EAST LIMESTONE ISLAND FIELD STATION:
REPORT ON THE 2006 FIELD SEASON

Prepared by Jen Rock with Jake Pattison
Reviewed and edited by Directors, LBCS
Laskeek Bay Conservation Society, Box 867, Queen Charlotte City, BC, V0T 1S0

Photo courtesy of Jake Pattison, LBCS

SUMMARY

This season marks 17 years for the Limestone Island field camp. In 2006 our education and research programs involved 32 volunteers, six groups from four local schools, and three groups from sail boats for a total of 268 volunteer days and 105 visitor days. For a third consecutive year, Ancient Murrelet fieldwork was restricted to chick capture work which ran from 10 May to 1 June and peaked on 17 May. We caught 446 chicks at funnels 1-6 in addition to 68 chicks caught either after hours, outside of the funnels or at the two new funnel set-ups. This year's chick total is the second lowest number of chicks recorded in the 17 years and was the shortest chick season to date. Only 2004 had fewer chicks.

From the end of May through to camp closing we monitored Black Oystercatcher breeding territories extending from Laskeek Bay south to Juan Perez Sound. We located 95 territories occupied by adults, 81 of which had eggs or chicks at some point in the season and in total we banded 29 chicks. We identified 2438 prey remains at 27 Black Oystercatcher nests. Limpets, mussels and chitons made up 99% of identified prey. We counted 283 Glaucous-winged Gull nests in Laskeek Bay, and 89% of these were located at the Lost Islands colony. For a second consecutive year, we found eggs and chicks in our Pigeon Guillemot nest boxes on ELI and we banded four chicks. We followed Cassin's Auklet and Fork-tailed Storm Petrel breeding activity on the North Shore and at Cassin's Tower sites by monitoring 108 burrows. We banded one Cassin's Auklet chick.

There were 103 marine mammal sightings of 8 different species this season, including 91 Humpback whales.

We also identified 14 active wildlife trees with 15 nests belonging to Red-breasted Sapsuckers (8), Chestnut-backed Chickadees (3), Hairy Woodpeckers (2), Northern Flicker (1), and Brown Creepers (1). One Bald Eagle nest was active on Limestone this year and the chick was flying by mid July.

TABLE OF CONTENTS

INTRODUCTION

Our research and education programs offer a unique opportunity for participants to learn about the marine and terrestrial ecosystems of Haida Gwaii. In particular, we stress the importance of long-term monitoring to develop a better understanding of long-lived species and their natural fluctuations. Consider for example that the oldest Ancient Murrelet we've recorded is at least 17 years old and that Black Oystercatchers banded as chicks in 1994 are currently breeding in Laskeek Bay. A better understanding of the life history of each of these birds will help to evaluate changes across time, which is especially important given the pressures from introduced threats such as predation by non-native species, contamination from pollutants such as oil and recent concerns related to wind turbine developments. We hope that by promoting a better understanding and appreciation for wildlife we can help to protect the marine and terrestrial ecosystems of Haida Gwaii and beyond. This field season marks 17 years of education and research in Laskeek Bay!

EDUCATION AND INTERPRETATION PROGRAM

Two important missions of LBCS are to raise awareness of local conservation issues through environmental education and to provide opportunities for members of the public to participate in hands-on research in the field. To this end LBCS runs several different programs aimed at public involvement through creating opportunities for local youth and adults, as well as visitors, to participate in the research activities on the island.

New on Limestone this year is the Visitor Interpretation Centre. Constructed during March of 2006 this new cabin provides a place where visitors can access the Limestone Island library and explore other interpretive materials. The space serves a dual role of providing a new 'office' and work space and a gathering place for visitors. It has helped to reduce congestion in the old cabin. In addition it provides another heated space for volunteers to read, write or simply relax. It is certainly a very valuable addition to the interpretive program and camp!

Project Limestone

This year was the 16th season that Project Limestone has brought local students to participate in the Ancient Murrelet banding program. Students participate in a tour during the day which introduces them to the island and gives them an overview of the research carried out by LBCS, with a focus on the Ancient Murrelet banding program. Students then return at night to help with chick banding and assist in capturing chicks from the funnels, bringing them to the banding shelter and releasing them. Students also have the opportunity to weigh the chicks, assist in recording data and observe the banding process. This is a unique opportunity for the students and they are always quick to say that it is one of the things they look forward to in the school year.

Six groups from four local schools visited the island this year - a total of 50 students and 13 chaperones/teachers. Our first group of the year was from GM Dawson Secondary School on May 19. The Living and Learning School brought two groups to the island this year, visiting on the nights of May 20 and May 22. Two groups from Queen Charlotte Secondary School (QCSS) visited on the nights of May 24 and 26. The last group of the season was from Anges L. Mathers School on May 31. The number of students participating this year was somewhat higher than in previous years, highlighting the continued and growing popularity of the program among the island youth. Many students have visited in the past and are on their second or third visit to the island. Since 1991, a total of 407 students have participated in the program in 55 visits to the island.

After banding finishes at 3:00 am school groups spend the remainder of the night on a specially built sleeping platform near Boat Cove on the West side of the island. In 2006, staff and volunteers constructed a new out-house at this site prior to the arrival of the first school group. When not on Limestone Island, school groups spend several days at nearby Vertical Point. LBCS volunteers built another out-house here in July because the old one was in disrepair.

Volunteers

The volunteer program is a cornerstone of operations on Limestone Island. Volunteers spend time living in camp with staff and assist in a variety of projects depending on the time of year. This provides a valuable opportunity for members of the public to learn about the operation of a field camp as well as the associated research projects. The enthusiasm and energy contributed by the volunteers goes a long way to accomplishing the many tasks necessary to keep camp running.

This year saw a diverse range of volunteers visit the island to participate in research and partake in camp life. We had volunteers during every week and in total 32 volunteers contributed an

outstanding 268 volunteer days over the course of the season. Of the volunteers this year, 23 were new to the island and 9 had volunteered in the past. Most volunteers spent a week on the island, however our most die-hard volunteer this season, Jen Smith (U.K.), contributed a full 6 weeks - way to go, Jen! Seventeen of this year's volunteers were from Haida Gwaii, five from other areas in BC, and the remainder from places such as Italy, U.K., Japan, Texas, Nova Scotia and Alberta. Our youngest volunteers this season were Evan Garrett, 10 and Peter Moore, 12. We also had several people who volunteered twice during the year, among them director Keith Moore and Barbara and Charlie Mack from Queen Charlotte. Work experience student Steve Botel (Sandspit) from QCSS was on the island July 14-21.

Moira Lemon, Canadian Wildlife Service, was on island June 17-23 to complete a census of the Ancient Murrelet colony. She very much appreciated the help of volunteers Les Loewen and Michiko Nishimura.

LBCS executive director Greg Martin was on the island for the period of July 7-10 installing a new wood stove and working on other camp infrastructure. During the same time, Masset resident Mike Cheney completed a plant survey of Limestone Is., looking in particular at the distribution of invasive species.

Visitors

Similar to Project Limestone, guests from tour boats visit the island during chick banding season to participate in an interpretive tour and subsequent night work. This service is provided by the society free of charge and serves to raise public awareness of the society's research and the importance of long-term monitoring. Most guests are not local and are, for the most part, on ecotourism excursions within Gwaii Haanas. All are very keen to learn about the island ecosystem and the Ancient Murrelets in particular. Many guests say that visiting Limestone is one of the highlights of their visit to Haida Gwaii.

Three boats visited the island this year bringing a total of 30 guests and 4 resource people. S/v Maple Leaf visited on 15 May and then again on 18 May, followed by a group from s/v Anvil Cove, 24 May, and then by s/v Island Roamer on 29 May. Unfortunately, due to poor weather, the group from the Island Roamer were given a tour of the island but were unable to stay for banding.

Reef Island camp, operated by CWS and the Research Group on Introduced Species (RGIS) was up and running from 17 May through 9 June. Dr. Tony Gaston with crew Melanie Farquar, Sophia Colantino, Siobhan MacPherson, Tim Lash and Gwenda Wells stopped by Limestone several times during this period. Limestone staff and volunteers had dinner with the Reef camp on two occasions and their good company was much appreciated. Siobhan also volunteered at Limestone on two separate occasions during the season: 28 May to 2 June and 9-17 June.

Other visitors were Laura Pattison, a guide with Moresby Explorers (and staffer Jake Pattison's sister), who stopped by for a visit on 17 May. Moresby Explorers also stopped by with a group of seven people to view the deer exclosures on 30 June.

Field Staff

In 2006 the East Limestone field camp opened on 29 April and closed 21 July, making a 97 day season. Our field staff this year were: Jen Rock (camp supervisor / biologist – 9 weeks), Laura Cowen (camp supervisor / biologist – 3 weeks) and Jake Pattison (assistant biologist / interpreter – 11 weeks)

Haida Gwaii Watchmen

Because of our busy schedule, visits with our watchmen neighbours are infrequent. This season we were fortunate to spend time with the watchmen at Skedans, Tanu, and Hot Springs, as our Black Oystercatcher work brought us to these sites in search of birds. Thank you for your warm welcomes.

RESEARCH AND MONITORING PROGRAMS

Ancient Murrelets *Synthliboramphus antiquus*

Adult Banding and Burrow Monitoring

For a third consecutive year there was no Ancient Murrelet adult capture work or burrow monitoring at East Limestone and the camp opened one month later than in previous years. LBCS suspended this work in 2004 after 14 consecutive years of banding adults and monitoring burrow occupancy. This was done to reduce disturbance to breeding and non-breeding adults. We hope to address whether previous adult capture and burrow work has deterred prospecting birds, resulting in reduced recruitment and lower chick numbers.

Chick Banding

Each night from 5 May to 2 June we monitored funnels at North Cove and Cabin Cove for Ancient Murrelet chicks. From 5 to 19 May, chick trapping took place between 22.30h and 02.30h. After 19 May, in response to longer daylight hours the schedule was adjusted to begin trapping at 23.00h. This year two new funnels were added to the Cabin Cove area, bringing the total to eight funnels, four at each of the trapping locations. Chicks first arrived at funnels on 10 May and following the usual protocol banding continued until the first night when no chicks arrived at any of the eight funnels (Figure 1). All chicks that passed through our funnels were weighed and banded and in total we caught 446 chicks in the six historical funnels. In addition, 48 chicks were caught at the new funnels and 20 chicks were caught after 02.30h or outside of the funnels (Table 1).

This year, we counted the fewest number of chicks trapped at funnels one to six, apart from 2004 when we counted one individual fewer (Figure 2). Chick departures peaked on 17 May, which is a few days earlier than the average (SD) peak of 20 May ± 2.5d. Also of note, the length of the chick banding season was the shortest recorded to date (Table 1).

LBCS is concerned about the apparent decline in the number of chicks since 2003, and has decided to hold a workshop in the fall of 2006 and to analyze date and to consult with biologists about the potential causes of the decline. Changes to the field program will be considered for 2007.

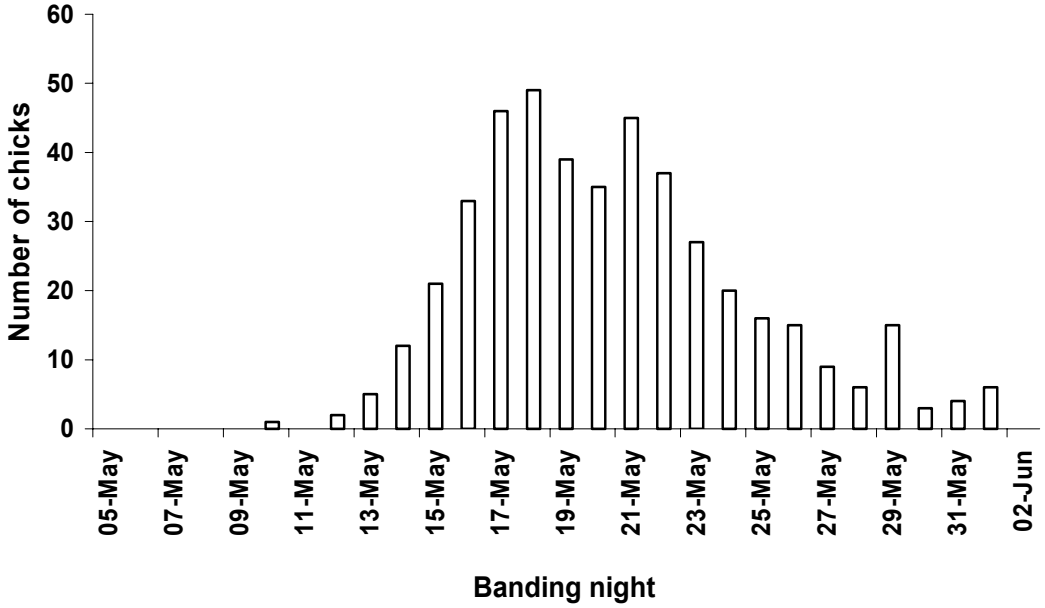

Figure 1. Nightly chick numbers caught at funnels 1-6 on Limestone Island, 5 May to 2 June 2006.

Table 1. Summary of chick departures, peak nights and totals from funnels 1 to 6 on Limestone Island 1990-2006.

Year	*Opening night*	*First night with chicks*	*Last night*	*Peak night*	*Peak count*	*Total days*	*Total chicks*
1990	12-May	12-May	15-Jun	22-May	65	35	873
1991	08-May	08-May	06-Jun	26-May	48	30	571
1992	12-May	12-May	03-Jun	21-May	73	23	674
1993	09-May	10-May	15-Jun	18-May	70	37	653
1994	07-May	07-May	08-Jun	22-May	52	33	618
1995	07-May	10-May	11-Jun	22-May	64	33	617
1996	10-May	11-May	09-Jun	19-May	48	30	587
1997	08-May	11-May	11-Jun	24-May	41	32	527
1998	07-May	11-May	22-Jun	20-May	55	43	495
1999	09-May	11-May	11-Jun	21-May	54	32	567
2000	11-May	11-May	11-Jun	20-May	62	32	595
2001	08-May	10-May	15-Jun	18-May	54	37	560
2002	07-May	09-May	03-Jun	21-May	65	26	566
2003	10-May	11-May	03-Jun	21-May	52	24	512
2004	08-May	08-May	02-Jun	16-May	45	26	445
2005	07-May	07-May	06-Jun	23-May	38	31	462
2006	05-May	10-May	01-Jun	17-May	49	23	446

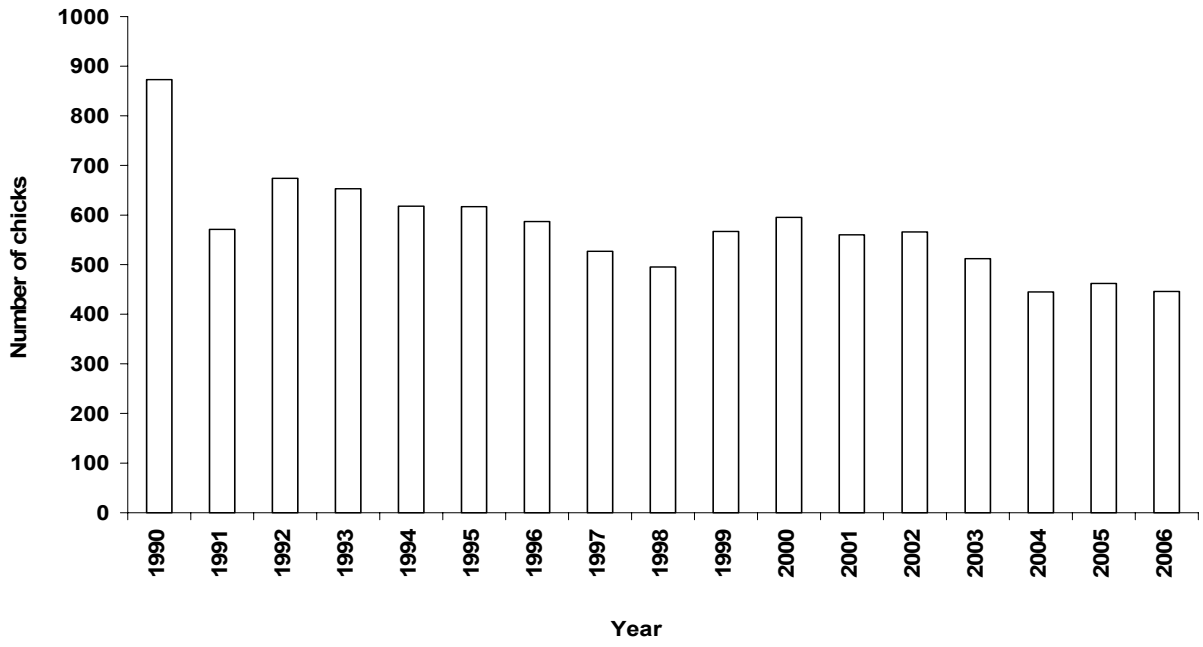

Figure 2. Number of Ancient Murrelet chicks caught at funnels (1 to 6) on Limestone Island from 1990 to 2006.

Gathering Grounds

We counted Ancient Murrelets gathering west of Low Island daily from 30 April to 20 June 2006. Each day, we conducted five-minute counts approximately two hours before sunset. Poor weather conditions prevented counts on 11 days and an additional five days were missed because the crew was absent during gathering ground hours. The peak count of Ancient Murrelets gathering west of Low I. was 123 birds on 14 May (Figure 3). On average (SD) we counted 50.5 ± 40.0 (range: 3-123) birds on the gathering grounds in May and 23.1 ± 23.1 (range: 4-69) birds in June.

Point Counts

From 21 May to 2 June we conducted daily point counts for Ancient Murrelets following chick trapping sessions (at approximately 02.30h). We counted the number of calls heard and the number of individuals calling for five-minute periods at both North Cove and Cabin Cove. Summing data collected from both locations, the peak numbers were 106 calls on 25 May and 13 individuals on 24 May.

This season, undergraduates under the direction of Tony Gaston examined the use of point counts to monitor colony attendance at Reef Island. They will be comparing the accuracy of point count information recorded across individuals in addition to analyzing the call data recorded electronically. Hopefully, this work will contribute to developing a methodology for using point counts to monitor activity in the Ancient Murrelet colony in a more rigorous way and to more accurately monitor the number of prospecting, non-breeding birds in the colony.

Population trends

In June Moira Lemon (CWS) led a complete census of the East Limestone Ancient Murrelet colony with staff and volunteers. We used transect methods (plots were 7 x 7 m squares placed at

20 m intervals) following identical protocols used in previous censuses on East Limestone (1983, 1989, 1995). Based on data from 13 of the 14 transects analyzed to date, the number of burrows in 2006 is approximately 63% of what was recorded in 1995. In terms of occupancy, less than 50% of the burrows held evidence of current years breeding effort compared to over 60% in 1995. There was no indication that the colony has shifted to other areas on the island. Overall, these transect results are consistent with the decline in chick numbers observed at funnels and suggest that the number of breeding birds on Limestone is lower than in earlier years.

Black Oystercatchers *Haematopus bachmani*

Occupancy and Reproductive Success

Since 1992 we have been monitoring Black Oystercatchers in the Laskeek Bay area from Cumshewa Island (north of Limestone) to the Lost Islands in Gwaii Haanas. In 2006, we visited Black Oystercatcher territories in Laskeek Bay to determine reproductive success by counting the number of breeding pairs and measuring eggs and chicks. We found 35 territories occupied by adults and at 26 of these we found either eggs or chicks at some point in the season. A total of 13 chicks hatched at nine territories (range: 1-2 chicks per nest). Eight chicks were big enough to band (we band chicks that exceed 100g in weight).

For a third consecutive year we extended our Black Oystercatcher monitoring to include additional sites in Gwaii Haanas. Not including sites in the Lost Island group, we identified 60 territories occupied by adults and at 55 of these we found either eggs or chicks. Thirty-eight chicks hatched at 26 territories (range: 1-3 chicks) and 21 chicks were big enough to band. This 3-year program was funded by Gwaii Haanas, and is part of a coast wide monitoring program of Black Oystercatchers. We will produce a final report of our work after this season, and we anticipate that the nest will be monitored every second year after this season.

We band chicks with a uniquely numbered metal band in addition to colour band combinations to indicate where chicks were banded and the year they were banded. These band combinations allow researchers to examine dispersal and various life history aspects and as a result we are always keeping an eye out for banded adults. This year we re-sighted 12 banded Black Oystercatcher adults at 11 different sites (Table 2). This fall and winter, LBCS hopes to look for banded birds in Skidegate Inlet.

Table 2. Banded Black Oystercatchers re-sighted in Laskeek Bay 2006, * note that birds can lose colour bands (UB = unbanded).

Band Combination	***Location seen / Nest site***	***Year Banded***	***Banded as Adult or Chick***
UB – W/M	South Low (SLW-8)	1994	Chick
UB – BK/M	Reef I. (REE-2)	2000	Chick or Adult
AL – BK/M	Reef I. (REE-1)	2000	Adult
UB – BK/M	Lost I. (LOS-4)	2000	Chick or Adult
UB – BK/M	South Low (SLW-5)	2000	Chick or Adult
UB – BK/M	South Low (SLW-1)	2000	Chick or Adult
UB – M	Kingsway Rk. (KNG-2)	unknown	unknown
W – R/M	East Limestone I. (ELI-3)	2003	Chick (not breeding)
WH – BK/M	Skedans I. (SKE-6)	2000	Chick
UB – M	Cumshewa	unknown	unknown
UB – R/M,	Both at Reef I., in a flock of	2003	Chick
UB – BK/M	seven birds	2000	Chick or Adult

Diet

We also collected data on Black Oystercatcher diets. Chick diets are comprised primarily of marine invertebrates that adults feed to chicks at the breeding territory until fledging (approx. 40 d.). Chick diet composition can be inferred from prey remains found within the breeding territory. We described chick diet composition and prey size by counting and measuring food remains in the vicinity of nest sites with chicks.

In Laskeek Bay we collected 2432 prey remains from nine nests that we later identified and measured. In Gwaii Haanas we identified 1263 prey remains from 18 nests but we did not measure these due to time constraints. Based on the mean proportion of prey remains at each nest site, limpets make up about 70% of Oystercatcher chicks diet. Limpets mussels and chitons together made up 99% of the prey remains identified (Figure 3)

Figure 3. Invertebrate prey remains identified at Black Oystercatcher nest sites in Laskeek Bay and Gwaii Haanas 2006 (n = 3795 prey from 27 nests).

Glaucous-winged Gulls *Larus glaucescens*

Since 1992 we have been censusing Glaucous-winged Gull colonies in Laskeek Bay. In 2006 we counted adults, nests and the number of eggs at Kingsway Rock, Lost, Low, Skedans and Cumshewa Islands. We visited most sites between 25 and 26 June with the exception of the Lost Islands which we visited late this year (2 July) because of scheduling and weather. As usual, the largest colonies were at Lost Is. with 252 active nests followed by Kingsway Rk. with 20 nests. Only a few additional breeding pairs were found at Skedans Is., Low I., and Cumshewa I. where two, nine and zero nests were found respectively (Figure 4).

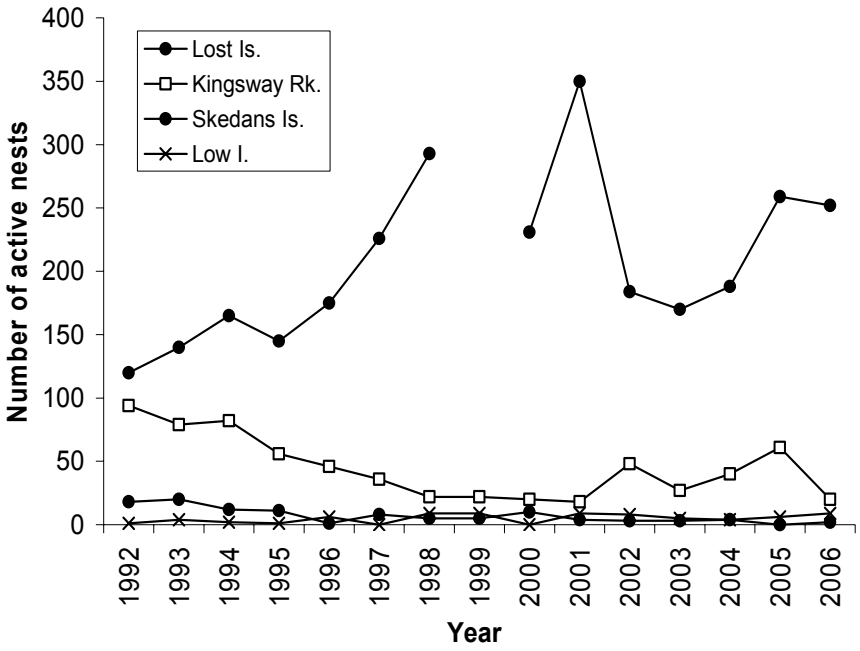

Figure 4. Number of active Glaucous-winged Gull nests in Laskeek Bay 1992-2006.

The number of breeding pairs on Lost Islands remains high compared to other colonies and is higher than the early 1990s (Figure 4). The number at Kingsway Rock is lower. Because of the later survey date this year, more than half of the nests contained chicks with some chicks estimated to be 14 days old.

Pigeon Guillemots *Cepphus columba*

Ten wooden Pigeon Guillemot nest boxes were set up at Lookout Point in 2001 and we check the boxes for nesting activity at the end of each season. We visited the nest boxes on 18 July and seven nest boxes were active. They contained one egg (n = 2 nests), one chick (n = 2 nests) and two chicks (n= 3 nests). Four chicks were banded with metal bands while the remaining four were just a few days old and too small to band.

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

We monitored breeding activity at 74 burrows located at North Shore and Cassin's Tower sites by conducting weekly checks for knockdowns at burrow entrances. At the North Shore we monitored 25 burrows and at 18 of these we recorded activity (more than two records of knockdowns). Cassin's Auklets were definitely active in this area as telltale droppings and strong characteristic smells were noted at several of the burrows entrances. Nesting habitat in this area is very rocky making the majority of burrows inaccessible. However, this year we installed 24 nest boxes at this site hopefully providing future opportunities for banding and monitoring chick growth.

At Cassin's Tower, we monitored 44 burrows and at 43 of these we recorded activity. We also monitored knockdown activity at a nest box and were able to use the hatch to access the Cassin's Auklet chick inside, which we later banded. Both Cassin's Auklets and Fork-tailed Storm Petrels occupy burrows in this area. We know this because some burrows possess distinct Cassin's

Auklet attributes (see above) whereas others, in contrast, have smaller openings and are characteristically 'musty' in smell. In one we found a Petrel egg.

Both the North Shore and Cassin's Tower sites were heavily disturbed by raccoons in the early 1990's and for some years there was virtually no activity at burrows or nest boxes at these locations. The high levels of activity in 2006 continues the trend of increasing activity at these sites that we have noted over the last 5 years, and indicates that Cassin's Auklet and Fork-tailed Storm Petrel numbers on Limestone Island are growing.

At-Sea Surveys

To determine the abundance and distribution of different marine birds in Laskeek Bay we use transect methods conducted regularly throughout each season. We have conducted these surveys each year since 1991 and they are now an invaluable long-term data set.

Nearshore surveys
We conducted four nearshore surveys on 9-11 May, 4 June, 25 June and 15 July. During the four surveys, we counted 11 different marine bird species including: Ancient Murrelets, Marbled Murrelets, Rhinoceros Auklets, Pigeon Guillemots, Pelagic and Double Crested Cormorants, Pacific Loons Glaucous-winged Gulls, White-winged Scoters, Long-tailed and Harlequin Ducks. We also commonly observed Bald Eagles nd Black Oystercatchers. Marbled Murrelet encounters are of particular interest because this bird is provincially red-listed and is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Our peak count of Marbled Murrelets during nearshore surveys was 182 birds on 15 July. These birds were counted on the water or flying within our transects.

Hecate Strait surveys
Especially calm conditions are required for the 'offshore' Hecate Strait surveys making it difficult to schedule regular trips. In 2006 we conducted 'offshore' surveys on 9 June and 16 July. We counted ten different marine bird species during the two offshore surveys including: Ancient Murrelets, Marbled Murrelets, Rhinoceros Auklets, Pigeon Guillemots, Pelagic Cormorants, Common Loons, Glaucous-winged Gulls, Sooty Shearwaters, Red-necked Phalaropes, and a Tufted Puffin.

Marine Mammals

In 2006, we recorded 103 marine mammal sightings of eight species (Table 3). Reports of marine mammals are a combination of observations made during sea surveys, sea watches and opportunistically.

Humpback whales were a common sight in the spring and this season we counted 91 Humpbacks in total. Despite these frequent reports, we had only one opportunity to take photos of tail flukes for individual identification because most of our whale sightings occurred from a distance, from land, and/or during poor weather conditions.

We have only one Killer whale encounter to report this year. On 21 June at 17.00h a group of four individuals was spotted traveling through Cabin Cove. Members of the group included one bull, two smaller individuals and a juvenile. We watched the whales for approximately 20 minutes as they traveled towards Low I. On route, the whales put on a fantastic acrobatic show complete with spy hopping, tail lobbing and breaching.

Although sightings of Pacific white-sided Dolphins were not a common occurrence this year, there were three notable encounters. On both the 12 and 19 May large groups (>150 individuals) were spotted out beyond Low I. As they traveled across Laskeek Bay, dolphins lined the horizon. On 3 July we spotted 15 Pacific white-sided dolphins on the SE side of Lyell I. This was a unique encounter because the dolphins were foraging around and under our boat providing excellent close-up views.

Steller sea lions are commonly hauled out at sites on Skedans and Reef Islands and LBCS has surveyed these sites several times a year since 1991. Our highest count this year at Skedans was 60 individuals on 11 May and at Reef, 386 individuals on 4 June. During our 4 June visit we spotted two branded Steller sea lions at the Reef haul-out: 'F1026' and '75Y'. That same day, the Reef I. crew reported seeing a third branded individual 'F1020'. It is likely that the 'F' individuals were branded at Forrester Island in Alaska and we will be following up on the origin of these sea lions.

Table 3. Total counts of marine mammal sightings by Laskeek Bay Conservation Society based on observations made during sea surveys, sea watches and opportunistically, 2002-2006. (note: Harbour seals and Steller sea lion counts are not included).

Species (common name)	***Scientific name***	***2006***	***2005***	***2004***	***2003***	***2002***
Dall's porpoise	*Phocoenoides dalli*	0	1	0	0	29
Northern elephant seal	*Mirounga angustirostris*	0	0	0	1	0
Fin whale	*Balaenoptera physalis*	0	0	0	1	0
Grey whale	*Eschrichtius robustus*	1	1	1	3	2
Harbour porpoise	*Phocoena phocoena*	4	3	12	5	21
Humpback whale	*Megaptera novaeangliae*	91	15	19	152	49
Killer whale	*Orcinus orca*	4	11	13	21	29
Minke whale	*Balaenoptera acutorostrata*	1	0	2	0	0
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	365	8	0	325	22
California sea Lion	*Zalophus californianus*	0	1	1	0	0

Wildlife Trees

Decaying, standing trees (snags) provide habitat for cavity nesting birds and each season we survey East Limestone for potential nest sites. This year we monitored 44 snags for cavity nesting birds and after three, 0.5h visits to each tree we determined nine of these trees were active with nests (Table 5). In addition, we found five new wildlife trees in 2006 for a total of 14 active trees. There were 15 nests in the 14 trees that were occupied by five species of birds including: Red-breasted Sapsuckers (8 nests), Chestnut-backed Chickadees (3 nests) Hairy Woodpeckers (2 nests), Northern Flicker (1 nest) and Brown Creepers (1 nest). The number of Red-breasted Sapsucker nests is currently much lower than in 2000 when there were 22 nests. The 2006 total of 8 nests is higher than 2005 when there were only 5, but this is the second lowest number we have recorded since 1991.

We now have a total of 111 different wildlife trees observed to have had nests over the years and we are hoping to soon complete a report.

Table 5. Wildlife tree use on East Limestone Island, 2006. (RBSA = Red-breasted Sapsucker, NOFL = Northern Flicker, CBCH = Chestnut-backed Chickadee, HAWO = Hairy Woodpecker, BRCR = Brown Creeper, Ss = Sitka spruce, Hw = Western hemlock)

Tree #	*Cavity Nester*	*Tree Species*	*Fledge Date*
10	RBSA	Ss	19-Jun
17	NOFL	Ss	30-Jun
45	CBCH	Ss	7-Jun
72	RBSA	Ss	20-Jun
90	RBSA	Ss	21-Jun
96	CBCH	Hw	6-Jun
96	RBSA	Hw	21-Jun
99	RBSA	Hw	11-Jun
103	HAWO	Hw	2-Jun
106	RBSA	Ss	19-Jun
107	HAWO	Ss	11-Jun
108	BRCR	Ss	11-Jun
109	RBSA	Ss	19-Jun
110	CBCH	Ss	5-Jul
111	RBSA	Hw	3-Jul

Tree #10 was first recorded in 1992 and has now been active in 7 different years. Tree #17 was first recorded in 1993 and has been active in 10 different years. On average (SD) cavity nesters chicks fledged on 17 June ± 9.8d (Table 5) with Hairy woodpeckers averaging the earliest fledge dates (6 Jun ± 6.4d) and Red-breasted Sapsuckers the latest (18 Jun ± 6.0d).

There was no sign of nesting Northern Saw-whet Owls on the island this year.

NATURAL HISTORY

Daily Bird Checklist

We recorded a total of 59 bird species seen or heard in the Laskeek Bay area during the 2006 season and our daily maximum count was 32 species on 9 July. Some of the less common sightings included four Red-necked Phalaropes seen during an offshore survey, and Western and Least Sandpipers spotted at Kingsway Rock on 16 July. Other species of note that we saw or heard during visits south of Laskeek Bay included Northern Saw-whet Owl, California Gull, Great blue Herons and Blue Grouse.

Birds of Prey

Our only active Bald Eagle nest this season was in tree #5 located at Cassin's Tower. The pair was observed at the nest regularly from 9 May and a chick was first spotted on 7 June. The ridge adjacent to Cassin's Tower provided an excellent perch from which to watch the nest and view the chick. On two occasions around 10 July the large chick was absent from the nest however following each of these watches the chick was seen back in the nest suggesting that by mid July the chick was flying. At camp shut-down on 21 July the chick was still in the nest.

Most years we have regular reports of Northern Saw-whet Owls calling in addition to the occasional nighttime sightings during Ancient Murrelet chick banding season. Twice, we have

found Saw-whet Owl nests in our wildlife trees. However, in 2006 there was no sign of Saw-whet Owls on Limestone Island.

There were no signs of Peregrine Falcons nesting on the island this year and only occasional observations. There were very few observations of Red-tailed or Sharp-shinned Hawks.

Common Ravens nested on Limestone again this year and by 26 May the young had fledged. We suspect that Northwestern Crows also nested on the island because we found a handful of nests in Crow Valley and noted the presence of Crows in the area. We did not observe activity at any of the nests but they were discovered late in May and chicks may already have fledged.

Plants

We continue to inventory plants and bloom dates on Limestone throughout the field season and in early July, Mike Cheney visited Limestone to re-survey the plant community on the island. Of particular interest was the distribution of rare and invasive species. Several plant species that occur on Limestone are uncommon or occur nowhere else in the Archipelago while others are aggressive, non-natives that potentially threaten to compete with native species.

Introduced Species

In Haida Gwaii, non-native species such as Sitka Black tailed deer and Raccoons have had a considerable impact on the island's ecosystem. The deer mark their presence on Limestone by browsing heavily on the forest understory. Our three deer exclosures (20 m x 20 m) now provide visitors and volunteers with a chance to compare the dramatic difference between areas with and without deer browse. This year again, one of our exclosures was badly damaged by a falling tree, but was quickly repaired. The effects of deer browse are especially highlighted when we visit the few deer-free islands in Laskeek Bay. These deer-free sites are often carpeted with wildflowers and dense under brush, features uncharacteristic of islands with deer.

Raccoons have had devastating effects on seabird colonies which have no natural defense against these introduced predators that target adults, chicks and eggs. They were present on Limestone Island in the early 1990's (and possibly in 2001) and had a dramatic impact on nesting Ancient Murrelets, Cassin's Auklets and Petrels at that time. This year, poor weather prevented raccoon surveys by boat on most days with appropriate tide conditions, and as a result we completed only one boat survey (6 June) to search for raccoons on Louise and Limestone Islands. Despite this reduced effort to scan for raccoons by boat, we surveyed East Limestone regularly by foot keeping an eye out for signs of diggings, predation and tell-tale latrines. No signs of raccoon activity were recorded in 2006.

SUMMARY

Ancient Murrelet chick numbers remain low compared to early years suggesting that the overall number of breeding birds has declined over time. Preliminary results from this year's population census are consistent with this trend and it does not appear that the colony has shifted to other areas on the island. At this point we are considering a number of potential factors that might explain the decline in Ancient Murrelets on Limestone Island and there are plans to address this issue collectively at a workshop in the fall of 2006 that will include LBCS directors, staff and biologists familiar with our research program.

In terms of the other research activities, this year saw the completion of a three-year contract with Parks Canada to conduct Black Oystercatcher work south of Laskeek Bay. Overall, this project

was very successful in collecting baseline data for the region and there is discussion that Parks Canada would like LBCS to continue this work by re-surveying territories every other year.

Our visitor, volunteer and student programs continue to be very well received.

ACKNOWLEDGEMENTS

With the generous contributions from the following groups and individuals, the Laskeek Bay Conservation Society has been able to provide its scientific monitoring and education programs, raising awareness and understanding of the marine and terrestrial ecosystems of Haida Gwaii. We gratefully acknowledge the support of:

- Coast Sustainability Trust
- South Moresby Forest Replacement Account
- BC Gaming Commission
- Gwaii Trust (Project Limestone)
- Canadian Wildlife Service, Environment Canada
- World Wildlife Fund and N. M. Davis Corporation
- Science Horizons Program, Environment Canada
- School District #50 & the Community Links Program
- Gwaii Haanas National Park Reserve and Haida Heritage Site
- Blue Water Adventures (t-shirt purchases and donations)
- Maple Leaf Adventures (t-shirt purchases and donations)

Thanks also to the following individuals and groups who gave generously of their time and services to the Society:

- LBCS Directors for their time and efforts in keeping the Society running year after year;
- Dr. Tony Gaston for his valuable advice and guidance throughout the field season;
- Graeme Ellis (Pacific Biological Station) for providing a camera and film to document whales even though there was less cooperation this year from the whales;
- This year's crew of local and international volunteers for all their enthusiasm, hard work, good humor and good company;
- Project Limestone teachers and students for their dedication to the project and for teaching us just as much as we teach them;
- South Moresby Air Charters for the pick up/drop off of volunteers/staff all season long;
- Jeremie Hyatt and the *m/v Wanderlust* for transporting gear at camp start-up and take-down;
- The *m/v Gwaii Haanas* for help with freight delivery;
- The *s/v Anvil Cove, s/v Island Roamer* and *s/v Maple Leaf* for bringing such lively and interesting visitors and for their endless promotion of LBCS.

For more information about Laskeek Bay Conservation Society, our programs and publications, please visit our website at www.laskeekbay.org or contact LBCS at:

Laskeek Bay Conservation Society
Box 867, Queen Charlotte, B.C., V0T 1S0
ph/fax (250) 559-2345
e-mail laskeek@laskeekbay.org