fins and saddle patches for individual Id.

The first boat encounter took place on June 27th when staff followed two whales, one large male and one smaller individual. Towards the end of the encounter the large male was at the surface, apparently shaking as the smaller individual circled the large male. As the two whales then traveled away from the area, the crew noticed what appeared to be a rope looped around the

male's dorsal fin. Once the two whales disappeared the remains of a Harbour seal floated to the surface and it then became clear that the 'rope' caught on the male's fin had in fact been a portion of the seals' intestines. LBCS photos identified T054 and T058, two known transient whales.

The following day on June 28th, staff encountered a group of 13 Orcas that included a large bull, several smaller individuals and two juveniles. LBCS photos identified the group as transients: the bull was T162 and the others were T023, T023C, T023C1 (folded over dorsal fin), T023C2, T023D, T059, T059A, T059A1?, T060, T060C, T060D and T002B. Staff watched this group of mammal eating whales travel past the sea lion haul-out at Reef I. Many of the Steller sea lions *Eumetopias jubatus* became quite vocal as the whales passed by the haul-out and a number even slid in to the water and began posturing and vocalizing. The whales traveled past without incident.

Steller sea lions are commonly hauled out at Skedans and Reef I. The highest count at Skedans was 132 individuals on May 8th and at Reef, 482 individuals on same day. Staff spotted one branded Steller sea lion at the Reef I. haul-out: 'F3000' branded at Forrester Island in SE Alaska.

Four California sea lions *Zalophus californianus* were spotted in Laskeek Bay this season however, no more than two individuals were encountered at any given time. Sightings of California sea lions in Haida Gwaii are of interest because typically, this species is more common to the south.

Table 4. Total counts of marine mammals based on sightings in Laskeek Bay, 2002-2006. Observations were made during sea surveys, sea watches and opportunistically (note: totals do not include Harbour seals *Phoca vitulina* and Steller sea lions *Eumetopias jubatus*.

Species (common name)	Scientific name	2007	2006	2005	2004	2003
Dall's porpoise	*Phocoenoides dalli*	0	0	1	0	0
Northern elephant seal	*Mirounga angustirostris*	0	0	0	0	1
Fin whale	*Balaenoptera physalis*	0	0	0	0	1
Grey whale	*Eschrichtius robustus*	0	1	1	1	3
Harbour porpoise	*Phocoena phocoena*	1	4	3	12	5
Humpback whale	*Megaptera novaeangliae*	203	91	15	19	152
Killer whale	*Orcinus orca*	26	4	11	13	21
Minke whale	*Balaenoptera acutorostrata*	3	1	0	2	0
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	81	365	8	0	325
California sea lion	*Zalophus californianus*	4	0	1	1	0

Wildlife Trees

Snags are decaying, standing trees that provide habitat for cavity nesting birds and each season staff surveys Limestone for snags with active nests (wildlife trees). This year 42 formerly active wildlife trees were monitored and eventually it was determined that eight were active (Table 6). In addition, five new wildlife trees were located for a total of 13 active trees with 14 nests, occupied by three bird species including: Red-breasted Sapsuckers *Sphyrapicus rubra* (9 nests), Chestnut-backed Chickadees *Poecile rufescens* (3 nests) Hairy Woodpeckers *Dendrocopus villosus* (2 nests). This year staff did not locate any nests for Northern Flickers *Colaptes auratus* or Brown Creepers *Certhia americana*.

Table 6. Wildlife tree use on East Limestone Island in 2007. (RBSA = Red-breasted Sapsucker, CBCH = Chestnut-backed Chickadee, HAWO = Hairy Woodpecker, Ss = Sitka spruce, Hw = Western hemlock)

Tree #	Cavity Nester	Tree Species	Fledge Date
10	RBSA	Ss	16-jun
45	RBSA	Ss	26-jun
79	CBCH	Ss	4-Jun
96	CBCH	Hw	6-jun
98	RBSA	Ss	18-Jun
99	RBSA	Hw	14-Jun
106	RBSA	Ss	16-Jun
107	CBCH	Ss	16-Jun
107	RBSA	Ss	18-Jun
112	RBSA	Hw	20-Jun
113	HAWO	Ss	22-Jun
114	HAWO	Ss	10-Jun
115	RBSA	Hw	12-Jun
116	RBSA	Ss	24-Jun

NATURAL HISTORY

Bears

For the first time since LBCS has operated a field camp on Limestone, a black bear *Ursus americanus carlottae* was spotted on the island. Luckily the bear's visit to the island was brief and uneventful. After having encountered an unsuspecting volunteer at Lookout Pt. the bear ran away and was not seen again.

Daily Bird Checklist

A daily record of birds seen or heard in the Laskeek Bay area is kept by staff. This year 64 different bird species were recorded and the daily maximum count was 36 species on July 7th. Some of our less common records included Green-winged Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Black Scoter *Melanitta nigra*, Red-breasted Merganser *Mergus serrator*, Lesser Yellowlegs *Tringa flavipes*, Thayers Gull *Larus thayeri*, Western Gull *L. occidentalis*, Western Sandpiper *Calidris mauri,* Least Sandpiper *C. minutilla* and an American Pipit *Anthus rubescens*.

Birds of Prey

Peregrine Falcons were back on Limestone this year after a 10-year hiatus. A pair of birds was active in the vicinity of the old nest site from May 1st to July 4th; however, it was difficult to confirm whether any chicks were produced because the cliff where the birds were suspected to be nesting was not easily observed.

Limestone was also home to two breeding pairs of Bald Eagles. Nest #5 located at Cassin's Tower was active for a second consecutive year and nest #7 located just east of North Cove was active for the third time in four years. Activity at nest #5 was easily monitored from the ridge trail that provided open views of the growing chick which was first spotted on June 23rd. In contrast,

activity at nest #7 was not as easily determined and was initially inferred from alarming adults and fresh guano at base of tree. Later in the season a whole salmon (small) was found at the base of the tree and the chick was heard on July 11th. At camp shut-down on July 13th, both pairs were busy raising a single chick.
Common Ravens *Corvis corax* nested in the same tree as last year. The ravens produced two chicks that fledged on May 26th, fledging one day later than the chicks produced in 2006.

Staff suspected that Northwestern Crows *C. caurinus* also nested on the island but did not find any nests. Early in the season crows were active in the inaccessible cliff area adjacent to the Ridge Trail.

Plants

Bloom dates of flowering plants are kept track of on Limestone by regular visits to areas where flowers can persist because they are inaccessible to deer browse. Staff takes the opportunity to enjoy the blooms that carpet the handful of deer-free islands located in Laskeek Bay, as deer-free islands are rare in the archipelago.

Introduced Species

Sitka Black tailed deer *Odocoileus hemionus sitkensis*
This year marked 10 years since deer exclosures (20 m x 20 m) were erected at sites throughout the archipelago, including three on East Limestone. These structures provide an interesting opportunity for visitors and volunteers to compare the difference between areas with and without deer browse and in turn, to learn about the significant impact that non-native species have on the forest understory. Researcher Steve Stockton from the Research Group on Introduced Species (RGIS) visited Limestone this season to examine how the vegetation in the exclosures has responded after 10 years.

Raccoons
Raccoons can have devastating impacts on seabird colonies that have evolved no natural defense against introduced predators that target adults, chicks and eggs. This season a single raccoon was at large on Limestone throughout the Ancient Murrelet breeding season. The raccoon was responsible for digging up burrows, destroying adults, chicks and eggs causing much concern for the future of this small, peripheral colony.

CONCLUSIONS

LBCS completed the 18th field season in Laskeek Bay and thanks to all of the directors, staff, volunteers and visitors LBCS continues to build a unique, long-term data set initiated in 1990. In 2007 some significant changes were made to the program which were well received by volunteers and visiting groups.
Raccoon predation could explain the decline in Ancient Murrelet numbers that staff observed this year. LBCS has yet to determine whether other factors may be contributing to the downward population trend. This year's raccoon experience has highlighted the need to adopt a more preventative approach to predator control on the island. Unfortunately, the proximity of the colony to adjacent islands with raccoons means that this introduced species will continue to pose a threat to burrow nesting seabirds on Limestone. There is need for predator control to be conducted before birds arrive at the colony as well as while birds are incubating. By the time the field crew arrives at the end of April (once eggs are near hatching) raccoons that are present on the island will already have had serious impacts on prospecting birds, breeding adults and developing eggs. Ancient Murrelets are 'blue listed' by the province of British Columbia and are

considered of 'special concern' by COSEWIC. The reason for these designations is because Ancient Murrelets are especially vulnerable to threats posed by introduced species, such as raccoons. LBCS is hopeful it work together with other concerned counterparts to ensure the safe breeding habitat for burrow nesting seabirds within this Provincial Wildlife management area.

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