

EAST LIMESTONE ISLAND FIELD STATION: REPORT ON THE 2005 FIELD SEASON

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This year marked the 16th field season on East Limestone Island. Our interpretation and research programs welcomed 262 visitor and volunteer days. Three local school groups participated in Project Limestone and we also hosted students from Langara College, a post secondary school in Vancouver. For a second consecutive year, the Ancient Murrelet banding program was limited to chick banding. The timing of chick departures was similar to previous years, peaking on 23 May. We caught 462 Ancient Murrelet chicks in our funnels, the second lowest number of chicks caught to date. Black Oystercatcher surveys were carried out in Laskeek Bay south to Juan Perez Sound. In total, 78 nest sites were deemed active at some point in the season with either eggs or chicks and we banded 27 chicks. We also described Black Oystercatcher chick diet based on 3351 prey remains identified at 29 nest sites. Limpets, mussels, and chitons made up 97% of the prey fed to Black Oystercatcher chicks. We counted 326 active Glaucous-winged Gull nests distributed among three colonies: most were located on the Lost Islands (79%). For the first time, we found Pigeon Guillemot chicks in the nestboxes at Lookout Point on East Limestone Island. We banded eight Pigeon Guillemot chicks from five nestboxes and at Cassin's Tower we monitored the growth of and banded a single Cassin's Auklets chick. Marine mammal sightings were consistent with previous years and we recorded 65 sightings from nine species. Ten wildlife trees were active with Red-breasted Sapsuckers (5), Hairy Woodpeckers (3), and Chestnut-backed Chickadees (2). We also followed two active Bald Eagle nests and a Northwestern Crow nest that fledged three chicks.

INTRODUCTION

The East Limestone Island camp was opened on 22 April and shut down on 23 July, making a 93 day field season. The field staff comprised: Jen Rock (Camp Supervisor / Biologist), Ceitlynn Epnors (Interpreter / Assistant Biologist) and Jake Pattison (Assistant Biologist). Alex Rose, a graduate student from University of Santa Cruz, was on Limestone from mid April to mid June studying the effects of introduced species on Song Sparrows.

in our Ancient Murrelet banding program. The school groups receive an afternoon orientation to the island, the research projects carried out on Limestone, and the biology and ecology of Ancient Murrelets. At night the school groups return to assist with the Ancient Murrelet chick banding. Students retrieve chicks from the funnels, bring them to the banding shelter, and assist with weighing the bird bags and recording measurements and band numbers. The students' excitement and enthusiasm for the Ancient Murrelets and Project Limestone is obvious and many students name their visit to Limestone Island as a highlight of the school year.

EDUCATION AND INTERPRETATION PROGRAM

Project Limestone

2005 marked the 15th year of Project Limestone - a program whereby local students and teachers participate

Despite very stormy weather during the peak of the Ancient Murrelet breeding season four local school groups and a total of 31 students and nine teachers/leaders visited Limestone Island. One group from G.M Dawson Secondary School visited on 17 May. Two groups from Queen Charlotte Secondary School visited

Limestone Island during the nights of 25 and 27 May. One group from the Living and Learning School visited Limestone Island during the evening of 20 May, after weathering three days of storms which impeded travel from Vertical Point to Limestone Island. Unfortunately, a second group from the Living and Learning School was not able to make it to Limestone Island due to the storms. We received great feedback from the students this year. Over half of the students were first time visitors to Limestone and all vowed to return in subsequent years. In total, 357 students have participated in Project Limestone since its inception in 1991.

Volunteers

Volunteers come to Limestone Island for one or more weeks. Living in camp and working alongside field staff, they are involved in all aspects of the research programs and camp life. This year 20 volunteers joined the Limestone Island team, 18 of whom were from BC, one from Alberta and one from Ontario. Nine of this year's volunteers were from Haida Gwaii! Two volunteers each stayed for two weeks, most others stayed for one week, and a few repeat volunteers or Directors stayed for a couple of days. Stacey Shantz and Tysen Husband, two local youth, joined the Limestone Island team 15- 23 July as summer work exchange students. There was a total of 143 volunteer days this summer and 1 week without volunteers.

Visitors

Three tour boats visited Limestone Island for a total of four visits this season. The s/v Maple Leaf visited on 16 May, the s/v Island Roamer visited on 24 and 26 May and the s/v Anvil Cove visited on 23 May. Altogether, 31 guests and 7 leaders came ashore on Limestone Island. Unfortunately, one visit by the Maple Leaf was cancelled due to stormy weather. Like Project Limestone, the tour group visitors participate in an afternoon interpretive tour and then return in the evening to participate in the Ancient Murrelet Banding program. Tour boat guests often cite the visit to Limestone Island as a highlight of the trip. Each tour boat was either on its way to or from a multi-day excursion in Gwaii Haanas.

Limestone Island also provided interpretive tours to three student groups from Langara College 16-18 June. The visit to Limestone Island was part of Langara College's Haida Gwaii Studies program - an intensive and integrated four course package that explores the

culture, biology and geology of Haida Gwaii. Five leaders and 28 students visited Limestone Island. The interpretive tour provided an introduction to the research done on Limestone Island, to seabird biology and to island ecology. The tour also allowed the students to observe the real world relevance and applications of their academic work- a key learning objective of the Langara College program.

RESEARCH & MONITORING PROGRAMS

Ancient Murrelets (*Synthliboramphus antiquus*) *Adult Banding and Burrow Monitoring*

In 2005, as last year, there was no adult banding, or burrow and nestbox monitoring on Limestone Island. Since the 1990s there has been an apparent reduction in recruitment of new breeders on East Limestone Island. By suspending adult capture work and burrow monitoring the LBCS has sought to eliminate the possibility that these activities contributed to this decline.

Although we did not carry out any directed adult capture work, during chick banding, we opportunistically checked adults encountered on the ground for bands. If birds were banded, we recorded band information and condition of the brood patch and if they were not banded, we released the bird immediately. This season, we caught three banded Ancient Murrelet adults. All three birds were originally banded on Limestone Island as breeding adults in 1990, 1993 and 2002. Ancient Murrelets age at first breeding is between two and four years, meaning that the adult banded in 1990 was at least 17 years old this year.

Predation

Throughout the season we observed the usual feather piles and body parts leftover from predators such as Common Ravens, Bald Eagles and Peregrine Falcons. We found no burrow diggings or headless murrelet carcasses, both of which can be indicative of the presence of raccoons in the colony.

We recovered three bands from the remains of dead Ancient Murrelets (presumably predated). All individuals were originally banded as adults, two at East Limestone Island, one in 1997 (as a breeding adult), and one in 2003 (as a non-breeding adult). The third band was recovered on Reef Island and had been banded there in 1997.

Chick Banding

Following the usual protocol, we weighed and banded chicks passing through the six plastic funnels at North and Cabin Cove. Our first banding night was on May 7 and we shut down after June 6 which was the first night that no chicks arrived at the funnel mouths (Fig. 1). We closed the funnels between 2230-0230 from May 7-19 and adjusted to 2300-0230 for the remainder of the season. In total, we caught 462 chicks in the six funnels in addition to 11 chicks that were collected either after 0230 or outside of the funnels (Table 1).

Of the 473 chicks caught and processed, we banded 468 chicks.

Chick departures peaked on May 23 with 38 chicks passing through the funnels (Fig.1). This is the lowest peak count since 1990, reflecting also, the second lowest total for chicks caught at the six funnels since 1990 (Fig. 2).

Table 1
Summary of chick departures, peak nights and totals from funnels for Ancient Murrelet chick banding on Limestone Island, 1990-2004

Year	Opening night	First night	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	561
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	29	588
1997	08-May	11-May	11-Jun	24-May	41	31	527
1998	07-May	11-May	22-Jun	20-May	55	43	495
1999	09-May	11-May	11-Jun	21-May	54	31	567
2000	11-May	11-May	11-Jun	20-May	62	31	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	07-Jun	21-May	52	28	523
2004	08-May	08-May	02-Jun	16-May	45	26	445

No chicks were banded from burrows, as burrows were not monitored this year. The mean weight of chicks from the funnels was comparable to past years at 26.6 ± 3.4 g (\pm SD). No chicks were found with ticks this season.

Gathering Grounds

Adult Ancient Murrelets were counted on the gathering ground to the west of Low Island each night from May 2 to June 20 at approximately 2 hours before sunset. Poor weather and visibility prevented counts on 2 nights in June and counts were not done from June 14-16 while all camp members were in Juan Perez Sound for the Black Oystercatcher survey. The peak count occurred on May 16, the same night that the peak number of chicks were

banded, with 163 birds recorded (Figure 3). The peak count for June was 87 birds on June 1 (Fig. 3).

Point Counts

Beginning on 16 May, we conducted nightly point counts noting the number of individuals calling and the number of calls heard at each of two sites at North and Cabin Cove. These five-minute counts were conducted between 0200 and 0230 until the end of chick banding on 6 June. Birds assumed to be calling for chicks on the water were excluded. The number of calls was highest between 25 May - 2 June, but this period did not coincide with high counts on the gathering grounds. The relationship between these two indices remains obscure.

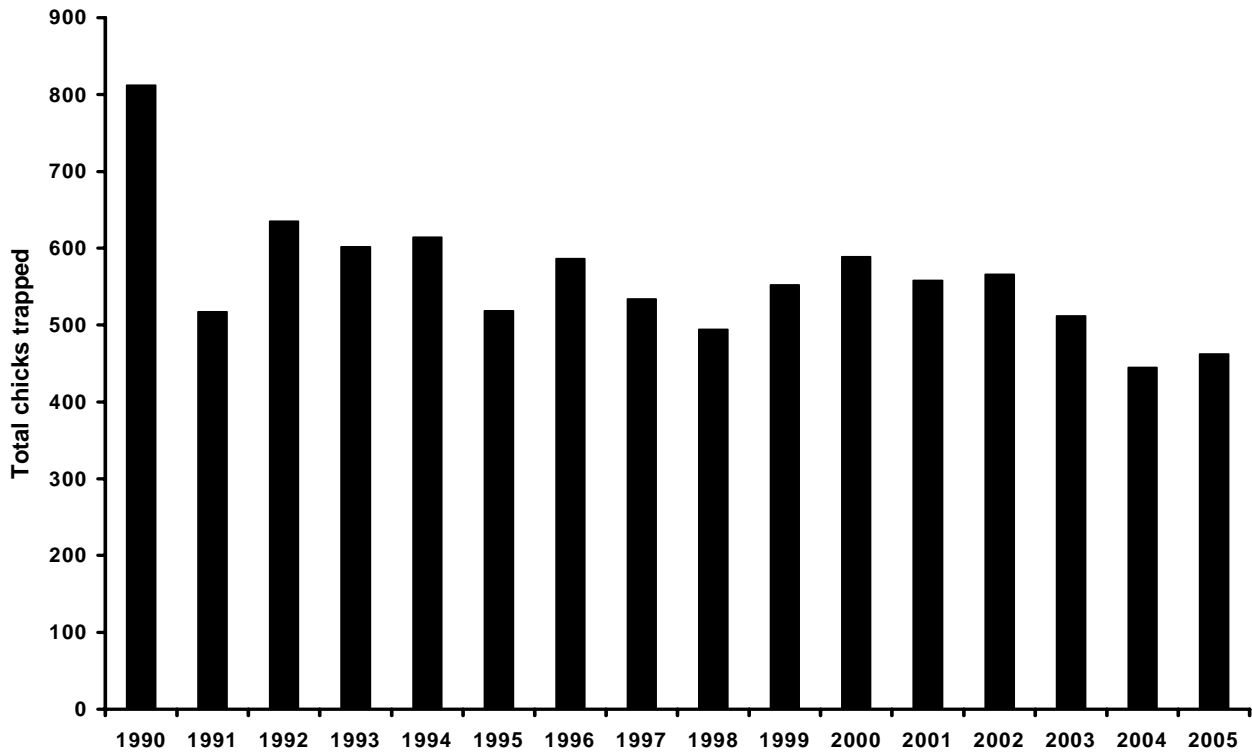


Figure 1

Annual counts of Ancient Murrelets chicks caught in funnels on East Limestone Island 1990-2004. The solid line is the long-term mean for 1990-2003 and the fine lines are one standard deviation from the mean.

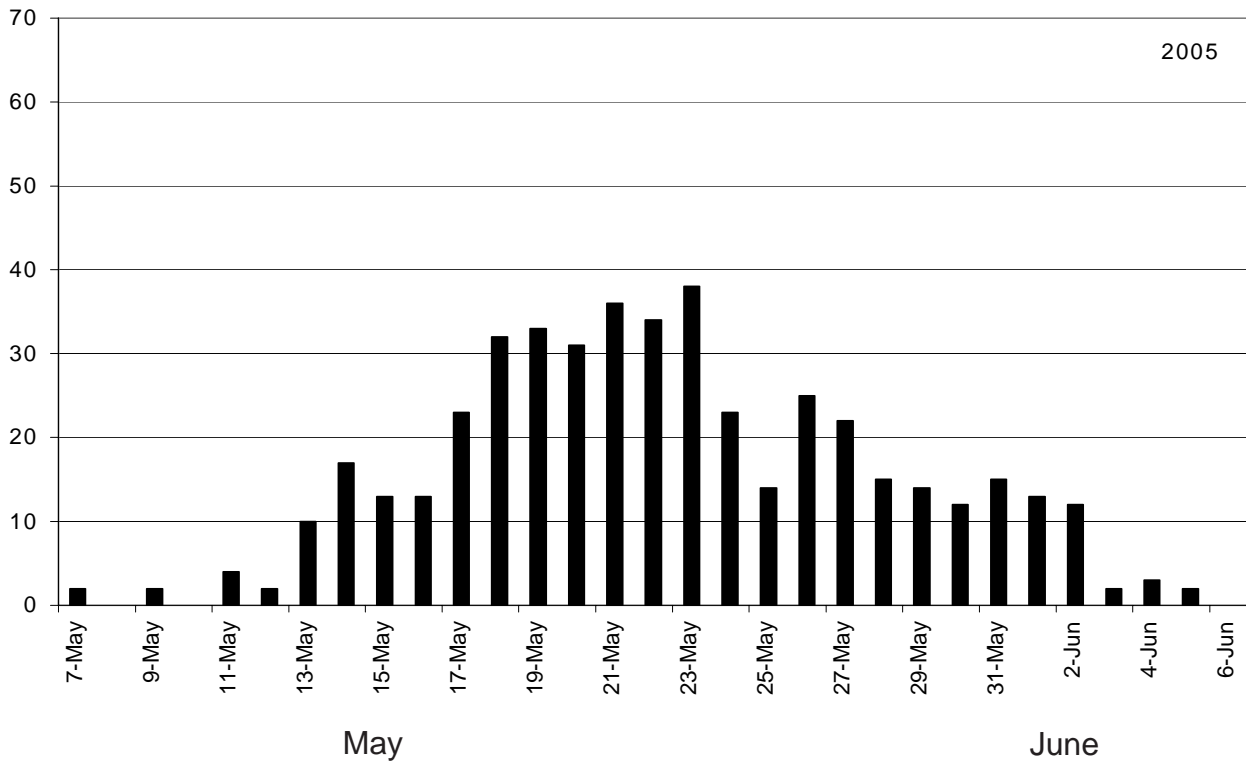


Figure 2

Number of Ancient Murrelet chicks caught in funnels per night from 8 May - 3 June on East Limestone Island

Black Oystercatchers (*Haematopus bachmani*)

Banding

Black Oystercatchers are conspicuous shorebirds that are common along the rocky shores of Haida Gwaii. Because they rely on marine shorelines for nesting and foraging habitat, their breeding success is closely associated with the health of intertidal ecosystems. Consequently, long-term monitoring of Black Oystercatcher reproductive success and chick diets can help detect changes in the inter-tidal environment. The Laskeek Bay Conservation Society has been monitoring Black Oystercatcher population and reproductive success in Laskeek Bay since 1992. Throughout the breeding season, we visit Black Oystercatcher breeding territories to count and measure eggs and chicks.

In 2005, we found 27 Black Oystercatcher sites in Laskeek Bay, containing either eggs or chicks. In total, 46 eggs were laid. Subsequent visits revealed that 22 sites failed while the remaining five nests hatched 10 chicks (range: 1-3 chicks). Two new breeding territories were monitored this year, both located on Louise Island, one at Nelson Pt. (LOU-1) and the other on the point due west of Nelson Pt, 'Squatter Pt.' (LOU-2).

The Black Oystercatcher banding program continued this year. Once chicks reached 100 grams in mass they were banded with colour combinations indicating where they were banded and the year of banding (left leg – locality colour; right leg – year colour / standard metal band). This season, five chicks were banded with a dark green darvic band indicating 2005 as hatch year and a white darvic band indicating Laskeek Bay as nest site location. By mid July, two of the banded chicks disappeared and a third was depredated, leaving only two banded chicks at sites on Reef Islets (Reef –4 and Reef –8). Two nests remained active with eggs at the time of camp closure in mid July, with 1 egg and 2 eggs respectively. These late clutches could indicate either inexperienced breeders or replacement clutches.

This season we spotted nine banded adults at breeding sites in Laskeek Bay (Table 2). Three of the re-sighted birds were banded as adults and three were banded as chicks. Re-sighting our banded birds is important as it lends insights into basic Oystercatcher biology for example: survival, age at first breeding, long term pair bonds, philopatry, and nest site fidelity.

For a second year, the Black Oystercatcher program at LBSC was expanded to include areas in Gwaii

Haanas National Park Reserve / Haida Heritage Site. This expansion includes islands and islets south of Laskeek Bay: on the east side of Lyell, Darwin Sound, including the north end of Juan Perez Sound. Banding colour codes for the different localities were: Richardson Passage = yellow and Juan Perez Sound = dark blue.

We conducted our surveys on two separate occasions using the same protocol employed in Laskeek Bay. On 12-15 June we conducted our first trip, visiting 53 potential breeding territories and finding 41 active nest sites with 66 eggs and 17 chicks. None of the chicks were big enough to band as most were just a couple of days old.

On 2-July, 17-19 July we re-visited the known BLOY territories in Gwaii Haanas and found 29 active sites. Seventeen of the previously active nests had failed while five territories had become active since our last visit, active either eggs or chicks. The 29 active sites included 15 eggs and 26 chicks, 17 of which were big enough to band. Also, on this second trip, we discovered 7 additional breeding territories, five of which were active: five chicks from four sites were banded and one site contained two eggs.

In summary, we visited 60 potential breeding territories in Gwaii Haanas (not including the Lost Is.), 51 of which were active at some point in the season and 22 chicks were banded.

Diet

For many bird species, reproductive success is closely linked to food availability and therefore, baseline information on diet is key to understanding changes in productivity. Adult Black Oystercatchers feed chicks exclusively with marine invertebrates obtained from the intertidal zone and because chicks stay at breeding territories until fledgling (~40d), chick diet composition is relatively easily determined by examining the shell remains of invertebrate prey found at nest sites.

In Laskeek Bay, we collected 1134 prey remains from five nest sites which were later identified and measured to get an idea of both diet composition and prey size. Mussels and limpets made up the majority of prey

delivered to Black Oystercatcher chicks, along with a smaller amount of chitons (Figure 4).

Table 2
Banded adult Black Oystercatchers seen in Laskeek Bay in 2005.

Band Combination	Location seen(nest site)	Year Banded	Banded as Adult or Chick
W-W	South Low (SLW-8)	1994	Chick
W-Bk /M	Skedans(SKE-6)	2000	Chick
W-M	Skedans(SKE-6)	unknown	Chick
UB-Bk/M	South Low(SLW-5)	unknown	unknown
M-Bk/M	Reef Is.(REE-1)	unknown	Adult
M-Bk/M	Reef Is.(REE-2)	unknown	Adult
M-Bk/M	Reef Is.(REE-7)	unknown	Adult
UB-M	Cumshewa Is.(CUM-2)	unknown	unknown
UB-Bk/M	Lost Is.(LOS-4)	unknown	unknown

The average sizes of the three main prey types were 47.6 ± 5.4 mm, 27.2 ± 1.3 mm and $59.4 \text{ mm} \pm 2.2$ mm for mussels, limpets and chitons respectively.

Black Oystercatcher chick diets in Gwaii Haanas were analyzed solely for composition and we were able to identify 2217 prey remains at 24 nest sites.

Results were consistent with findings in Laskeek Bay where mussels, limpets and chitons were the three main types of prey fed to Black Oystercatcher chicks (Figure 4).

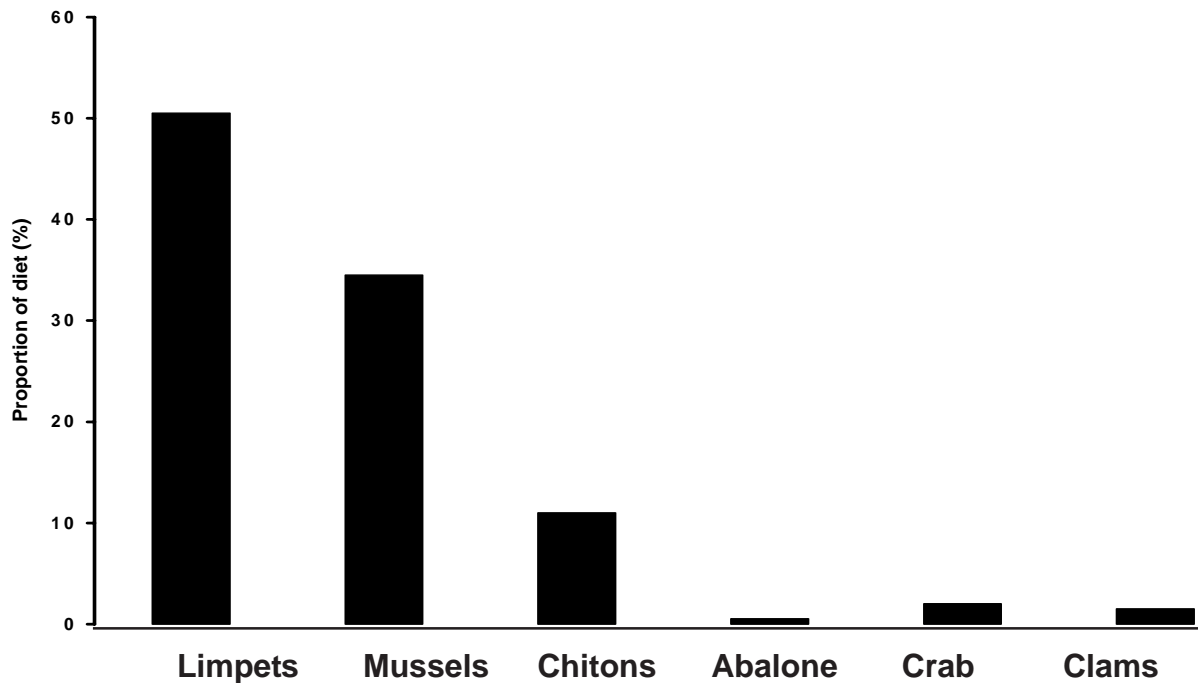


Figure 3
Composition of Black Oystercatcher chick diets determined from 3351 prey remains identified at 29 nest sites located in Laskeek Bay and Gwaii Haanas, 2005.

Glaucous-winged Gulls (*Larus glaucescens*)

On May 24 laying had just begun on Kingsway Rock and we counted 110 adults, 65 empty nests and two nests with one egg each. From June 20-25, we censused all of the Glaucous-winged Gull colonies in Laskeek Bay taking note of the number of adults, nests and describing the contents of each nest. No nests were found at either Skedans or Cumshewa Islands and we counted six nests at Low Island.

Of interest this year was the notable increase in the number of nests at Lost Islands (Fig. 4) as well as a small increase at Kingsway Rock. In total, we counted 326 Glaucous-winged Gull nests in Laskeek Bay: 72% comprised three eggs, 18% two eggs and 7% one egg. The remaining 3% of all nests counted contained either three chicks, two eggs and one chick or one egg and two chicks.

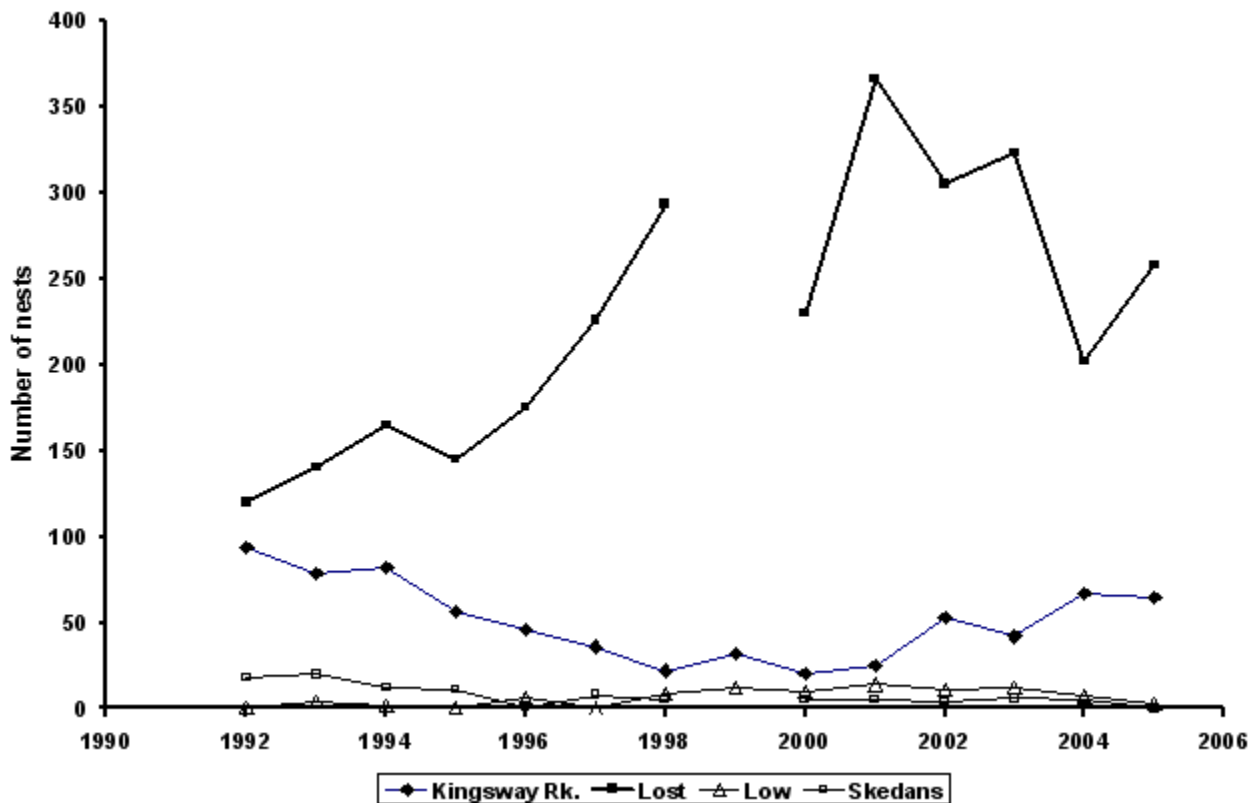


Figure 4
Number of active Glaucous-winged Gull nests in Laskeek Bay 1992-2005

Pigeon Guillemots (*Cephus columba*)

In 2001, ten wooden nest boxes were installed at Lookout Point in hopes that Pigeon Guillemots would nest inside. Since their installment, the ELI crew has been checking the boxes at the end of each season for signs of breeding activity and this year, we found eight chicks in five nestboxes (range:1-2 chicks). This news is exciting as the nest boxes are experimental in design and this year is the first year that chicks have been found. On 23 July, we weighed, measured and banded the eight Pigeon Guillemot chicks.

Cassin's Auklets & Fork-tailed Storm Petrels (*Ptychoramphus aleuticus* & *Oceanodroma furcata*)

This season, we monitored breeding activity at 61 burrows located at Cassin's Tower and the North Shore. We visited the two sites every three days and checked for knockdowns at burrow entrances. Telltale smells at burrow entrances allowed us to identify some of the burrows as either Cassin's Auklets or Storm Petrels. At Cassin's Tower we monitored 47 burrows and based on smell, 23 were Cassin's Auklets, seven were Storm

Petrels and the occupants of the seventeen remaining active burrows could not be determined. On the North Shore, we monitored 13 burrows and based on smell, five nests were Cassin's Auklets and the occupants of two of the burrows could not be determined. By mid-season, six of the 13 burrows on the North shore were no longer active.

We attempted to grub all of the burrows suspected to be Cassin's Auklets and were successful at accessing the contents of one nest at Cassin's Tower. We banded the chick and monitored its growth every five days until it fledged around June 25. In addition to the nests at Cassin's Tower and North Shore, we counted approximately five plus another 12 Cassin's Auklet burrows at the Lookout and South side of the Island. Burrows at both of these sites were located under rocks and thus were chicks inaccessible.

Mid-way through the season, a ladder was constructed at Cassin's Tower. The ladder is a great improvement over the previous scramble method of reaching the top of the Tower.

Marine Surveys

Seabirds

By carrying out regular, systematic surveys at sea we are able to monitor the number of marine birds and marine mammals in the area. One species of particular interest is the Marbled Murrelet as it is provincially red listed and is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada.

In 2005, we conducted four nearshore surveys (3 and 23 May, 8 and 27 June) and two Hecate Strait surveys (May 25 and June 26). The peak count of Marbled Murrelets this season was the 23 May when 110 individuals were counted on a nearshore survey.

We counted sixteen different bird species during nearshore surveys including: Rhinoceros Auklets, Pigeon Guillemots, Pelagic and Double-crested Cormorants, Common Murres, Pacific Loons, Glaucous-winged Gulls, Ancient Murrelets, White-winged Scoters, Buffleheads, Marbled Murrelets, Long-Tailed Ducks, Bald Eagles, a Black-legged Kittiwake, a Red-necked Phalarope and a Sooty Shearwater.

A definite highlight of the season was a Hecate Strait survey we conducted on 25 May. The survey started out with a Horned Puffin sighting and as we travelled east into the Hecate, we were soon surrounded by an estimated 1000 Sooty Shearwaters, including 616 that were counted on our transects. Over the course of our two Hecate Strait surveys we counted nine different bird species including: Marbled Murrelets, Rhinoceros Auklets, Pigeon Guillemots, Common Murres, Sooty Shearwaters, Glaucous-winged Gulls, Ancient Murrelets and Common Loons.

Marine Mammals

In 2005, there were 65 marine mammal sightings of nine species (Table 3). The sightings occurred during sea surveys, sea-watches as well as opportunistically from the cabin.

We reported 15 Humpbacks this season, which is fewer than previous years (Table 3). However, passing boats reported that Humpbacks were common in areas south of Laskeek Bay suggesting that overall, the numbers passing through Haida Gwaii were not necessarily low.

We encountered Killer whales five times this season. Twice we spotted single individuals travelling on their own and on three occasions we saw a group of three whales. Most sightings were brief, with the exception of 27 June, when we followed three whales into the Skedans Islets Lagoon and were able to follow the whales for about an hour. During this encounter, we took photos of each of the three whale's saddle patches and dorsal fins which, in the future, will help with individual identification.

The highest count of Steller sea lions at haul-outs on Reef and Skedans Islands occurred on 3 May, with 373 and 42 individuals counted at each site respectively. The s/v Maple Leaf reported a California Sea Lion sighting on 9 May at Skedans. We kept our eyes and ears open on subsequent visits but were unable to locate the California Sea Lion. No branded individuals were reported this year.



Steller sea lions, Skedans Islands, June 2006
(photo: Tony Gaston)

Table 3

Summary of marine mammals sightings noted throughout the field season on East Limestone Island, 2001-2005. Counts are the result of sightings made during sea surveys, sea-watches as well as opportunistically from the cabin or boat

Species (common name)	Scientific name	2005	2004	2003	2002	2001
Dall's porpoise	<i>Phocoenoides dalli</i>	1	0	0	29	0
Northern elephant seal	<i>Mirounga angustirostris</i>	0	0	1	0	2
Fin whale	<i>Balaenoptera physalis</i>	0	0	1	0	4
Grey whale	<i>Eschrichtius robustus</i>	1	1	3	2	0
Harbour porpoise	<i>Phocoena phocoena</i>	3	12	5	21	19
Harbour seal	<i>Phoca vitulina</i>	679	1177	635	316	105
Humpback whale	<i>Megaptera novaeangliae</i>	15	19	152	49	140
Killer whale	<i>Orcinus orca</i>	11	13	21	29	16
Minke whale	<i>Balaenoptera acutorostrata</i>	0	2	0	0	0
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	8	0	325	22	93
California sea Lion	<i>Zalophus californianus</i>	1	1	0	0	0
Steller sea Lion	<i>Eumetopias jubatus</i>	1849	2987	3107	5277	1633

Wildlife Trees

Early in the season we monitored 54 snags for cavity nesting birds. After visiting each tree at least three times, we determined ten trees to be active with Red-breasted Sapsuckers (five nests), Hairy Woodpeckers (two nests) or Chestnut-backed Chickadees (three nests). Of the ten active trees, seven were Sitka spruce and three were Western hemlock. Five of the active trees were new to the list, having not been monitored in previous years. This year, we did not observe any banded birds nesting in wildlife tree cavities.

At the end of the season, we recorded the locations of wildlife trees on Limestone using a G.P.S. unit. We hope to produce a more accurate map of our wildlife tree locations.

Daily Bird Checklist

Our daily checklist of birds on East Limestone and surrounding Laskeek Bay totalled 70 species identified in 2005. The maximum species count for one day was 40, which we counted on May 25. Sightings of interest for the season include: a Red-necked Grebe, a Green-winged Teal, Buffleheads, Long-tailed Ducks, Wandering Tattlers, a Spotted Sandpiper and on June 26, we saw an Ancient Murrelet family out by Reef Island, two adults accompanied by a juvenile bird.

Some of our more unusual sightings on Limestone occurred after a stretch of storms in May when we spotted two Albatross soaring among the waves out by Reef Island and a Savannah Sparrow seen two days in a row in Crow Valley.

Birds of Prey

Two Bald Eagle nests were active this year, tree #7 and tree #8. Tree #8 was a new nest site and is situated along the Ridge Trail. Bald Eagle nests were determined active based on a combination of adult activity at the nest sites, signs of guano around the base of the trees and chicks calling. Because both of the Bald Eagle nests were difficult to see, we were unable to determine how many chicks were produced at each nest.

The Northern Saw-whet pair did not return to nest in tree #81 and unfortunately, we were unable to determine where the Saw-whets were nesting this year. There were a few accounts of owl activity early in the season including three occasions when a Northern Saw-whet Owl was seen perched on funnels at both North and Cabin Cove during Ancient Murrelet chick banding. On July 6, five Northern Saw-whets were observed in the forest during mid-day. Four juvenile birds sat quietly perched for about 45 minutes and then became quite vocal. Within moments, an adult bird arrived

delivering a small mouse or vole to the juvenile birds. This was the only occasion that the family was observed.

This year, we did not find any signs of nesting Peregrine Falcons, Red-tailed Hawks, Sharp-shinned Hawks or Common Ravens. Northwestern Crows nested up on the ridge trail in a tree easily spotted from the path. We counted three chicks at the crow nest and all three fledged in early June.

Plants

In 2005, we did not include any new additions to the Limestone Island plant list, however, we did note a new location for the rare Richardson's Geranium (*Geranium richardsonii*). Richardson's Geranium is not known to occur elsewhere in coastal B.C. and so far, this species has been recorded at four locations on East Limestone Island. Other rare plants such as cut-leaf anemone *Anemone multifida* and showy Jacob's ladder, *Polemonium pulcherrimum* continue to do well on cliffs and other areas that deer cannot access.

Wall lettuce *Lactuca muralis*, an invasive flowering plant was detected in four areas on East Limestone and in efforts to control its spread, we removed all accessible specimens. Unfortunately, wall lettuce appears to be well-established in two hard to reach areas, along the south edge of the island and the cliffs in Crow Valley. The clusters found in Cabin and North Cove areas were removed and those sites will be closely monitored. See also Appendix 1 for additional notes by Marlene Specht.

Introduced Species

In 1998, three deer exclosures were erected on East Limestone Island to demonstrate the recovery of the forest understory in the absence of deer browsing. Unfortunately, when we arrived in late April, fallen trees had damaged all three deer exclosures and deer had browsed the vegetation inside. The exclosures have since been repaired and the vegetation is recovering. Deer on East Limestone are a common sight on the Island and this year we saw at least two fawns, with no reports of the collared deer.

Introduced raccoons have can devastate seabird colonies by predated on eggs, chicks and adults. In order to monitor for the presence of raccoons on the Limestone Islands and neighbouring Louise Island (Vertical Pt. area), we conducted two nighttime surveys

at low tide, scanning the intertidal zone using a spotlight. On 3 June, our first survey, we spotted four raccoons on Louise Island and on 18 June we did not see any raccoons. Raccoon surveys are best conducted during the Ancient Murrelet breeding season and June 18 is a little late, however, poor weather and tide conditions prevented the second survey from occurring any earlier. In addition to our boat surveys, we walked the shoreline on East Limestone throughout the field season, keeping an eye out for behaviours indicative of raccoon activity ie: suspicious diggings and predations or latrines. We did not find any evidence of raccoon activity on Limestone Island this year.

CONCLUSIONS

Although Ancient Murrelet chick numbers are slightly higher than 2004, this year's chick total indicates that the number of chicks passing through Limestone funnels remain low compared to the early 1990s. Concerns persist that previous adult capture work has potentially deterred prospecting birds resulting in reduced recruitment. It remains to be seen, however, whether chick numbers will recover now that adult trapping has ceased. Alternatively, other factors may be at work which of course, underlines the importance of continuing our long-term monitoring efforts. For further thoughts on this problem, see Tony Gaston's paper in this report.

APPENDIX

Notes on Some Plants of East Limestone Island, 9 and 10 July, 2005 by Marlene Specht

I visited east Limestone island on 9-10 July 2005. The main flowering season of many of the plants was over, but there was still much of interest. In the forest interior, *Listera caurina* (northwestern twayblade) and *Moneses uniflora* (single delight) were in flower, and along the rocky shoreline were showy, flowering plants of *Campanula latsepala* (common harebell) and *Mimulus guttatus* (monkey flower). *Prenanthes alata* (western rattlesnake-root) was just coming into flower on moist cliff-faces. Observations were made on the northern half of the island. A number of plants which are rare or uncommon on the island were observed:

Anemone multifida (cut-leaf anemone) – a single, small non-flowering plant on a rocky ledge along the northeastern shore
Arctostaphylos uva-ursi (kinnikinnick) – on rocks north of the biffy
Castilleja unalaschensis (Unalaska paintbrush) – plant with a single, late flower-head, on a high, rocky ledge along the northeastern shore
Chamaecyparis nootkatensis (yellow-cedar) – a single tree on the north side of Boat Cove; cones present
Dodecatheon pulchellum (few-flowered shootingstar) – small plants in 3 locations along

northeastern, rocky shoreline; also on the cliffs in Anemone Cove, large plants with a few late flowers and abundant seedpods
Epilobium ciliatum (purple-leaved willowherb) – small plant on rocks near northernmost tip of island, on east side
Fragaria chiloensis (coastal strawberry) – along northeastern rocky shoreline, high on cliff ledges
Fritillaria camschatcensis (northern rice root) – 2 locations along northeastern shoreline, 1 plant in with seedpod; plants with seedpods in Anemone Cove
Geranium richardsonii (Richardson's geranium) – 4 locations on the northeastern shore (tentative identification of plants at a distance, up on the cliffs and out of flower)
Goodyera oblongifolia (rattlesnake plantain) – a single plant with 2 rosettes, non-flowering, near North Trail
Lactuca muralis (wall lettuce) – small colonies in Cabin Cove and North Cove
Listera caurina (northwestern twayblade) – colonies in flower along trails in forest interior
Senecio sylvaticus – Cabin Cove