

# Laskeek Bay Conservation Society

## Field Season Report 2001



### Summary

*Drawing by Ken Otter*

With over 300 visitor and volunteer days in 2001, the interpretation and research program on East Limestone Island (ELI) was a strong success. Three local schools participated in Project Limestone, with children as young as 10 years old seeing an Ancient Murrelet for the first time. We hosted many other visitors and began an outreach program with the Haida Gwaii Watchmen. On the island and offshore, our long-term study of the Laskeek Bay ecosystem continued to produce interesting results. Thirteen monitored Ancient Murrelet burrows (the fewest ever) were occupied, with chicks successfully fledged from nine. Ancient Murrelet breeding was disturbed with 41 burrows excavated throughout the island by an unidentified predator, likely a raccoon. We installed 100 wooden Ancient Murrelet nest boxes and 10 boxes for Pigeon Guillemots. There were lots of Ancient Murrelets on the water during sea surveys and in June, more than 400 murrelets were observed in Laskeek Bay. We banded 560 chicks in funnels and caught 181 adult birds in nets, including adults banded in 1989 and 1990. Other observations included finding the first Northern Saw-whet Owl nest (subspecies *brooksi*) on East Limestone Island; the owls successfully fledged at least one chick. Twenty-five wildlife trees were active with five different species occupying the nests. A Sharp-shinned Hawk pair fledged one chick, the second ELI record for this species. Bald Eagles nested again on ELI and raised one chick. Offshore, 85 sightings of nine species of marine mammals were made, including sightings of the rare Fin and Sei whales. Two collared deer were frequently seen on the island and the plants in the deer exclosures are showing signs of recovery. It was exciting to add to the long-term research projects and to share these discoveries with our visitors.

## Contents

<b>Education Programs</b> .....	2
Project Limestone .....	2
Visitor Interpretation Program .....	3
Other Visitors .....	3
Haida Gwaii Watchmen .....	4
Volunteer Orientation Guide .....	4
Limestone Logs .....	4
Volunteers .....	4
Student Intern .....	4
Staff .....	
<b>Science Programs</b> .....	5
Ancient Murrelets .....	5
Black Oystercatchers .....	10
Glaucous-winged Gulls .....	10
Pigeon Guillemot nest boxes .....	11
Marine Surveys .....	11
Wildlife Trees .....	13
Songbird Banding .....	13
<b>Natural History</b> .....	14
Daily Bird Checklist .....	14
Birds of Prey .....	14
Plants .....	15
Introduced species .....	15
Other Species .....	16
<b>Acknowledgements</b> .....	16

### Staff

2001 staff were: Joanna Smith, Charlotte Tarver, Lee Burles (Science Intern), Joelle Fournier, Bev McBride, Chris Lindberg, and Sue Charest (University of Ottawa honours student working on Black Oystercatcher project). Dr. Tony Gaston (Canadian Wildlife Service) was on East Limestone Island in late March to band Ancient Murrelet adults before egg-laying, install Ancient Murrelet and Pigeon Guillemot nest boxes and help set-up camp.

## Education Programs

### Project Limestone

Now in its eleventh year, Project Limestone has brought more than 400 students and 120 teachers to East Limestone Island. Student visits are scheduled to coincide with the peak of chick departures, usually in late May. This year 28 students (ages 9 to 18) came to East Limestone Island, accompanied by nine teachers, from Queen Charlotte Secondary School, G.M. Dawson, and the Living and Learning School. The students and teachers stayed at nearby Vertical Point for a four-day field trip. While there, the groups

investigated tide pools, studied native plants and learned about the changes caused by introduced species to the forest. During day visits to East Limestone Island, Charlotte Tarver demonstrated the techniques used to gather data and explained the various projects we were doing. At night, the students made their way to the north cove funnels and were shown how to gently pick up the chicks and put them in chick bags. During the night, the students helped by accurately recording measurements, weights and band numbers of the chicks.

As well as lasting memories, students take home the lesson that they are not separate from the world they live in.

### **Visitor Interpretation Program**

East Limestone Island is one of the only places in Canada where people can visit a seabird colony with an active research program. As a result, our interpretation program for visitors is very popular and highly regarded. Most visitors come from tour groups visiting Gwaii Haanas National Park. A daytime orientation to our research projects is offered by staff, and during the Ancient Murrelet chick departure season, a night visit is provided to those who wish to come ashore and assist with chick, and occasionally, adult banding.

The 'Island Roamer' called in five times (May 8, 17, June 1, 20 and 28), with a total of 66 visitors. The 'Maple Leaf' visited twice (May 23 and 28) with 25 people. Nine people came ashore with Whitney-Smith Kayak Tours on June 15 for an afternoon tour of our songbird and introduced species projects. Total person days of tour groups: 131 (or 100 visitors).

A few private visitors drop in from time to time. Some of these people are long time friends and supporters of the Society, such as Greg and Kathryn Wiggins of Queen Charlotte who visited Limestone and Reef Islands in June. As well, two kayakers from Denmark dropped in on July 16 to thank the staff for helping out with a search and rescue event on July 2. Total person days for private visitors: five.

### **Other Visitors**

Members of the Reef Island-based Research Group on Introduced Species (RGIS) crew frequently came to Limestone to do vegetation plot surveys, insect collecting, and introduced species monitoring. Total person days of RGIS staff and volunteers: 93.

Two Gwaii Haanas National Park Reserve staff made a brief, overnight stop on Limestone Island on their way to the Park in May. We gave them an orientation to our projects and they helped us with chick and adult banding. Haida Fisheries researchers, studying the abundance of Northern abalone (*Haliotis kamtschatkana*), a threatened species, stopped by five times in July (12-13, 15, 17-18). That same month, a group from Haida Forestry came to look at the effects of deer on the vegetation. Total person days of these visitors: 16.

On June 27, seven people representing local government organizations came to learn about the five-year study on introduced deer. Dr. Jean-Louis Martin (RGIS), assisted by Charlotte Tarver and Joelle Fournier, guided the group comparing vegetation on Laskeek Bay islands with and without deer. The total number of all visitors for 2001: 279.

### **Haida Gwaii Watchmen**

Over the years, we have had a cordial relationship with the Haida Gwaii Watchmen caring for the ancient villages of Tanu and Skedans. They call us “The Bird People” of Gwiilang (East Limestone island). This year, we visited Tanu and Skedans to talk with Haida watchmen about our programs. We took the Volunteer Orientation Guide and photos for the Watchmen to look at. The visits were well received, with many questions and a good exchange of both scientific and historical information. Several Watchmen expressed an interest in visiting Gwiilang in 2002; we hope this will happen.

### **Volunteer Orientation Guide**

This was the first year for the new Volunteer Orientation Guide, which was introduced to supplement the camp orientation of volunteers. Volunteers frequently referred to the Guide during their stay and most read the entire book, enjoying the opportunity to refer to it at their own pace. Staff felt that fewer repetitive questions were asked and volunteers more easily understood their role in camp.

### **Limestone Logs**

The first Limestone Logs were written in 1991 for the Society’s directors, volunteers, and scientific partners, providing an informal journal of events during field season. Now that we distribute the Logs electronically, our readership is growing. The bi-weekly Logs have become an effective way to promote public awareness and involvement in the goals of the Society.

### **Volunteers**

Twenty-nine volunteers took part in our interpretation and research program this season. Most people (23) stayed for one week but one volunteer stayed for two weeks, two spent four days and four stayed for three days. Four of the volunteers were LBCS directors (Keith Moore, Maggie Stronge, Betsy Cardell and Julie Towers), 12 volunteers were island residents, 14 were from elsewhere in Canada, two were from California and one was from Germany; eight people had volunteered previously. The volunteers helped us with all of the research activities and to maintain the field station. The total number of days contributed by volunteers: 193.

### **Science Intern**

Since 1998, four science interns have come to East Limestone Island. This six to 10 week program is intended to encourage pursuit of a career in biology, conservation or education. Our 2001 intern, Lee Burles of Sandspit, worked from May 4 to July 2. Lee is currently finishing his fourth year in biology at the University of Calgary.

Lee quickly became an essential part of the staff team – he trained volunteers, collected data, ran the boat, and did maintenance and mechanical repairs. He became a proficient

Ancient Murrelet banded under Joanna's tutelage. Later in the season, Joelle and Bev showed Lee how to extract songbirds from mist nets and band, sex, and age them.

For his science intern project, Lee located, mapped and measured the diameter and height of all the wildlife trees used by cavity nesting birds. Lee reorganized much of the long-term data to improve year-to-year tracking and collection.

## **Science Programs**

### **Ancient Murrelets**

The study and conservation of Ancient Murrelets continues to be important. About one half of the world's population breeds on Haida Gwaii and the species is declining throughout its range. The world population estimate for Ancient Murrelets lies between one and two million, with approximately 500,000 birds breeding in Haida Gwaii. Ancient Murrelets are listed as vulnerable in Canada by the Council on the Status of Endangered Wildlife in Canada (COSEWIC).

Introduced predators are a continual threat to Ancient Murrelets on Haida Gwaii. Raccoons and rats can easily destroy seabird colonies, so watching and controlling these predator populations is necessary.

Talk of lifting the Federal oil and gas moratorium in British Columbia had heightened concern for all species that reside in the marine environment. Ancient Murrelets are found in the Hecate Strait and other waters off Haida Gwaii from February to September, and in other parts of BC from August to March. Chicks feed exclusively in the protected waters near Haida Gwaii for the first four to six weeks of their life. Depending on the conditions, oil pollution could have devastating effects on the breeding population of Ancient Murrelets.

Ancient Murrelet breeding success and colony attendance were monitored from March 29 until June 20, 2001. Standardized methods to capture, band, monitor burrows and measure the reproductive success of this seabird were used with minor adjustments for the longer days in late May.

### Adult banding

Three large, knock-down flight nets were used to catch adult Ancient Murrelets leaving the colony before dawn from March 29 to April 11. Adult banding stopped during egg-laying and then resumed from May 16 to June 12, 2001. The nets were opened on 16 nights, for 29.25 hours of banding. We caught 63 adults before April 12, and 154 adults afterwards, plus an additional 10 birds in burrows. Total capture was 217 birds, however 46 adults were caught more than once so the actual number of birds was 181 (70 new and 111 retraps) (Table 1).

Table 1. The number of breeding and non-breeding adult Ancient Murrelets caught at three net stations (including ground) and in monitored burrows, East Limestone Island, 2001. The 'Unknown' breeding status were birds with brood patches 10 to 19 mm.

Capture Method	Breeding Status	New	Retrap	All Retraps (with multiple captures)
Net	Breeder: before egg laying	9	48	54
	Breeder: after egg-laying	16	39	63
	Non-breeder: after egg laying	39	13	22
	Unknown	3	5	11
Burrow	Breeder	3	6	7
TOTAL		70	111	157

The average weight (mean  $\pm$  one standard deviation) of the birds was  $199 \pm 14$  g for breeders, and  $184 \pm 9.6$  g for non-breeders. More birds were caught at the Spring Valley location than at either Cabin or North Cove (120 birds; mean 15 birds/night; 43 birds; 10.75 birds/night; 49 birds; 12.25 birds/night, respectively). The Spring Valley net was used eight times, and Cabin and North Cove nests used four times each.

Ancient Murrelets banded in other years continue to return to Limestone , with their recapture assisting establishment of accurate annual survival statistics. A bird banded as an adult in 1989 was recaptured; this is the oldest bird known to date for this colony (15 or 16 years old). We recorded 101 birds banded as adults from all years, 1989-2000, and 87 percent were breeding. Seven chicks were recaptured, three of them breeders. Chicks from 1993 have still never been sighted on Limestone Island.

#### Chick banding

The standard chick weighing and banding system was used, with plastic funnels channelling chicks to six outlets.. We replaced 250 of the cedar stakes and all of the plastic sheeting except for sheeting on Funnel 6 and at the end of Funnel 4. Two different time protocols were used for chick banding, to adjust for the longer days in late May: 2230 – 0230 and 2300 – 0230. Chicks were first heard calling from the colony on May 7 so the funnel gates were closed the next night, May 8, and the first chicks were banded May 10. Eight days later (May 18), we had the peak with 54 chicks in one night (Figure 1).

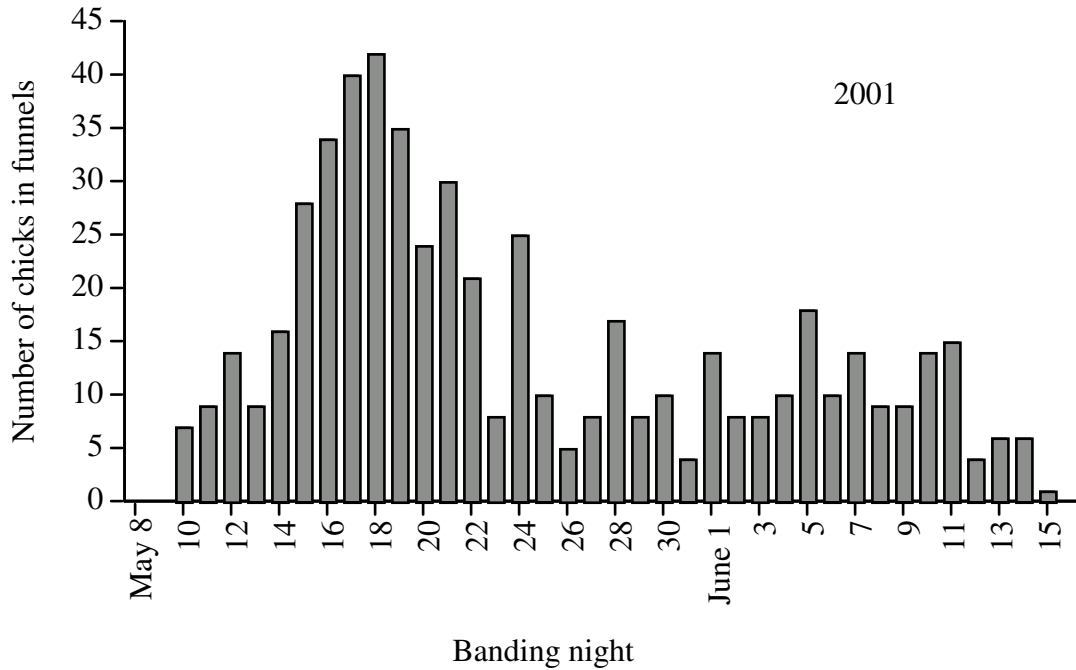


Figure 1. Chick numbers from funnels on Limestone Island, May 8 to June 16, 2001.

We banded and weighed 560 chicks at the funnels, which is within one standard deviation of the 11-year mean for this colony (Fig. 2). An additional 11 chicks were banded in monitored burrows (May 18 to June 9). The mean ( $\pm$  SD) weight of the chicks was  $26.7 \pm 2.5$  g.

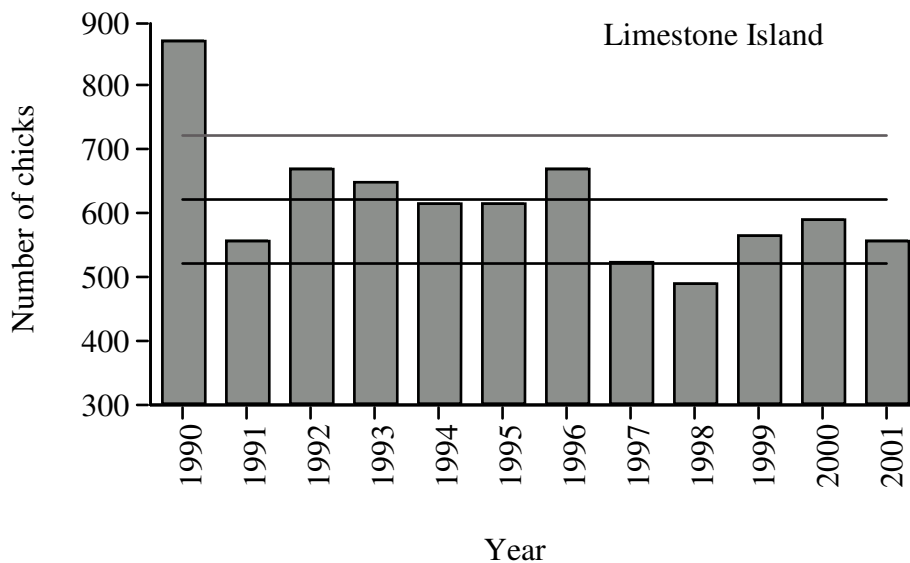


Figure 2. The number of chicks in funnels 1990 – 2001 on East Limestone Island. The solid line is the mean number of chicks 1990-2000, and the hatched lines are one standard deviation above and below the mean (ie.  $623 \pm 101$  chicks).

The chick departure trends were similar to other years, although it started a few days earlier than the last six years, and ended a bit later than the last two (Figure 3).

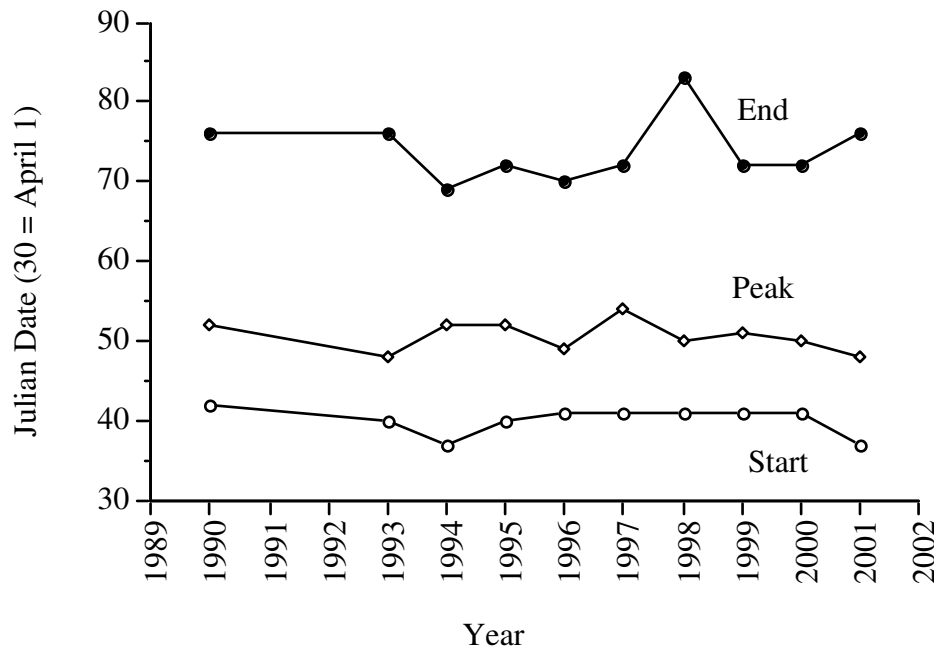


Figure 3. Ancient Murrelet chick departure dates for East Limestone Island 1990 – 2001; data were not available for 1991-92.

### Burrow monitoring

Daily nest checks began on April 7, finding three eggs, and resulted in 12 eggs from 13 active burrows (we missed the first egg in burrow C21). One (n=5) or two (n=4) chicks were successfully fledged from nine burrows, while four burrows were deserted (1 – one egg, 2 – two eggs and 1 – three eggs). One nest was abandoned after an incubating adult was taken from the burrow and killed (S8); the predator was suspected to be a raven. Despite an intensive search for new burrows to monitor at both the Cabin and Spring Valley plots, no new active nests were found. This year, we had the lowest number of active burrows than of any previous season.

The first chicks hatched in the monitored burrows on May 20. Three days later, to our surprise, we found a burrow with three warm eggs in S-plot during a routine 30-day check (S34). We learned that two different females were incubating the eggs but this unusual nest was not successful because the nest was abandoned before the chicks hatched. We took the eggs from the burrow, measured them and examined their contents. Two eggs were similar in size and colour but the third was smaller and coloured differently. The dissimilar egg contained a rotting embryo while the two similar-looking eggs contained nearly formed chicks.

We spent time in the northern part of the colony this year, setting up a pilot monitoring plot at North Cove. The plot's purpose was primarily to help us find suitable locations for the new Ancient Murrelet nest boxes. We have not monitored burrows at North Cove



before and consulted a Canadian Wildlife Service colony census (1985) to mark out a plot. We temporarily marked 41 burrows between Funnel 1 and 4, monitored them for 7 weeks and found 24 active nests.

#### Gathering Ground count

Ancient Murrelets adults were counted as they gathered on the water on the western side of Low Island. We began counts on April 6 and continued nightly until 19 June. The peak count was 328 murrelets on May 23. The high counts for each month were: April 20 - 220; May 23 - 328; and June 1 - 106. We missed 13 evenings as a result of poor weather or commitments to our visitor program.

#### Nest boxes

We installed 100 wooden nest boxes for Ancient Murrelet creating predator-proof nests which permit less invasive monitoring. Thirty-three boxes were installed at the cabin and spring valley plots, and 34 at north cove. The boxes have a front hatch, a u-shaped tunnel, and 'burrow' entrance. About 20 cm back from the hatch, a small piece of wood was fastened to the floor so that birds would nest and lay their eggs against this half-wall, instead of the door. This lesson in nest box design was learned on Reef Island when birds nearly fell out of the box when the hatch was opened. Boxes were checked for activity from May 20th for 10 days. No eggs or birds were found in the boxes but 13 had visits.

#### Predation

We found 41 Ancient Murrelet burrows excavated by a predator we never saw. Twice, headless murrelet skins were found close to an excavated burrow and once an inside-out carcass was found. Three excavated burrows were found with two eggs on the nest cup. During one search, a partially excavated burrow (the whole entrance and half the tunnel was gone) was found with an adult incubating two eggs; the nest was found abandoned the next day. We suspected that a raccoon was responsible for the diggings but since eggs were not taken from some of the burrows, it was possible that river otters were also involved. As noted by Michelle Masselink and others, the diggings were typical of raccoons. We have not seen this amount of digging on East Limestone Island for ten years, although river otters have lived here the entire time. On June 14, 2001, a raccoon survey and burrow-digging report was prepared and sent to Sean Sharpe at the Ministry of Environment, Lands and Parks in Smithers. We requested that MoELP initiate a control program on Limestone Island and Vertical Point, as per a 1995 multi-agency agreement. In October, a raccoon control team camped on Limestone Island for five days and removed at least nine animals from Vertical Point; no raccoons were found on Limestone Island.

A Common Raven nest was found near the trail as it crests the hill leading to Boat Cove. At least 25 wings and numerous eggshell fragments were found on the ground at the base of a large Sitka spruce tree. Throughout the entire season, we found many new wings and feather piles in all colony areas. A predator disturbed a burrow that has been active since 1992 and the incubating murrelet was pulled out and killed. We suspect that the predator was a raven because of the way the rocks were set aside, hatch cover moved and the presence of a feather pile. One day on Reef Island, Michelle Masselink watched a

raven pull an adult murrelet out of a burrow and kill it. The murrelet struggled and called loudly, but was unable to free itself. Michelle also found a very large pile of murrelet wings, legs and eggshell fragments on the ground under a large tree on Reef Island.

### **Black Oystercatchers**

All Black Oystercatcher nest sites are surveyed for breeding activity in Laskeek Bay and chicks banded when they reach 100 grams; adults are banded when possible. The marking program helps to track chick survivorship, year-to-year movements and perhaps, the age of some oystercatchers. This year 12 chicks were banded on Reef, Skedans, Low and Lost Islands. A total of – 21 active nests were located on islands in Laskeek Bay: Reef – 6, Low – 1, South Low – 2, Skedans – 6, Kingsway – 1, Lost – 5, and East Limestone – 3.

There are three nest sites on Limestone Island that are used each year. On May 30, nests numbered ELI-1 and ELI-2 both had eggs, ELI-3 had no eggs; adults were near all nests. All nests were re-checked in early June and none had eggs; adults were still nearby. Eggshells were found at the ELI-3 (North Cove) on early June and early July, meaning the adults might have laid two clutches.

### **Glaucous-winged Gulls**

Nest and adult counts of five Glaucous-winged Gull colonies in Laskeek Bay were done June 18 to 29 and on July 10 and 23. The trend of increasing numbers of breeding gulls on the Lost Islands continues with 376 nests and 750 adults (including 29 juveniles) and the colony on Kingsway Rock continues to decline (Fig. 4). Numbers of nests on the gull colonies were: Lost - 376, Kingsway - 25, Low – 14, Skedans - 4, Cumshewa - 3 and Reef - 2. The total number of nests on all colonies was 424, with 294 (69%) having three eggs each and 39 (9%) empty nests. The Cumshewa and Reef Island colonies were re-surveyed on July 10 and 23 and, whereas there had been no nests on the initial survey, there were nests found then. Glaucous-winged Gull egg-laying may have been delayed due to cool temperatures and stormy weather in May.

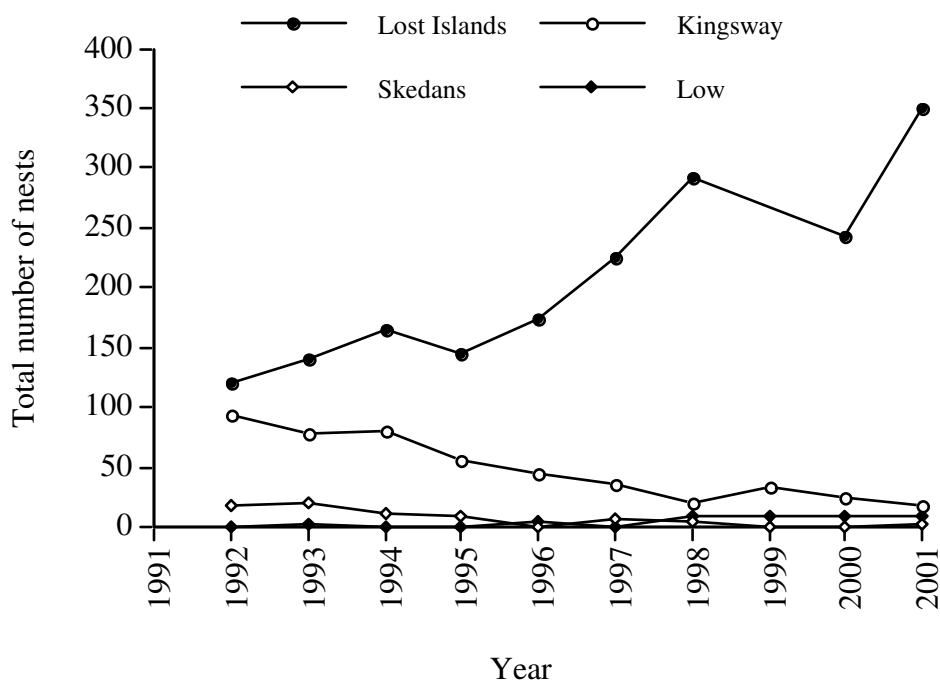


Figure 4. Glaucous-winged Gull nest counts for four colonies in Laskeek Bay, 1992-2001. Colony counts from 1999 were not included for the Lost Islands.

### Pigeon Guillemot nest boxes

Ten wooden nest boxes were installed at the Lookout Point, south east of the cabin. The boxes are predator and weather proof, and are basically a short tunnel with a small, dark nest chamber. They were put in permanent locations on the rock cliff, weighted down and topped with a thin layer of soil and pebbles. Two boxes had fresh droppings inside the tunnel entry when they were surveyed in July prior to camp closure.

### Marine Surveys

#### Seabird surveys

In 2001, we did four nearshore surveys (April 21, May 21, June 3-6, June 23) and two offshore surveys (June 11 and July 1). This data is sent to the Canadian Wildlife Service in Ottawa to become a part of the permanent records of annual seabird counts along the west coast of British Columbia. Transects have been done in Laskeek Bay since 1989 (except Cumshewa Inlet). One of the primary purposes of the nearshore survey is to count Marbled Murrelets, a species that is listed in Canada as endangered by COSEWIC. Our project provides the longest time series record for Marbled Murrelets in British Columbia. The peak count was on June 23, with 165 murrelets, on all transects.

Species diversity was quite good during the late April and May surveys (19 species each), declining to nine and eleven species in June. The complete species list for the nearshore surveys was: Common and Pacific Loon, Red-necked Grebe, Double-crested and Pelagic

Cormorant, White-winged and Surf Scoter, Brant, Common Merganser, Harlequin Duck, Bufflehead, Long-tailed Duck, Green-winged Teal, Black Oystercatcher, Black Turnstone, Glaucous-winged and Herring Gull, Black-legged Kittiwake, Ancient Murrelet, Marbled Murrelet, Rhinoceros Auklet, Pigeon Guillemot, Cassin's Auklet, Bald Eagle, Northwestern Crow, and Belted Kingfisher.

Black-legged kittiwakes were recorded in Laskeek Bay in 16 of the 17 weeks of the field season and were seen during all of the nearshore surveys in 2001. Several large flocks of mostly immature birds were noted on or near Kingsway Rock with 80 birds on May 21 and 235 on June 29.

We observed eleven and ten species for the two offshore surveys, respectively. Sooty Shearwaters were seen both times, with 148 birds on the first survey and 598 (plus additional 300 off transect) on the second. A dark phase Northern Fulmar was seen on July 1, as well as five unidentified sandpipers. On June 11, 400 + Ancient Murrelets were on the waters between Low Island and Skedans Islets at 7:50 am; one humpback whale was close by. The bird list for the offshore surveys was: Common Loon, Pelagic Cormorant, Northern Fulmar, Sooty Shearwater, White-winged Scoter, unidentified sandpipers, Glaucous-winged Gull, Herring Gull, Common Murre, Pigeon Guillemot, Ancient Murrelet, Cassin's Auklet, and Rhinoceros Auklet.

#### Marine Mammal Surveys

In 2001, we had a total of 85 sightings from nine species of marine mammals – this is the most sightings recorded by the Limestone Island crew since we began collecting records in 1990. The sightings were made from the Limestone cabin, on sea surveys, or during sea watches. We spent 20.5 hours at the Lookout, fewer than other years but rough seas in April and May severely hampered our visibility.

Humpback whales were in Laskeek Bay from April 1 to July 27, with almost daily sightings, another record. On one sea watch alone, over 20 animals were spotted in the southern portion of Laskeek Bay. At times, there were upwards of 40 whales feeding in Laskeek Bay as reported by the Reef Island crew and tour operators. Humpbacks may have remained in the area due to an abundance of food, since all animals were definitely feeding during our observations.

Orcas were encountered twice (June 17 and July 5), both times near the Skedans Islets. The first time, a pod with two males, four females and two calves slowly traveled north. This pod gave an amazing show with body rolls, tail slapping, breaching, somersaults, and spy-hopping displays. Several times, four animals would simultaneously spy-hop. The second encounter with three whales in the lagoon of the Skedans Islets on July 5 lasted for over one hour. We made a recording and took photos of the bull, cow, and calf. At one point, the calls of the bull could be clearly heard through the hull of the boat!

On two occasions (April 14 and 21) a single elephant seal was spotted at the surface near Low Island; on April 14, it appeared to be following a large group of Ancient Murrelets. These animals were probably young males since they were alone.

Non-breeding Steller's Sea Lions were counted three times at the Reef Island haul-out (March 28, April 21 and May 21), with more than 720 animals on April 21. This year, we saw very few sea lions at the Skedans Islands, with the peak of 75 on April 21. The peak numbers at Reef Island were about one month earlier than previous years. One male at Reef Island had a rope caught around its neck and was in poor condition. Sea lion observations were sent to Parks Canada to be included in their annual Steller's sea lion haul-out counts for the South Moresby region of Haida Gwaii.

Other marine mammal species recorded in 2001 were: a sighting of two rare Fin Whales east of Skedans Rock on May 1; one Sei whale off Haswell Island on May 21; as well Minke whales, Pacific White-sided dolphins and Harbour porpoises. On the June 21 sea survey, several hundred Harbour seals were counted at traditional pupping sites (Kinguii Island, Reef Island, Kingsway Rock, Cumshewa Island, and elsewhere).

### **Wildlife Trees**

We surveyed 69 wildlife trees in 2001. We confirmed the use of twenty-five trees by cavity nesting birds and of these, 10 were new this year. All 69 wildlife trees were snags (dead, standing trees) with 57% (39 trees) of them Sitka spruce, 35% Western hemlock, 3% Alder and 5% unknown species. Of the 25 active trees, 64% were Sitka spruce, 28% Western hemlock, and 8% Alder.

The bird species using the trees for nesting (chicks heard and/or fledged) were: Red-breasted Sapsucker (21 nests); Brown Creeper (1); Chestnut-backed Chickadee (1); Northern Flicker (1); and Hairy Woodpecker (1), plus later, Northern Saw-whet Owl (1). Wildlife tree 20 (on the trail to the biffy) was active again in 2001 and a Red-breasted Sapsucker pair (one banded) successfully raised their chicks to fledging.

Lee Burles measured all of the trees for height and diameter (DBH), took GPS bearings on some trees, and wrote detailed directions on the location of others. New tags were put on some trees and a few trees were re-numbered to eliminate confusion. New data forms were created to help us track the history of use for each tree. Some trees have been used for more than five years.

### **Songbird Banding**

One part of the RGIS project looks at songbirds and the impact of introduced species on their diversity, breeding success, and number of birds. Staff from Limestone and Reef Islands banded songbirds from June 20 to July 25, running six stations on Reef, Low, W. Skedans, E. Limestone and Louise Islands (Vertical Point) covering a wide range of habitat. Each station had eight banding sessions of five hours with at least a two-day break between sessions. The Limestone Island crew banded at East Limestone Island, Vertical Point, and West Skedans Islets.

Measurements of tarsus, wing and bill are taken to determine changes in species geographically and over time. Birds are also aged by looking at plumage, feather condition, molt limits, and if needed, skull formation. The ratio between hatch-year (HY)

birds, juveniles, and after-hatch-year adults helps us monitor the breeding success of the population around the banding stations. This data is looked at in conjunction with the presence and types of introduced species.

Both Limestone Island and West Skedans showed much lower numbers than previous years, while Vertical Point had its highest year to date; W. Skedans has only been used for two years. On Limestone Island, 49 birds were banded or retrapped with 18% HY birds. On Vertical Point, 119 birds were caught, with 46% HY. The W. Skedans station had 156 birds, with 23% HY. There were 11 species of songbirds caught on Limestone Island, 12 species at Vertical Point, and 14 species banded on W. Skedans. Vertical Point had an unusually high amount of Hermit Thrush with 31 of the 55 HY birds banded.

One female Hermit Thrush, originally banded on Limestone Island in 1998, has been re-trapped each year. Each time she has a brood patch, which means this bird returns to the same area of the island to breed. A Wilson's Warbler was netted at the Low Island station on July 25 – the first time this species has been banded in Laskeek Bay.

## Natural History

### Daily Bird Checklist

A daily checklist of birds on Limestone Island and the surrounding area reported sightings of 73 species in 2001. The maximum species count on a single day was 38 on June 11. Some interesting highlights were: young of the year Ancient Murrelets off the boat cove on July 21 and a male Blue Grouse calling almost daily from dawn to the middle of the night for 17 weeks. During a storm on May 6, several thousand Sooty Shearwaters were seen flying south, inside Low Island.

### Birds of Prey

This year we celebrated finding the first Northern Saw-whet Owl (*Aegolius acadicus brooksi*) nest on Limestone Island; this subspecies is found only on Haida Gwaii. The familiar, monotonous calls were not heard until May 5, much later than normal. However, soon an owl was frequently sighted at dusk in the area near the cabin and on June 20, Joelle Fournier discovered why – an owl flew straight into wildlife tree number 1, entering an old Northern Flicker nest cavity. Daily observations of this nest tree revealed that an owl briefly visited the tree every evening, often carrying prey. On July 4, an adult was sighted looking out of the nest cavity while the other adult sat on the tree. On July 20, chick(s) were heard calling whenever an adult owl came in carrying prey. Once the chick(s) had hatched, an adult would frequently come to the nest during the day. Winter Wrens were observed dive-bombing an adult saw-whet owl in the spruce regeneration near the owl's nest. The last check when we closed camp (July 27) showed that the chick(s) were still sticking their heads out of the nest hole. On August 15, the nest was checked and the chick(s) had fledged.

The excitement with nesting raptors continued with a pair of Bald Eagles occupying the nest on Cassin's Tower for the second year in a row. A quick visit to the Tower before egg-laying turned up a Ancient Murrelet band in a fresh eagle pellet – a bird banded on

Limestone in 1993. After the first egg was laid, we watched its incubation from behind a tree on the ridge trail. A chick appeared on June 9, poking its head out from under an adult and we checked the nest weekly thereafter. When camp closed on July 27, the chick was fully feathered but had not yet fledged. No further checks of the auklet/storm petrel colony were made in 2001.

Sharp-shinned Hawks were occasionally sighted throughout the season and we saw territorial displays by two adults over the channel between the Limestone Islands. On July 2, a fledgling hawk was heard calling from the cedar trees on the west side of the boat cove and on July 8, the adults were observed feeding a squirrel to the chick perched on a tree, however, a nest site was not located.

There was no activity at the Peregrine Falcon eyrie on the south side of Limestone Island. The cliff where the Falcons nest was checked periodically after May 24, but no birds were seen.

### **Plants**

An unconfirmed Queen's cup (*Clintonia uniflora*) was found in the woods north of boat cove (seen only once; no pictures). This lily is common in coastal temperate forests but has never been found on the Limestone Islands. The plants in the deer enclosures are growing, with the most obvious change being increased ground cover from young huckleberry and false azalea. The rare plants on the cliffs near the boat cove (e.g. *Anemone multifida*, *Polemonium pulcherrimum*) continue to fare well since they are out of reach of the deer. In mid-June, the rare Richardson's geranium (*Geranium richardsonii*) was found in bloom at the two sites first located in 1992.

### **Introduced species**

Perhaps the single greatest concern this year was the suspected presence of a raccoon on Limestone Island. For the first time since 1992, we noticed unusual burrow excavations in three parts of the colony. The diggings first appeared on April 23 at the northern end of the island, then more diggings were found towards Lookout Point, in Spring Valley and the northeast colony areas. Michelle Masselink came over from Reef Island and looked for raccoon latrines on Limestone and Louise Islands, finding none on Limestone but at least 40 on Louise. In total, there were 41 excavated burrows, with no estimate of adult mortality. As well, two similar sized diggings were found on West Limestone Island. Despite a massive search effort of two midnight spotlight surveys, several daytime shoreline surveys and numerous dawn searches in the colony, no raccoons were found during the field season. Live animal traps were borrowed from Parks Canada and set for 60 trap days. We baited the traps with fresh chicken eggs but failed to catch anything but two red squirrels. In October, a raccoon control crew spent five days on Limestone Island to remove raccoons from Vertical Point and Limestone Island. The crew shot and killed nine animals, probably killed two others, and saw two more, all on Vertical Point/Louise Island. A pair of eyes was seen on Limestone Island but a raccoon was never confirmed, despite one bait pile of fresh fish and two live traps with fresh fish (A. Edie, pers. comm.).

Sitka Black-tailed deer continue to live and breed on East Limestone Island. We recorded the locations of two radio-collared deer from April to June. A yellow/red collared deer was seen 15 times and a white/red collared deer was seen four times. Most of the observations were on the east side of the island but the deer ranged from the boat cove to cabin cove and into Crow Valley regularly. A fawn was found on June 13 near North Cove and at times, the yellow-red deer was accompanied by up to four other animals.

The squirrel surveys were continued this year and we completed ten surveys between May 5 to June 13. In total, 66 squirrels were seen or heard, with 19 within the 20 m radius plots.

### **Other Species**

River otters were very active on Limestone Island this year, with numerous observations of young otters frolicking along the shoreline. On two occasions (May 6 and June 14), an otter was seen in the forest. We found an active den on May 3, on the ridgetop heading towards Lookout Point.

We were excited to see large numbers of a pelagic invertebrate, *Salpa fusiformis*, in the waters around Limestone Island for several weeks in May and June. This salp is solitary but can form long daisy chains, looking a bit like a children's toy.

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