

EAST LIMESTONE ISLAND FIELD STATION: REPORT ON THE 2003 FIELD SEASON

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SUMMARY

The Laskeek Bay Conservation Society's 14th field season on East Limestone Island ran from 29 March 8 July 2003. This report summarizes the Education, Interpretation and Research and Monitoring programs. The 14-week field season involved 5 field staff, one in-town staff, eight Directors and 162 volunteers and visitors. Through Project Limestone, the camp was host to four school groups from Haida Gwaii. Ancient Murrelets continue to be the main focus with over 2500 adult Ancient Murrelets and 8800 chicks banded on Limestone Island since 1990. In 2003, 142 adults were caught, of which 46 were new birds. There were 16 active burrows monitored throughout the season, from which 21 chicks successfully fledged. Chick banding was just below the 14-year average with 523 chicks banded from the funnels. The Black Oystercatchers in the area were also surveyed and 22 active nest sites were found throughout the season. Surveys of Glaucous-winged Gull colonies yielded a total of 206 active nests, the majority on the Lost Islands. The Pigeon Guillemot nest boxes on East Limestone Island had the highest occupancy since they were put in place in 2001 with a total of 3 eggs found in 2 boxes. The return of the Cassin's Auklet to Limestone Island and significant petrel activity is also of great interest. Wildlife Trees were monitored and 20 active trees were found used by 4 species of cavity nesters. Although no Northern Saw-whet Owl nest was found, it was confirmed that a pair was on island when the female was banded and the male heard calling. Songbird banding was carried out at East Limestone, Reef, Low and West Skedans islands with 203 birds caught during banding sessions, including 2 birds that had moved between islands. There were 129 marine mammal sightings, including 2 spectacular Killer Whale encounters. Contributions by volunteers and staff alike to the long-term scientific research helped provide a unique learning experience for all.

INTRODUCTION

2003 Field Staff

The East Limestone Island camp opened on 29 March in 2003 and was open for a total of 99 days. This includes 2 days when camp closed temporarily on 25-26 April. This year's staff were: Laura Cowen (Camp Supervisor/Biologist (April/May)), Joëlle Fournier (Camp Supervisor/Biologist (June/July)), Suzanne Charest (Biologist/Interpreter), Charlotte Tarver (Interpreter/Naturalist), and Christine Gibb (Songbird Technician from Queen's University). Dr. Tony Gaston was on Limestone Island from 29 March – 4 April to assist with camp set-up, Ancient Murrelet burrow and nestbox monitoring and pre-laying Ancient Murrelet banding.

EDUCATION AND INTERPRETATION PROGRAM

This program imparts to students, teachers and other visitors what we are learning from our research projects. It provides the opportunity for the Society to demonstrate the operation of a biological field station and enables visitors to take part in the data collection at a first-hand. The program draws visitors from local schools and tour boats in increasing numbers. Project Limestone is now a highly sought after field trip for local students, with more students wishing to come than there is space available. Tour operators report that their Limestone visit is a highlight of their tour for guests!

Project Limestone

This was the thirteenth year for local students to come to Limestone. Thirty-nine youth, ages 10 to 18, came during the Ancient Murrelet chick departure time. Thirteen teachers and chaperones accompanied them, with each school group coming for an afternoon orientation and then returning at night. All students had a chance to help with captures, weighing, data entry and releasing the chicks at the edge of the ocean. On two occasions, students stayed after chick banding to help trap adult Ancient Murrelets.

Visitor Interpretation Program

Two tour boats (*s/v Island Roamer* and *s/v Maple Leaf*) called in at Limestone seven times (May 17, 20, 24, 26, 30, June 20 and 28) bringing 94 people to learn about LBCS work. Each tour group was given a two-hour interpretive walk across the island ending at the cabin. The groups that came during the chick departure season also came ashore at night to sit in the forest listening to the activity of Ancient Murrelets in the nesting colony. They helped staff with the capturing and weighing of chicks and data entries. In June, tour groups came during the day to watch and learn about the forest bird banding project.

Nineteen other people came to Limestone and all were given an interpretive walk-about of the island. On May 9, five Gwaii Haanas Parks' staff were given a tour of the island and the camp facilities. Two private parties visited in May, two people in a small boat and four kayakers. An LBCS work party also stayed for three days in May to help with camp maintenance, cut firewood and to erect a new shower stall.

Although the Research Group on Introduced Species (RGIS) was not operating a camp on Reef Island this year, we were fortunate to have visits from several of the researchers due to the filming of a documentary on the introduced species project. In June, the French film crew stayed on Limestone for two days to film parts of this documentary.

Haida Gwaii Watchmen

In June, the two Haida Gwaii Watchmen from Skedans village, Laura and Marvin, visited Limestone Island on several occasions for dinner. They were given a tour of the island and a brief description of the programs run by LBCS. The invitation was reciprocated and Limestone Island staff and volunteers enjoyed an evening of desserts at Skedans with the Watchmen.

Volunteers

Thirty-three volunteers worked alongside staff during the 14-week season. They contributed over 450 person-weeks of time towards the operation and maintenance of the field camp and towards the research programs. Twenty-four people were first-time volunteers, and thirteen were local residents. It is notable that six of the volunteers were children ages 10 to 14, contributing five weeks of work. Their youthful energy and inquisitive minds made for a lively camp. Without the efforts of our volunteers, we would not be able to accomplish all the tasks and work needed to run the research station.

RESEARCH AND MONITORING PROGRAM

Ancient Murrelets *Synthliboramphus antiquus*

Adult Banding

Adult Ancient Murrelets were caught while leaving the colony using large flight nets at three different locations on Limestone Island from 1-12 April (pre-laying) and from 15 May - 3 June (post-laying). The nets were opened on 17 nights, for a total of 37.15 hours from approximately 0300-0530 in April, and 0130 or 0200-0415 in May and June.

We caught 180 birds (46 new and 134 recaptures), but 38 birds were caught more than once, so the actual number of birds on which data was collected was 142 (46 new and 96 recaptures) (Table 1). Of these 142 birds, 99 were caught in April (27 new and 72 recaptures) and 43 in May and June (19 new and 24 recaptures).

Table 1

The number of adult Ancient Murrelets caught on East Limestone Island in 2003. Birds with brood patches 10-19mm are of unknown breeding status. *Does not include repeat captures in 2003

Timing	Capture Method	Breeding Status	New Birds	Recaptured Birds*	Total Birds
Pre-laying	Net	Breeder	27	72	99
Post-laying	Net	Breeder	4	7	11
	Net	Non-breeder	10	2	12
	Net	Unknown	3	8	11
	Burrow	Breeder	2	7	9
Total			46	96	142

The average weight (mean \pm 1 SD) of breeding birds caught in the flight nets was 201.2 ± 13.1 g, while non-breeders caught in the nets weighed 179.1 ± 9.9 g and those from burrows weighed 208.0 ± 14.7 g.

The net at North Cove was the most often deployed (7 nights for 13.1 hours) but caught the fewest birds (26 birds). The Spring Valley net was opened 6 nights (14.35 hours) and caught the most birds (85 birds). The Cabin net was only opened 4 nights (9.7 hours), but caught 53 birds and had our highest total for one night at 27 birds. The catching efficiencies for each net were therefore 14.2 birds/night at Spring Valley, 13.2 birds/night at the Cabin and 3.7 birds/night at North Cove.

The majority of birds recaptured this year were from 1998, including one bird banded as a chick in that year (Fig. 1). Four other birds caught had been banded as chicks: 1 in 1994 and 3 in 1990. One bird, banded as a breeder in 1990, must have been at least 15 years old. No birds two or three years old (banded as chicks in 2000 and 2001), usually the commonest age classes, were caught.

The number of non-breeders caught this year was the lowest ever. Only 12 non-breeders were caught and, based on the experience of people in camp, there were very few singing in the trees at night. To compare nightly vocalizations, counts of the number of calls heard and the number of calling individuals (excluding birds considered to be on the water calling to chicks) between 02.00 and 02.05 were recorded at cabin net each night from 25 May - 6 June.

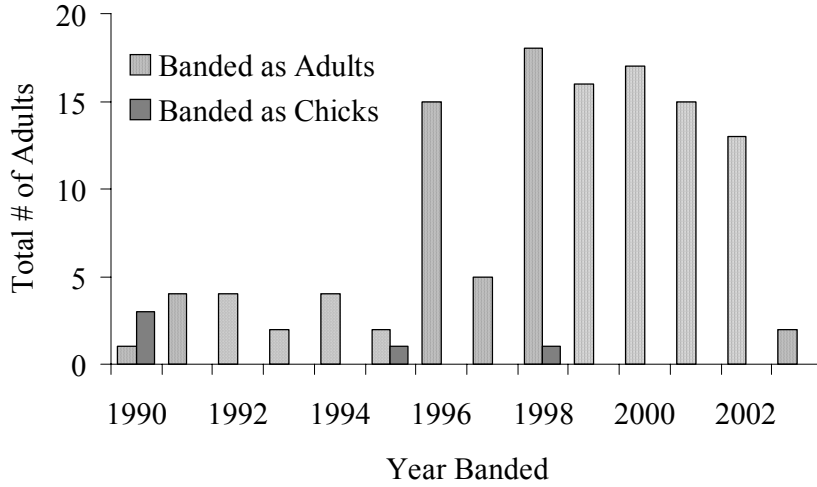


Figure 1
History of Adult Ancient Murrelets recaptured in 2003

Chick Banding

Chick trapping was conducted by the usual methods, with six funnels in operation from 10 May - 7 June. The first chick arrived in funnel 5, beside the cabin, on 11 May (Table 2). Using the adjusted time protocol from 2001, funnel gates were closed from 2230-0230 for the first 3 weeks of May and from 2300-0230 from the end of May to the end of banding.

Table 2
Summary of Ancient Murrelet chick departures from Limestone Island, 1990-2003

Year	Opening night	First night	Last night	Peak night	Peak count	Total days	Total chicks
1990	12 May	12 May	15 June	22 May	65	35	873
1991	8 May	8 May	6 June	26 May	48	30	561
1992	12 May	12 May	3 June			23	674
1993	9 May	10 May	15 June	18 May	70	37	653
1994	7 May	7 May	8 June	22 May	52	33	618
1995	7 May	10 May	11 June	22 May	64	33	617
1996	10 May	11 May	9 June	19 May	48	29	588
1997	8 May	11 May	11 June	24 May	41	31	527
1998	7 May	11 May	22 June	20 May	55	43	495
1999	9 May	11 May	11 June	21 May	54	31	567
2000	11 May	11 May	11 June	20 May	62	31	595
2001	8 May	10 May	15 June	18 May	54	37	560
2002	7 May	9 May	3 June	21 May	65	26	566
2003	10 May	11 May	7 June	21 May	52	28	523

A total of 549 chicks were banded: 523 within the funnels, 10 outside of the funnels and 16 from burrows. If the chicks caught in 1990 and the non-adjusted values in 1996 are included, the 2003 total is just within one standard deviation of the long-term average (Fig. 2). The peak number of chicks (52) occurred on 21 May, as in 2002 (Table 2 & Fig. 3). On average, chick weights were similar to those from previous years. Chicks from the burrows weighed 31.0 ± 2.8 g, while those from the funnels weighed 26.4 ± 2.1 g, a 15% weight loss.

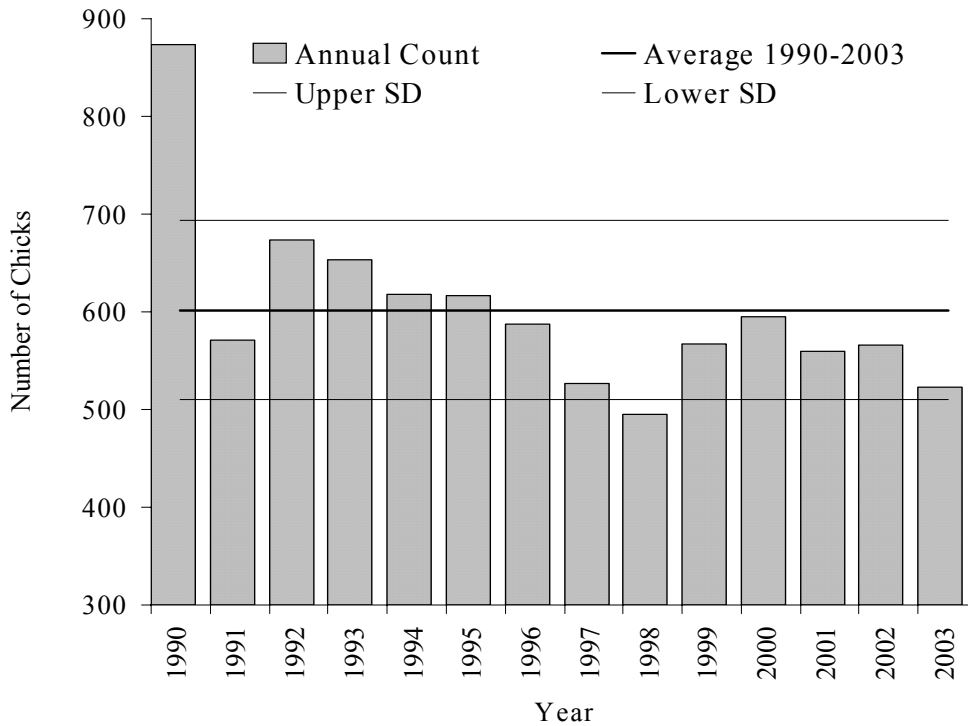


Figure 2
Annual counts of Ancient Murrelet chicks caught in funnels on East Limestone Island 1990-2003. The bold line is the long-term mean for 1990-2003 and the fine lines are one standard deviation from the mean

Burrows

Fifty-three Ancient Murrelet burrows, 5 of which were new this year (S37, C99-C102), were checked daily for first eggs, signs of entry (knockdowns) and presence of incubating adults from April 4 to June 1 (June 21 for 2 late burrows). The first egg was found on April 4 and the last, over one month later on May 8. This year, there were 16 active burrows, containing a total of 29 eggs. From these burrows, 21 chicks fledged successfully (9 with 2 chicks, 3 with 1 chick) and 4 were deserted (1 with 1 egg, 3 with 2 eggs).

There were 3 burrows where it was thought that the nest cup was reached and the burrow unoccupied until an adult was found incubating eggs towards the end of its incubation period. Two of the three burrows fledged chicks, and it was suspected that the third was abandoned when one of the partners was predated outside of its burrow. An adult in burrow C44 was also found incubating eggs on May 22. There had been no knockdowns at C44 all season and therefore no reason to enter, until an alternate entrance was discovered.

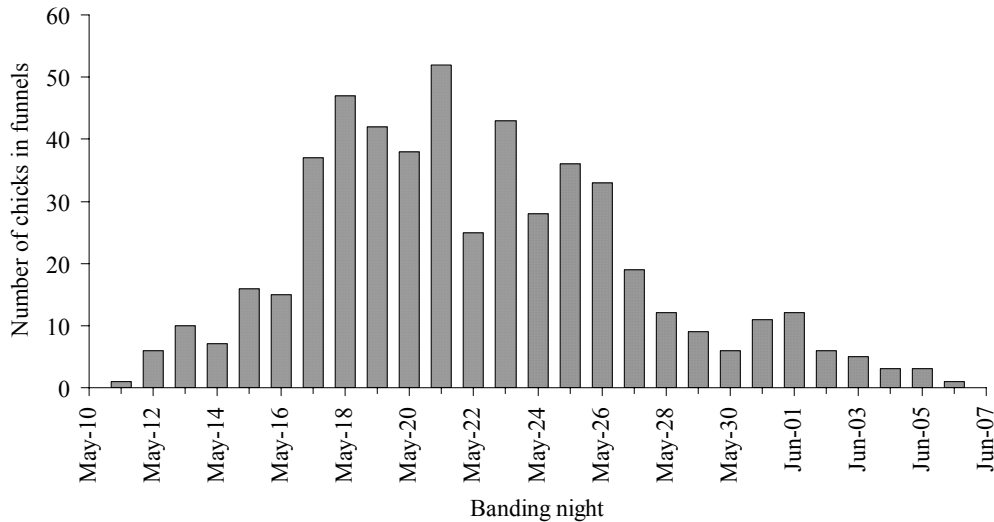


Figure 3
Nightly chick numbers from funnels on East Limestone Island, May 10 to June 7

Of the adults banded from burrows this year, 2 were new and 7 were recaptured. For two of the recaptured birds, it was their first year in their burrows (C35 & C101). The birds from S34 and C75 used the same burrows in 2001, C14 in 2000 and C44 in 2000 and 2001. This was the fifth year that the same bird has used burrow C21 (1996-1999 & 2003).

Gathering Grounds

Ancient Murrelets were counted on their gathering ground on the west side of Low Island every evening from 4 April - 19 June. The peak count was on 15 April, with 197 birds. Peak counts for other months were 1 May – 116, 2 June – 180.

Nest Boxes

All 100 nestboxes that were put in place in 2001 were checked daily from 4 April - 1 June for knockdowns and first eggs this year. Knockdowns were only found 9 times in the boxes and none of the boxes were occupied.

Predation

Predation level on Ancient Murrelets appeared normal this year, with no excessive burrow diggings, body parts or feather piles apparent (based on opportunistic surveys conducted as part of daily observations by staff and volunteers when moving around the colony). All burrow diggings appeared to be the work of river otters. One digging of interest was discovered on 13 May at Boat Cove near trail marker 510 on the main trail. A large and wide digging of a burrow was found at the base of a spruce tree, with an inverted carcass lying near-by. Upon investigation, two cold eggs were found in the burrow. The carcass, band number 1313-69365, was banded as a chick in 1999 at funnel 3 at North Cove. This predation is believed to be the work of a raven. Two other bands were found this year, one on 9 May on a leg near the upper part of the creek (band number 1313-69131, banded in 1999 as an adult). The third band was somewhat unusual in that it was found on a skinless tarsus on the path from the cabin to the woodshed on June 3. This bird was banded as an adult in 1999, band number 1313-69001.

Black Oystercatchers *Haematopus bachmani*

Laskeek Bay is home to 3% of the estimated national population of Black Oystercatchers and in 1999 BirdLife International, Bird Studies Canada and the Canadian Nature Federation designated it as an Important Bird Area for these remarkable birds. This year in Laskeek Bay, we found 22 active nest sites on 8 islands: Cumshewa Island (3), East Limestone (3), Kingsway Rock (2), Lost Islands (1), Low Island (2), Reef Island (6), Skedans Islands (3) and South Low Island (2). A new nest site with 2 eggs was found in May on East Limestone, just east-southeast of Bald Eagle *Haliaeetus leucocephalus* nest #4, between Cabin Cove and North Cove. However, 9 days after the second egg was laid, we watched from the cabin as a Raven *Corvus corax* predated the nest.

Table 3
Banded Black Oystercatchers seen in Laskeek Bay in 2003

Band Combination	Location seen (nest site)	Year Banded (Location if known)	Banded as (if known)
Metal only (right)	Cumshewa (CUM-2)	Unknown	Unknown
Aluminum-BK/M	Lost Islands (LOS-9)	Unknown	Unknown
Metal only (right)	Low Island	Unknown	Unknown
W-BR/M	Reef Sea Lion Rocks	2001	Chick
BK/M-W	Reef Sea Lion Rocks	Unknown	Unknown
W-BR/M	Reef Island (east of REE-8)	2001	Chick
A2-BK/M	Reef Island (REE-1)	2000 (REE-1)	Adult
W-BK/M	Reef Island (REE-2)	2000	Chick
W-BR/M	Skedans Bay	2001	Chick
W-M	Skedans Islands (SKE-6)	Unknown	Unknown
?-BK/M	Skedans Islands (SKE-6)	Unknown	Unknown
?3-BK/M	South Low (SLW-5)	possibly 2000 (ELI-3)	Adult
W-W/M	South Low (SLW-8)	1994	Chick
W-BK/M	West Limestone	2000	Chick

During the season, 21 Black Oystercatcher chicks were found from the 22 nests. Fifteen of these chicks were still alive as of July 8, 8 of which were large enough to be banded: 2 on Kingsway Rock, 2 on East Limestone, 3 on Reef Island and 1 on South Low Island. Bands were also spotted on 14 adult Oystercatchers throughout the season (Table 3). Of note, 32 adult Black Oystercatchers were counted at Reef Island in the afternoon of July 7, only 2 of which were banded. When camp closed in July, 13 nests were still successful to some degree: 2 with 2 eggs, 1 with 1 egg, 6 with 1 chick, 3 with 2 chicks and 1 with 3 chicks.

Glaucous-winged Gulls *Larus glaucescens*

Glaucous-winged Gull colonies in Laskeek Bay were censused for adult presence and timing of laying twice during the season, except for the colonies on Cumshewa Rocks and East Skedans Islands which were only censused once. On June 22, 20 adult gulls and 80 juveniles were counted on Cumshewa Rocks, along with one nest with 2 cold eggs. The same day, 16 adults, 1 juvenile, 3 active nests (i.e. nests containing eggs or chicks) and 3 empty nests were counted on East Skedans Island. The final counts made on June 19 on Low Island yielded 20 adults, 5 active nests and 7 empty nests and on Kingsway Rock, 95 adults, 27 active nests and 15 empty nests were counted. On June 28, the final census of the Lost Islands yielded 612 adults, 20 juveniles, 170 active nests, including one with 4 eggs and 8 with chicks and 153 empty nests. The Reef Island colony was not censused this year. Since 1992, the total number of active

nests on Low is slightly increasing, while the total on East Skedans is decreasing slightly (Fig. 4). The number of active nests on Kingsway Rock continues to decrease, despite a slight rise in 2002. There is an overall increase in active nests on the Lost Islands since 1992, however this years numbers were lower than those since 1997 (excluding 1999) (Fig. 4).

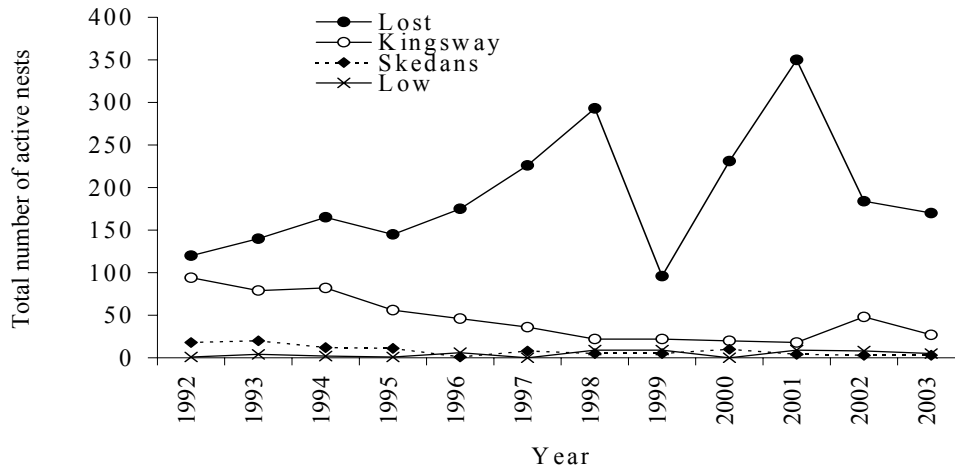


Figure 4
Number of Glaucous-winged Gull nests with eggs in Laskeek Bay 1992-2003. The low 1999 Lost Island count is likely a reflection of nests not counted due to adverse weather

Pigeon Guillemots *Cepphus columba*

In 2001, 10 Pigeon Guillemot nestboxes were put in place on the cliffs below and beside Lookout Point. The Guillemots began using the boxes in 2002, when 3 eggs laid by 2 different females were found in box #10. This year, 2 boxes were found to be active when they were checked on July 2. Box #8 contained 1 egg, while box #9 contained 2 eggs. Both nests were being incubated by adults who flew from the boxes upon our arrival on the cliff.

Cassin's Auklet *Ptychoramphus aleuticus*

In 1991 raccoons nearly decimated the Cassin's Auklet colony on Cassin's Tower on Limestone Island. A year later, 16 nestboxes were installed which provided alternate nesting that would also lend protection from raccoon predation. By 1994, the first successful use of the nestboxes was confirmed but the boxes were not used in 1995. From 1996-2002 Cassin's Tower was not monitored.

Knockdown sticks were first set up at Cassin's Tower on April 13 and were placed at the entrances of all burrows and nestboxes that could be found, i.e. 71 burrows and 5 nestboxes. Burrows and boxes were not marked with tags or numbers because the degree of monitoring that would occur in 2003 was not yet known. It was then difficult to know if all burrows were checked in subsequent knockdown checks. Many nestboxes have collapsed but some may still be somewhat intact. The nestboxes by Cabin Cove were not monitored. Burrows and nestboxes were next checked for knockdowns on May 22, and all were knocked down, although strong gale force winds throughout May were suspected of causing many of these. All sticks were placed back up and then checked again for knockdowns on June 4. On this check, 62 out of 67 burrows and all 4 nestboxes had knockdowns. It is possible that some of these knockdowns were due to storm petrels (as recorded in 1995) but the majority of these burrow entrances gave off the strong odour of

regurgitated plankton suggestive of Cassin's Auklets. All sticks were again replaced. On June 24, an attempt was made to band Cassin's Auklets chicks on Cassin's Tower. However, any chicks that were once present had already fledged leaving only eggshells and egg membranes as evidence of their occupancy. On this check, only twenty-six burrows were found with knockdowns, as were 4 nest boxes. None of the nestboxes contained evidence of use and all were partially collapsed and difficult to enter. Of the burrows, 2 had eggshells, 1 had eggshells and feathers, 3 had egg membranes and 7 contained feathers. Therefore, at least 13 burrows were occupied by Cassin's Auklets at Cassin's Tower in 2003.

Knockdown sticks were first set up at Cassin's Tower on 13 April and were placed at the entrances of all burrows and nestboxes that could be found (71 burrows and 5 nestboxes). Many nestboxes had collapsed but some may still be more or less intact. The nestboxes by Cabin Cove were not monitored.

Burrows and nestboxes were next checked for knockdowns on 22 May, when all were knocked down, although gale force winds throughout May were suspected of causing many of these. All sticks were replaced and checked again on 4 June, when 62 out of 67 burrows and all 4 nestboxes had knockdowns. Some of these knockdowns may have been due to storm petrels (as recorded in 1995) but the majority of the burrow entrances gave off the strong odour of regurgitated plankton, suggestive of Cassin's Auklets. All sticks were again replaced. On 24 June we examined as many burrows as possible, in an attempt to band Cassin's Auklets chicks on Cassin's Tower. However, chicks had already fledged, leaving only eggshells and egg membranes as evidence of their occupancy. On this check, only 26 burrows were found with knockdowns, as were 4 nest boxes. None of the nestboxes contained evidence of use and all were partially collapsed and difficult to enter. Of the burrows, 2 had eggshells, 1 had eggshells and feathers, 3 had egg membranes and 7 contained feathers. Therefore, at least 13 burrows were occupied by Cassin's Auklets at Cassin's Tower in 2003.

Fork-tailed Storm Petrel *Oceanodroma furcata*

In past years, Fork-tailed Storm Petrels were known to nest on Cassin's Tower but there was no previous record of them at Cabin Cove. This year, Petrels were heard on numerous nights and seen on several occasions north of the cabin, however it was not confirmed that they were indeed nesting in that area.

During Ancient Murrelet chick banding in the last week of May, unfamiliar calls were heard coming from burrows at North Cove. These calls were suspected to be from Petrel chicks, however neither chicks nor adults were ever seen at the burrow and therefore it could not be confirmed that Petrels were nesting at North Cove.

At-sea Surveys

During the 2003 field season five nearshore/offshore seabird surveys (20 April, 10 May, 26 May, 10 June and 30 June-1 July) and five Hecate Strait surveys (17 April, 5 and 19 May, and 4 and 25 June) were conducted. Weather was fairly cooperative and only one nearshore/offshore survey had to be continued over two days due to rough sea conditions. The Hecate Strait transects on 19 May had to be altered slightly to avoid excessive spray and were run only 5.7 km out in the Strait instead of 9 km.

The main purpose of the seabird surveys is to continue monitoring the numbers of Marbled Murrelets *Brachyramphus marmoratus* in Laskeek Bay, as these birds are listed as threatened in BC and federally as endangered. Numbers of Marbled Murrelets counted during the nearshore/offshore surveys this year are as follows: 20 April – 100, 10 May – 4, 26 May – 18, 10 June – 125, and 30 June/1 July – 44. The highest count during a complete nearshore/offshore survey for 2003 was 125 birds, lower than the last three years. As is typical it occurred in mid-June.

A total of twenty-eight species were seen during the nearshore/offshore transects (Table 4). Of special note are the sightings of Northern Fulmar *Fulmarus glacialis*, Great Blue Heron *Ardea herodias*, Greater

Scaup *Aythya marila*, and Bufflehead *Bucephala albeola*. From the five Hecate Strait surveys, eighteen species of birds were identified (Table 5). Interesting birds in the Strait, included Parasitic Jaeger *Stercorarius parasiticus*, and Bonaparte's Gulls *Larus philadelphia* and Sabine's Gulls *Xema sabini*. The Jaeger was observed chasing a Black-legged Kittiwake *Rissa tridactyla*. During the Hecate Strait survey on 19 May we saw thousands of Sooty Shearwaters *Puffinus griseus*.

Unlike last year, Black-legged Kittiwakes were seen on a regular basis during the seabird surveys. The highest count was during the April 17 Hecate Strait survey when 106 birds were seen. After that, observed numbers dropped slightly and Kittiwakes were seen for the last time on the 4 June Hecate Strait survey.



Harbour seal with pup, Low Island (photo A.J. Gaston)

Table 4
Bird species observed during the at-sea surveys in 2003 (* = Hecate Strait only)

Common Name	Scientific Name	Nearshore surveys			Hecate Strait survey		
		Surveys Recorded	Max. Count		Surveys Recorded	Max. Count	
			Number	Date		Number	Date
Ancient Murrelet	<i>Synthliboramphus antiquus</i>	3	79	21-Apr	5	566	19-May
Black Scoter	<i>Melanitta nigra</i>	1	12	10-Jun	0	-	-
Black-legged Kittiwake	<i>Rissa tridactyla</i>	1	52	10-May	3	106	17-Apr
Bonaparte's Gull*	<i>Larus philadelphia</i>	0	-	-	1	16	19-May
Bufflehead	<i>Bucephala albeola</i>	1	12	21-Apr	0	-	-
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	2	8	10-May	5	40	17-Apr
Common Loon	<i>Gavia immer</i>	3	3	21-Apr	2	7	19-May
Common Murre	<i>Uria aalge</i>	2	1	26-May, 10-Jun	4	49	19-May
D-crested Cormorant	<i>Phalacrocorax auritus</i>	3	12	21-Apr	0	-	-
Glaucous-winged Gull	<i>Larus glaucescens</i>	5	33	10-May	5	7	4-Jun
Greater Scaup	<i>Aythya marila</i>	1	30	10-May	0	-	-
Harlequin Duck	<i>Histrionicus histrionicus</i>	2	3	1-Jul	0	-	-
Herring Gull	<i>Larus argentatus</i>	2	159	10-May	2	17	17-Apr
Mallard	<i>Anas platyrhynchos</i>	1	16	21-Apr	0	-	-
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	4	125	10-Jun	3	15	4-Jun
Northern Fulmar	<i>Fulmarus glacialis</i>	1	1	10-May	0	-	-
Pacific Loon	<i>Gavia pacifica</i>	4	40	10-May	2	7	4-Jun
Parasitic Jaeger*	<i>Stercorarius parasiticus</i>	0	-	-	1	1	4-Jun
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	5	195	26-May	3	50	4-Jun
Pigeon Guillemot	<i>Cepphus columba</i>	5	178	1-Jul	5	95	17-Apr
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	5	50	21-Apr	4	131	4-Jun
Sabine's Gull*	<i>Xema sabini</i>	0	-	-	1	1	4-Jun
Sooty Shearwater*	<i>Puffinus griseus</i>	0	-	-	3	~5300	19-May
Thayer's Gull	<i>Larus thayeri</i>	2	13	10-May	2	4	17-Apr
Horned Puffin*	<i>Fratercula corniculata</i>	0	-	-	1	1	19-May
White-winged Scoter	<i>Melanitta fusca</i>	1	4	21-Apr	0	-	-

Marine Mammals

Information on marine mammals is collected during sea surveys and at Lookout Point during sea watches, as well as opportunistically whenever sightings are made (e.g. from the cabin). Volunteers and staff spent 33 h at Lookout Point this year. Using spotting scopes and binoculars, they sat for at least one hour at a time, monitoring Laskeek Bay from Skedans Village to Kunga Island. The view was divided into 3 equal sectors and the number and behaviour of each species of marine mammals seen in each sector was recorded. Observations are shared with researchers throughout North America. This year, Graeme Ellis of the Institute of Ocean Sciences, loaned us a new camera to take high-resolution detailed identification photographs of whales we encountered in Laskeek Bay. These photos were sent to Graeme and contribute to an extensive photo identification database on whales, which he and others are compiling.

The number of sighting events of marine mammals increased again in 2003 to 129 (compared to 101 in 2002), with nine species encountered. This increase was mainly due to the daily presence of humpback whales in Laskeek Bay from 3 April to the end of May. Humpbacks were spotted frequently approximately 4 km east of Low Island and later in the season, on the south side of Reef Island. They foraged and fed with extensive displays of breaching, lunge feeding, lateral rolls and tail lobbing. Counts of 20 - 50 individuals were recorded. Often the humpbacks were accompanied by Ancient Murrelets, Cassin's Auklets, Sooty Shearwaters and Rhinoceros Auklets *Cerorhinca monocerata*.

Table 4

Number of days on which marine mammals were recorded, or maximum one-day count (harbour seal, sea lion) from marine surveys, haul-out counts, and sea-watches from Limestone Island over the past five years

Species (common name)	1999	2000	2001	2002	2003
Dall's porpoise <i>Phocoenoides dalli</i>	0	0	0	29	0
N. elephant seal <i>Mirounga angustirostris</i>	1	0	2	0	1
Fin whale <i>Balaenoptera physalis</i>	1	0	1	0	1
Grey whale <i>Eschrichtius robustus</i>	4	2	0	1	2
Harbour porpoise <i>Phocoena phocoena</i>	5	5	8	11	3
Harbour seal <i>Phoca vitulina</i>	257	494	105	316	635
Humpback whale <i>Megaptera novaeangliae</i>	16	14	26	19	26
Killer whale <i>Orcinus orca</i>	2	1	3	3	5
Minke whale <i>Balaenoptera acutorostrata</i>	0	1	2	0	0
Pacific white-sided dolphin <i>Lagenorhynchus obliquidens</i>	6	1	6	3	2
Steller sea lion <i>Eumetopias jubatus</i> (maximum count)	511	410	700	888	410
TOTALS (cetaceans)	34	24	46	66	39

Orcas were encountered five times on 24 and 28 May and 16, 21 and 30 June for a total of 21 animals. Identification photos were taken and sent to Graeme Ellis. Twice they were sighted from shore on East Limestone I. On June 21, a pod of seven transients was observed and filmed as they killed a Steller sea lion near Reef Island. A newborn calf was with this group. A fin whale was spotted from Lookout Point on May 18 and an elephant seal was sighted during an offshore sea survey on 19 May.

Pinnipeds

Since 1986, a census of Steller sea lions at their haul-outs on the east end of Reef Island and at Skedans Islets has been conducted, originally by the Canadian Wildlife Service group from Reef Island and since 1990, by the crew on East Limestone Island. These counts were taken during the same time of year (April to July) at the same haul-outs. This data set is important to current research into the declining numbers of Steller sea lions in the North Pacific, as the records constitute the longest continuous running annual census records available for Haida Gwaii. This year, surveys for Steller sea lions were done on 3 and 17 April, 5, 10, 19 and 26 May, 2 and 10 June and 1 July; the highest count was on 3 April, with 410 animals on Reef rocks and 120 animals on Skedans. This number is considerably lower than the peak of 700 animals recorded at the Reef Island haul-out in 2002. Branded sea lions were spotted on 4 occasions, all at the Reef Island haul-out: F-2015 (seen twice, once in April and on 2 June), F-1229 (seen once), and F-2090 (seen once on 1 July). These animals were branded on rookeries in Southeast Alaska.

Wildlife Trees

There are numerous standing dead trees (snags) on Limestone Island that provide habitat for several species of cavity nesting birds. This year, 59 of these wildlife trees were monitored, 20 of which were used by 4 species of birds: Red-breasted Sapsuckers *Sphyrapicus rubra* (14), Hairy Woodpeckers *Dendrocopos villosus* (2), Chestnut-backed Chickadees *Poecile rufescens* (3) and Brown Creepers *Certhia americana* (1). Eight of these trees were new wildlife trees this year (#88-95). Tree diameter (DBH), nest height, tree height, tree species, decay code, and percent of bark remaining were recorded for each new tree. Tree species used by the cavity nesters were Sitka spruce *Picea sitchensis* (75%) and western hemlock *Tsuga heterophylla* (25%). All 5 Western Hemlocks were used by Red-breasted Sapsuckers and were 100% covered with bark (Table 6). Trees were narrowed down to those active by 14 May, after which all were checked every 2 d to determine hatching and fledging dates. Red-breasted Sapsucker chicks from monitored trees began to hatch on 27 May and the first fledging date was 2 June (Table 6). The Sapsuckers were the last to fledge and all Sapsucker chicks had fledged by 23 June.

Table 5
Wildlife trees: species, nest height and fledge dates. Ss=Sitka Spruce; Hw=Western Hemlock

Tree #	Tree Species	Nest hole height (m)	Fledge date
7	Ss	11.5	14 June
12	Ss	23.5	19 June
17	Ss	18.0	17 June
45	Ss	25.5	13 June
56	Hw	12.9	14 June
73	Hw	9.7	13 June
78	Ss	11.4	17 June
85	Ss	6.7	23 June
86	Hw	27.5	2 June
90	Ss	16.1	16 June
91	Ss	14.3	21 June
92	Ss	25.4	21 June
94	Hw	32.2	23 June
95	Hw	24.8	13 June

Table 6
Individual colour code band combinations of Red-breasted Sapsuckers nesting in known wildlife trees

Tree #	Band Combination	Year Banded	Banded as
78	Yellow/Red – Blue/Metal	1996	Adult
85	Red/Red – Red/Metal	2001	Adult
90	White/Red – Blue/Metal	2003	Adult
91	Yellow/Yellow – Metal/Red	1997	Adult
92	Green/White – Metal/Orange	2003	Chick

There were many sightings of banded Sapsuckers this year, and thanks to their individual colour codes, we were able to identify which wildlife tree each was nesting in (Table 7). For the 3rd year in a row, the bird banded Yellow/Red – Blue/Metal was nesting in wildlife tree #78. On June 8, this bird's partner was seen feeding chicks with a broken leg and, despite the injury, continued feeding until the chicks fledged on June 17!

Songbird Banding

This season marks the sixth year that the staff at Limestone Island has participated in a songbird banding program in conjunction with the Research Group on Introduced Species (RGIS). From 8 June - 8 July, sessions from 0700 to 1200 were run at banding stations on East Limestone Island (ELI), West Skedans Island (WSK), Low Island (LOW), and Reef Island (REEF13). In 2003, only the station on the north side of Reef was used. Each station was sampled four times, with three to nine days between banding sessions at a given station. Data are used for two distinct studies: an ongoing songbird recruitment monitoring project for RGIS and a genetic assessment of Haida Gwaii songbirds for Queen's University.

Banding sessions at all four stations netted a total of 203 birds (hummingbirds excluded). Of these, 44 were retraps from previous years. In addition, birds that were banded in 2003 were recaptured on 47 subsequent occasions. This number includes individuals caught multiple times after being banded. The number of species sampled on each island differed - LOW (5), ELI (10), REEF13 (11) and WSK (12). In all, sixteen species were represented (table 8), with the Orange-crown Warbler as the most commonly sampled species (35 individuals). With all stations combined, other frequently sampled species included: Winter Wren *Troglodytes troglodytes* (33), Swainson's Thrush *Catharus ustulatus* (27), Fox Sparrow *Passerella iliaca* (26), Hermit Thrush *Catharus guttatus* (25), Golden-crowned Kinglet *Regulus satrapa* (15), Chestnut-backed Chickadee (12) and Townsend's Warbler *Dendroica townsendi* (11). Less frequently sampled species included: Red-breasted Sapsucker (5), Song Sparrow *Melanospiza melodia* (5), Brown Creeper (3), Pacific-slope Flycatcher *Empidonax difficilis* (2), Varied Thrush *Ixoreus naevius* (2), American Robin *Turdus migratorius* (1) and Hairy Woodpecker (1). Rufous Hummingbirds *Selasphorus rufus* were caught on 25 occasions, however, the actual number of individuals caught may have been lower. Rufous Hummingbirds were not banded, thus rendering individual identification impossible.

Various data were collected from all captured birds (if an individual was caught more than once in 2003 it was released without repeating measurements). Wing chord, bill length, tarsus length, weight, age, plumage and breeding status were recorded for all species except hummingbirds. Additional bill measurements and a small blood sample were obtained for species included in the genetics study. The blood will be used for DNA analyses.

In collaboration with Limestone staff, researchers from Queen's University, Ontario concluded the fieldwork portion of a two-year genetic comparison of selected songbirds. Nine species of resident and

migratory birds found in Haida Gwaii (eight of which are found on islands in Laskeek Bay) will be compared to their coastal counterparts in Alaska, Northern and Southern B.C., Vancouver Island, Washington and Oregon. The study aims to determine the extent of genetic isolation of Haida Gwaii populations and map it onto geological time. In addition to regular banding sessions, additional sessions were conducted on Limestone and Reef islands, some using species-specific song playback to draw in the target species. They were not restricted to the established net lanes. An additional thirty target individuals were captured using this method (table 9). Data from these birds were not used in the RGIS songbird monitoring project.

The primary focus of the songbird banding sessions is to better understand the relationship between introduced species and songbird recruitment rates. Over the past six years, the RGIS songbird project has monitored the ratio of adult to hatch-year birds on islands with and without squirrels and/or deer. These ratios are indicative of the breeding success on islands differing in area, vegetation cover and presence/absence of introduced species, among other factors. In 2003, the ratios of adults to hatch-years were 26:10 on LOW (2.60), 48:19 on WSK (2.53), 26:22 on ELI (1.18) and 24:28 on REEF13 (0.86).

All but two retraps were caught on the same island on which they were banded. The first unusual recapture was a male Swainson's Thrush banded as an adult in 2002 at REEF16 (south shore of Reef Island) and recaptured on LOW. The second was a hatch-year Hermit Thrush initially banded on Reef Island and recaptured on Low Island two weeks later!

Table 8
Species caught at each station, including adult and hatch year birds and retraps from previous years

Species	ELI	LOW	REEF13	WSK	Totals
American Robin	0	0	0	1	1
Brown Creeper	2	0	0	1	3
Chestnut-backed Chickadee	11	0	1	0	12
Fox Sparrow	0	9	1	16	26
Golden-crowned Kinglet	8	1	3	3	15
Hairy Woodpecker	1	0	0	0	1
Hermit Thrush	7	0	11	7	25
Orange-crowned Warbler	2	11	10	12	35
Pacific-slope Flycatcher	0	0	0	2	2
Red-breasted Sapsucker	3	0	1	1	5
Rufous Hummingbird*	3	12	2	8	25
Song Sparrow	0	0	4	1	5
Swainson's Thrush	2	7	7	11	27
Townsend's Warbler	4	0	4	3	11
Varied Thrush	0	0	2	0	2
Winter Wren	8	8	8	9	33

*Actual Rufous Hummingbird numbers may have been lower because individuals were not banded and may have been caught on multiple occasions.

Table 9
Target species caught at target banding sessions in 2003 used for the genetics study. Numbers include adult and hatch year birds as well as recaptures from previous years

Species	ELI	REEF13	Totals
Brown Creeper	1	0	1
Chestnut-backed Chickadee	9	1	10
Golden-crowned Kinglet	5	2	7
Orange-crowned Warbler	2	1	3
Pacific-slope Flycatcher	1	0	1
Red-breasted Sapsucker	7	0	7
Varied Thrush	1	0	1

NATURAL HISTORY

Daily Bird Checklist

A total of 76 species of birds were seen or heard throughout Laskeek Bay this season, an all time high. The highest daily count was 40 species, recorded on 4 June. Species recorded more or less daily included Blue Grouse *Dendragapus obscurus* which was heard on Limestone from 2 April 2 - 25 June. Many flocks of Brant and Canada Geese (*Branta bernicla*, *B. canadensis*) flew past the Limestone Island cabin in the last two weeks of April and we also saw 2 flocks of approximately 20 Northern Pintails *Anas acuta*. In early May, 23 Whimbrels flew through our scopes during a Sea-watch Survey from Lookout Point. Also in the first week of May, a flock of 200 Green-winged Teals *Anas strepera* were seen in Skedans Bay. Pacific Loons started showing up in large numbers in late April with peaks of 30 and 36 in front of the cabin on 27 and 28 April, respectively. Also seen in front of the cabin in April were 28 Black Turnstones; a Dunlin *Calidris alpina* was spotted later on in June in the intertidal at South Low during an Oystercatcher survey.

Birds of Prey

In 2001, the first-ever located Northern Saw-Whet Owl nest on Haida Gwaii was found in Wildlife tree #1 near our cabin on Limestone Island and this season we have again been fortunate to work with this fascinating species. With the expertise of Carmen Holschuh, a graduate student at University of Northern BC and a Limestone Island volunteer, we were able not only to establish that there was a pair of Saw-Whet Owls on the island, but even got the opportunity to band one! On the night of April 30, we set up a mist net in Crow Valley and with the use of Ms. Holschuh's Saw-Whet playback recordings, caught an owl in only 4 minutes! While we were banding what proved to be the female, the male began calling from nearby. A brief attempt was made to catch the male as well, but was then abandoned so as not to further disturb the pair in one evening.

In total, there were 6 sightings of an owl, during one of which it was sleeping on a branch beside the main trail. On May 17, an owl was briefly heard calling in Crow Valley, southwest of the Ridge trail, past the Crow Valley trail. When the owl had stopped calling for several minutes, the playback recording was used and within 10 seconds, an owl flew overhead, landed on a branch directly above and began calling for 10 minutes. It was suspected that if the birds were breeding on the island that the nest was in Crow Valley. Attempts were made to locate a nest by visiting all the snags in Crow Valley and using the playback,

however no signs were found. An owl was heard calling on numerous occasions throughout April, May and June and its call was last heard on June 29.

Five Bald Eagle nests were monitored this year (#1,2,3,4 & 6). Bald Eagle nest #5 that was last active in 2001 was completely blown down by May this year. On a few occasions adults were seen on trees #2 and #3, as well as in nest #6, confirming last year's suspicions of it being used by Bald Eagles. No Eaglets were ever seen or heard in any of these 3 nests, nor was there any activity in trees #1 & #4.

No Common Raven nests were found this year, nor any belonging to Sharp-shinned Hawks. A Sharp-shinned was heard calling for several minutes on the West side of boat cove, however no sign of nesting was found. There were two sightings of Peregrine Falcons this year, one in mid-April when an immature was seen and heard calling in North Cove and an adult was seen exactly one month later. There were also 2 Red-Tailed Hawk sightings, the first in early May when the same individual was seen from various locations on Limestone, the second in early June when one was seen taking off from a branch by the exclosures, near wildlife tree #73. A Merlin was also seen this season on June 23 in Cabin Cove.

Plants

The timing of the bloom was early this year, possibly due to a mild winter and three weeks of sun in late April and early May. *Lycopodium clavatum*, running clubmoss, was found for the first time on E. Limestone by Rob Cameron on June 13 and a specimen collected. Surveys were done during May and early June to check on the status of the rare and uncommon plants. *Geranium richardsonii* (Richardson's geranium) were blooming by May 22, with five specimens located in five sites. Richardson's geranium is not known to occur elsewhere in coastal B.C. and these specimens are the only remaining plants known on Haida Gwaii. Other rare and uncommon plants of E. Limestone observed in bloom were: showy Jacob's ladder, Unalaska paintbrush, cut-leaf anemone, northern rice-root, few-flowered shooting star and kinnikinnick. Even though these species are common elsewhere in British Columbia, on E. Limestone Island they only survive in deer-free sites like niches, ledges and crevices of cliff faces.

Introduced Species

Introduced deer and squirrel remain on Limestone Island. No presence of raccoons was detected and no burrow diggings were attributed to raccoons. Squirrel surveys resumed this year and were conducted weekly from late April to early June. It appears that squirrels continue to use Ancient Murrelet nest boxes as a repository for spruce cones. No formal survey of deer numbers was done. However, on 7 June, a survey of most of the island was conducted and 15 individuals were counted, including the collared male. Introduced thistle is spreading to more areas and becoming more abundant along the shoreline from Crow Valley to North Cove.

CONCLUSIONS

The 2003 season saw a continuation of several trends that we have noted in recent years: numbers of Ancient Murrelets visiting East Limestone Island during May and June were lower than in the 1990s, although numbers of chicks departing have remained stable since 1999. The lack of post-breeding visitors, combined with low gathering ground counts and few visits to nest boxes, suggest that few birds are attempting to recruit on East Limestone Island. This will ultimately lead to a decline in the population, if the situation does not improve. In recognition of the potential for population changes at East Limestone Island, the 2004 program will probably omit the use of flight nets to capture adults, to minimize disturbance to potential recruits. On the positive side, Cassin's Auklets appear to have made a comeback at East Limestone Island, after being almost eliminated by raccoons in 1991.

Black Oystercatchers appear to have had a good season for reproduction, after the near-complete failure in 2003. The number of banded birds sighted was high and included two 2-year-olds, banded as chicks in 2001, so there is a good prospect that our locally-reared birds will continue to recruit into the population. Information on Oystercatchers will provide an important baseline against which to measure the effects of offshore hydrocarbon developments, should these go ahead in Hecate Strait.

Numbers of Humpback Whales feeding in Laskeek Bay, especially in May, continue to increase and numbers of Steller Sea Lions visiting the local haul-outs remain high. However, this was the third year running in which no Minke Whales, a regular visitor in earlier years, were not sighted. Numbers of Marbled Murrelets counted during at-sea surveys were relatively low, again consistent with recent trends.

We now have a sufficient series of observations to be able to detect trends with some confidence. As the information grows, we hope to be able to put our data sets to good use in improving understanding of changes taking place in local ecosystems, whether natural or human-induced. Such information is important if we are to do a better job of managing natural resources in the twenty-first century than we did in the twentieth.