

# **EAST LIMESTONE ISLAND FIELD STATION: REPORT ON THE 2002 FIELD SEASON**

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## **SUMMARY**

This annual Field Season Report summarises the highlights of the Education and Science Programs of the Laskeek Bay Conservation Society. In 2002, we had 395 volunteer and visitor days during our 14-week season on Limestone Island. The camp opened from 29 March to 7 July and was supported by four staff, 27 volunteers and eight Directors. More than one-quarter of the volunteers had helped previously and at least half were from Haida Gwaii. Four school groups participated in Project Limestone and we enjoyed six visits from the sailing vessels *Island Roamer* and *Maple Leaf*. The Research Group on Introduced Species partnered with the Society for a songbird banding and genetics study that will examine the degree of isolation in resident songbirds on Haida Gwaii. Ancient Murrelets always fascinate and intrigue us and this year was no exception. Ancient Murrelet chick numbers were within the long-term average, 566 chicks from 9 May to 3 June, one of the shortest seasons to date. The peak night of departure was 21 May with 65 chicks, the highest number since 1993. Breeding Ancient Murrelets occupied 12 monitored burrows and eight of these families departed with chicks. Of the successful burrows, five left with two chicks and three left with one. Fewer adult Ancient Murrelets were caught than in recent years, with only 159 birds for the season. Black Oystercatcher nesting was also slow this year, with only two nests with chicks in July. The Lost Island gull colony declined to pre-1997 levels and the Kingsway Rock colony increased slightly. One Bald Eagle pair raised one chick near the Spring Valley plot. There were 19 nests, including three species, in wildlife trees. Unfortunately for the saw-whet owls, their nest tree from last year fell down. We had more than 100 sightings of marine mammals, including 49 humpback whales. And saving the big news to last, one of the Pigeon Guillemot nest boxes was used and it was by two different females no less! All in all, a really great season.

## **INTRODUCTION**

What began as a discussion around a campfire on Reef Island in 1989 is now an active education and science program, more than halfway to its goal of 25 years. With pressures from introduced species, offshore oil exploration and now wind farms in the Hecate Strait, long-term monitoring projects like ours provide the scientific support to evaluate changes or effects. Our science program is comprised of more than a dozen projects and with each season, we are finding more firsts - a nine-year Red-breasted Sapsucker tree and a 17 year old Ancient Murrelet to name a few. The education program is an integral part of the science program, working in concert to gather data and provide a new experience for curious people. Residents and visitors to Haida Gwaii have an opportunity to investigate an old-growth forested island, explore the limestone shoreline and discuss what they have learned with scientists and other visitors.

## EDUCATION PROGRAM

### Project Limestone

This year marks the 12th season that local school groups have taken part in Project Limestone. This program is funded by the students, School District 50, Gwaii Trust and LBCS and offers a valuable, educational experience for both students and teachers from Haida Gwaii. Project Limestone is a great opportunity for young residents to learn more about the marine and terrestrial ecosystems of the islands and to experience biological research first-hand. School groups receive an afternoon natural history orientation and are introduced to the ongoing research projects carried out on East Limestone Island. At night, students and teachers return to assist with the Ancient Murrelet chick banding and learn to carefully retrieve chicks from funnels, help record weights, measurements and band numbers.

Four school groups participated in Project Limestone this year: Living and Learning School (Q.C. City), G.M. Dawson (Masset) and two groups from Queen Charlotte Secondary Kayak Club. Total number of Project Limestone days: 39 (30 students and 9 teachers).

### Visitor Interpretation Program

Sailboat tour operators en route to Gwaii Haanas National Park Reserve often schedule a visit to East Limestone Island. Visitors are treated to the same experience as the Project Limestone participants with an afternoon tour and evening chick catching at North Cove. We are told that for many of the tour boat guests, visiting Limestone Island is the highlight of their trip to Haida Gwaii.

Both the *Maple Leaf* and *Island Roamer* came to Limestone Island in 2002, and a scheduled visit by *Copper Sky* was curtailed because of bad weather. The *Island Roamer* visited four times (17-18 and 26 May, 12 June) with 42 guests and nine crew members. The *Maple Leaf* visited twice (21 May and 1 June) bringing 14 guests and 9 crew members. Total number of tour group days: 74.

### Volunteers

The volunteer program on Limestone Island offers a unique opportunity for people to assist with biological research in a remote field environment. This program, whereby people donate their time in exchange for learning about Haida Gwaii ecosystems, is vital to the success of the Society. This year, 27 people volunteered to help on Limestone, all from Canada – Haida Gwaii (17), rest of BC (4), Ontario (4) and Alberta (2). We had four volunteers age 12 or under, including one exceptionally enthusiastic student from Living & Learning, Cole Murdoch, who spent four extra days on Limestone after his trip with the Living & Learning School in 2001 and 2002.

The majority of volunteers helped for one week, but six people came for two weeks; the average length of stay in 2002 was nine days. Eight of the volunteers had been to Limestone before. Total number of volunteer days: 232.

### Other visitors

The Reef Island-based Research Group on Introduced Species (RGIS) arrived in Laskeek Bay on 21 June. Limestone Island continues to serve as an important research site for RGIS because they monitor long-term vegetation plots and three deer exclosures. The initial Reef Island research crew of PhD student Steve Stockton (University of Ottawa), Joelle Fournier, Joelle's nephew Andreas Lutjen, post-Doc Theresa Burg and M.Sc. student Roger Bull stayed on Limestone for four days while we worked out the songbird banding schedule and starting setting up their camp for the next week.

Tony Gaston (Canadian Wildlife Service) arrived on 28 June with his undergraduate field course and five students from Ontario. The class came over to Limestone Island for a guided tour and to collect habitat data around the mist net lanes on Limestone. On 5 July, Dr. Vicki Friesen, Queen's University, and her 12-year old son Daniel joined the research crew on Reef Island to study songbird genetics (*see* Songbird Banding).

Other visitors to Limestone included divers from Haida Fisheries, onboard the *Haida Storm*, who were conducting a sea urchin survey in Laskeek Bay in early July. Total number of other visitor days: 50 (19 people).

## **Haida Gwaii Watchmen**

To establish a closer relationship with our Haida neighbors, we visited Tanu and Hotspring Islands in early July. These visits were a good opportunity to meet the Watchmen and to extend an invitation to the Haida community to take part in our volunteer program; a number of the Watchmen were interested.

## **2002 Field Staff**

The Limestone Island camp was open from 29 March to 7 July, 2002. Positions were: Joanna Smith (camp manager/senior biologist), Jen Rock (biologist/interpreter) and Charlotte Tarver (interpreter/naturalist). Volunteer banders: Mark Hipfner (Canadian Wildlife Service) and Keith Moore (LBCS). The science intern position was vacant this year.

## **RESEARCH AND MONITORING**

Approximately half of the global population of Ancient Murrelets *Synthliboramphus antiquus* breed on Haida Gwaii and this species is listed as “of special concern” in Canada because of threats from introduced species. Although rats and raccoons continue to be a serious concern for Ancient Murrelets throughout most of the archipelago, Langara Island, on north coast, remains rat free after an intense eradication program. However, wind farms in the Hecate Strait are a new conservation issue to add to the discussion of offshore oil development and introduced species for their effects on species that use the Hecate Strait and offshore islands. Our long-term seabird monitoring programs allow us to develop a firm baseline against which we can evaluate future changes, anthropogenic or otherwise.

## **Ancient Murrelets**

### *Adult Banding*

We used three knock-down nets from 1-12 April (before egg laying) and 20 May to 9 June (during chick departures) to catch adult Ancient Murrelets leaving the colony. We also looked for adults in monitored burrows after 30 days of incubation. All told, we opened the nets for 39.25 hours, over 20 nights, using the same approximate time of night as years prior (0330 to 0530 h in April and then 0130 to 0415 in May and June). Most of the time we only use one net each night but on 30 May we had 3 banders on the island so we opened both the Cabin and North Cove nets on the same night (North Cove after finishing chick banding at 0230 h).

A total of 190 birds were caught in 20 nights (79 new + 111 retrap), including nine birds in burrows and birds caught more than once. After multiple retraps are subtracted, the total drops to 159 (79 new and 80 retrap; Table 1). Before egg-laying, we caught 66 birds (23 new and 43 retrap) and we caught 93 adults (56 new and 37 retrap) post-laying (i.e. during chick departures).

**Table 1**  
**The number of Ancient Murrelets caught on East Limestone Island, 2002. Birds with brood patches 10-19mm are of unknown breeding status. Retraps\* include only one capture per bird.**

| Timing       | Capture method | Breeding status | New       | Retrap*   | Total birds |
|--------------|----------------|-----------------|-----------|-----------|-------------|
| Pre-laying   | Net            | Breeder         | 23        | 43        | 66          |
| Post-laying  | Net            | Breeder         | 12        | 23        | 35          |
|              | Net            | Non-breeder     | 30        | 8         | 38          |
|              | Net            | Unknown         | 8         | 3         | 11          |
|              | Burrow         | Breeder         | 6         | 3         | 9           |
| <b>TOTAL</b> |                |                 | <b>79</b> | <b>80</b> | <b>159</b>  |

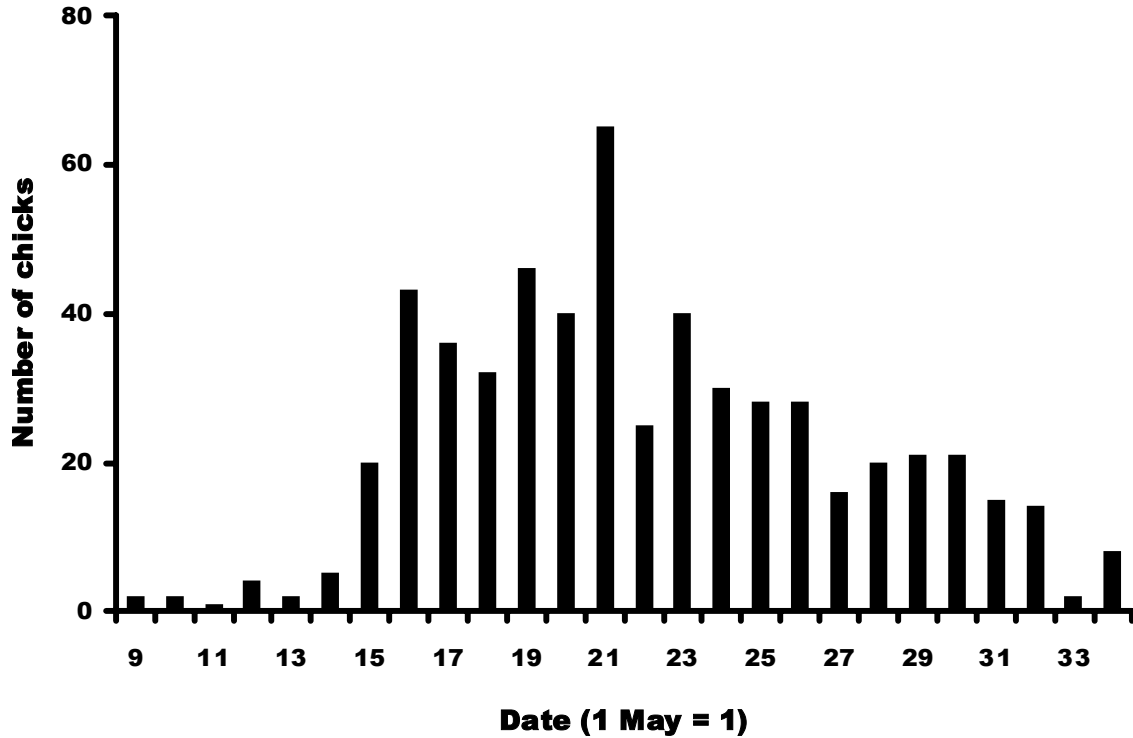
Of the 80 birds retrapped on Limestone Island, nine were banded as chicks, including seven breeders (banded 1990, 1991, 1995, 1997 and 1998) and two non-breeders (banded 2000). The remaining 71 birds were banded as adults between 1989 and 2001. Two breeders were banded in 1989, which makes them 16 or 17 years old, the oldest Ancient Murrelets to date. Most of the remaining retrapped birds (59; 74%) were banded in 1996 or later, with 17 adult birds coming from 2000 (21%). Birds in burrows weighed  $206.3 \pm 9.9$  g, breeders caught in nets  $201.3 \pm 16.2$  g, and non-breeders  $174.5 \pm 14.3$  g.

The catching efficiency of the nets varied. In April, we set up and opened the Spring Valley net first, then North Cove and Cabin. We banded eight nights each at Spring Valley and North Cove and only four nights at Cabin. However, Cabin was the big catcher this year, with 13.8 birds per night, or 6.5 birds per hour. The North Cove net was highly variable and one night we caught no birds but the net rated second for captures with 8.9 birds per night or 4.1 birds per hour. The Spring Valley had the lowest catching efficiency with 6.4 birds per night or 3.8 birds per hour, in part because the net would not completely open.

### *Chick banding*

Several days of strong, north winds caused lots of difficulties when we were setting up the plastic funnels and we only just managed to get the plastic up by 7 May. The gates were closed from 7 May to 4 June, using the adjusted protocol from 2001: 2230 – 0230 until 21 May and then 2300 – 0230 to end of season. We used USFWS No. 3 stainless bands series 1313-96000 for the chicks and no plastic bands. The first chicks arrived on the night of 9-10 May and the last chicks left on 3-4 June. A total of 566 chicks were banded this year, with the peak night on 21 May with 65 chicks (Figure 1; Table 2). The duration of the chick departures, at 26 d, was the shortest recorded apart from 1992, when funnels were not set up until 12 May and chicks departed on the first night of trapping. Omitting 1990, the number of chicks caught on East Limestone Island in 2002 was within one standard deviation of the long-term average (Figure 2).

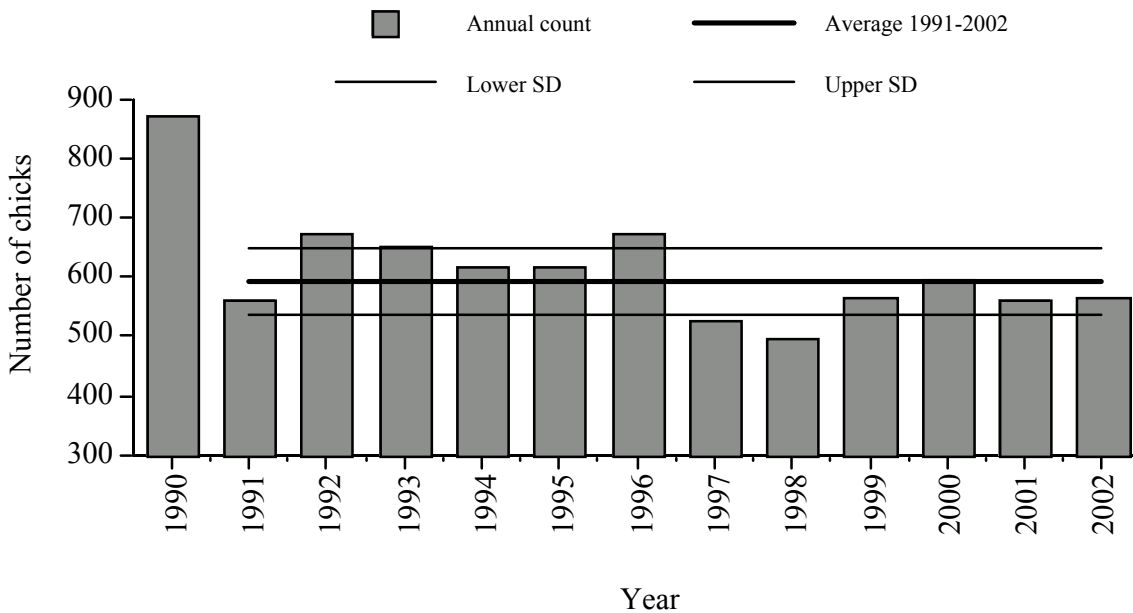
**Figure 1**  
**Nightly chick numbers on Limestone Island, 7 May to 4 June 2002.**



**Table 2.**  
**Summary of chick departures, peak nights and numbers on Limestone Island, 1990-2002.**

| 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 | 8 May         | 8 May       | 6 Jun      | 26 May     | 48         | 30         | 561          |
| 1992 | 12 May        | 12 May      | 3 Jun      | 22 May     | 84         | 23         | 674          |
| 1993 | 9 May         | 10 May      | 15 Jun     | 18 May     | 70         | 37         | 653          |
| 1994 | 7 May         | 7 May       | 8 Jun      | 22 May     | 52         | 33         | 618          |
| 1995 | 7 May         | 10 May      | 11 Jun     | 22 May     | 64         | 33         | 617          |
| 1996 | 10 May        | 11 May      | 9 Jun      | 19 May     | 48         | 29         | 588          |
| 1997 | 8 May         | 11 May      | 11 Jun     | 24 May     | 41         | 31         | 527          |
| 1998 | 7 May         | 11 May      | 22 Jun     | 20 May     | 55         | 43         | 495          |
| 1999 | 9 May         | 11 May      | 11 Jun     | 21 May     | 54         | 31         | 567          |
| 2000 | 11 May        | 11 May      | 11 Jun     | 20 May     | 62         | 31         | 595          |
| 2001 | 8 May         | 10 May      | 15 Jun     | 18 May     | 54         | 37         | 560          |
| 2002 | 7 May         | 9 May       | 3 Jun      | 21 May     | 65         | 26         | 566          |

**Figure 2**  
**Annual counts of Ancient Murrelet chicks in funnel on East Limestone Island 1990-2002. The solid line is the long-term mean, 1991-2001 and the dashed lines are one standard deviation from this mean**



We banded an additional 10 chicks in burrows and 18 chicks outside of the funnels. Chicks weighed on average  $31.9 \pm 2.9$  g in burrows, and  $26.5 \pm 2.2$  g in funnels, illustrating a similar 20% weight loss to that reported by Tony Gaston on Reef Island in the 1980s (Gaston 1992). We found eight chicks with ticks this year, each having from 1-5 ticks per web. These chicks weighed  $26.4 \pm 1.7$  g, not significantly different than chicks without ticks. Ticks were primarily on chicks that were departing from the eastern side of the island (Spring Valley and Cabin funnels, n=7). Ticks were detected on Ancient Murrelet chicks at Reef Island in 1999, but had not been seen previously at East Limestone Island.

### *Burrow monitoring*

We checked Ancient Murrelet burrows for the first time on 7 April when one egg was found. Egg laying continued at a slow pace, with the last egg laid on 4 May (C-44). Our sample of burrows started off at 47 but we retired three burrows because they were either filled with spruce cone seeds or had collapsed (C-9, C-18 and S-23). Three half-days were dedicated to finding potential new burrows bringing the total sample to 52. In the end, 12 burrows were active and of these, only 8 pairs departed with chicks. There may have been 13 active burrows but one, C-98 on the Ridge Trail, was under the path and although it had lots of activity, we decided not to dig a hatch for fear the whole burrow would collapse.

Of the eight breeding pairs of Ancient Murrelets that left the colony with chicks, five had two chicks and three left with 1 chick (one had only one egg in the burrow, one was one chick and one cold egg and the last was one chick and one dead chick in the burrow). Four burrows were abandoned or deserted, three with two eggs and the other with one egg. The average weight of first eggs was  $46.3 \pm 3.9$  g (N = 12).

An egg density index, based on  $\text{weight}/(L \times B^2)$  suggested that deserted eggs in burrows with 2 eggs were incubated for 14, 23 and 28 days, and the burrow with the single egg was not incubated at all (C-69).

We continued to notice Sitka spruce cone stalks and seeds in the burrows. In 2002, we retired two burrows because of the large accumulation of seeds in the nest cup and are still unsure if it is only mice eating cones in the burrows and boxes, or if squirrels are also using the murrelet nest sites to cache seeds.

Ancient Murrelet families left the colony from monitored burrows from 25 May to 12 June. The last burrow, C-44, has been active for nine consecutive years, with two of last three years with the same adult (1313-87070). The same adults have been in C-75 and C-14 also for two of the last three years.

### *Gathering Ground*

The usual evening counts of Ancient Murrelets on the gathering ground to the west of Low Island were made daily between 5 April - 27 June. The peak count was 226 on 29 April, almost a full month earlier than last year (2001: 328 on 23 May). Counts for the season were April: 3-226 (n=22, 62± 64), May: 1-157 (n=24; 43±42) and June: 4-129 (n=19; 49±51).

High winds, large swell and reduced visibility prevented us from counting birds on 17 evenings. April was unseasonably sunny and dry, with only a few days with high winds. The weather turned bad in May and we had several days with gale force winds. On 15 May we had a storm force sou'easter (>55 knots) with seas greater than 2.5m in Laskeek Bay! June was unusual in that we had almost a week of gale force winds in the last half of the month.

### *Nest Boxes*

Ancient Murrelet nest boxes were checked during daily burrow rounds (5 April – 1 June). As burrows were used in the first year that they were installed on Reef Island, it was a bit of a surprise that the nest boxes on Limestone were not used in their second year, and there were very few overall visits. Spruce cones stalks and seeds were found in nine boxes.

### *Predation*

Who is digging up the Ancient Murrelet burrows on Limestone Island? It is still a mystery but this year, we think it was river otters. Ten burrows were destroyed in 2002, most of them in the small Ancient Murrelet colony near the Look-out Point where an otter family has a play area and den within 200 m. Most of the diggings were found during late April - mid May, during the egg-laying and incubation period. Additional predation by birds of prey (eagles, falcons, hawks) was evident with Ancient Murrelet wings and feather piles throughout the colony, and occasionally beyond. Twice, headless carcasses were found.

### **Black Oystercatchers**

Laskeek Bay has been nominated as an Important Bird Area on the basis of its population of Black Oystercatchers *Haematopus bachmani*. We surveyed all of the nest sites from mid May until 3 July, with additional nest checks made by Tony Gaston and Joelle Fournier from 8-10 July. In 2002, the final nest tally was 10 active nests, two with chicks and eight with eggs (three with two eggs, five with one egg). No chicks were banded this year because none were large enough by the time we left Laskeek Bay. Eight adult banded oystercatchers were re-sighted and combinations recorded (Table 3) although the aluminum numbered bands are already showing signs of wear.

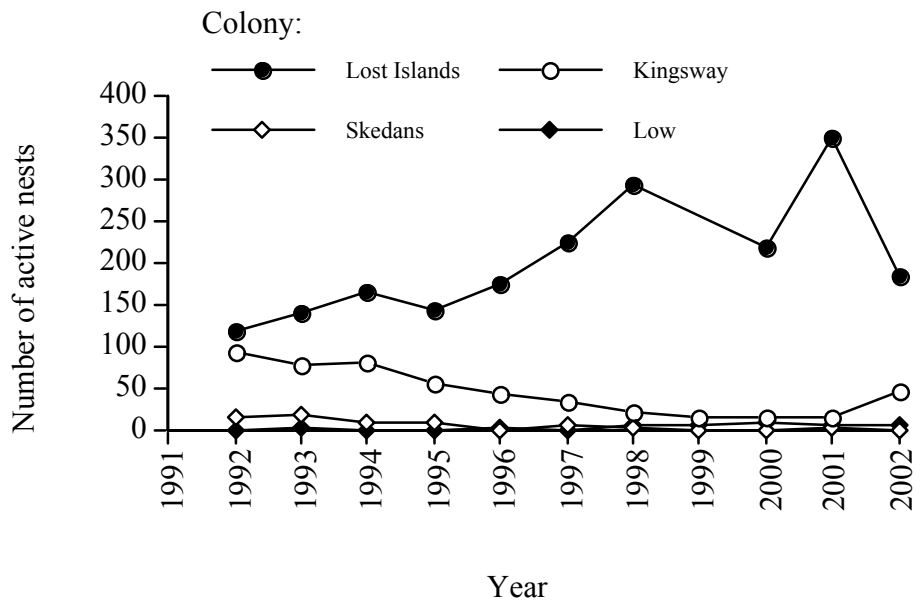
**Table 3**  
**Banded Black Oystercatchers in Laskeek Bay, 2002**

| Nest location (with Code) | Band combination (left – right leg)        |
|---------------------------|--|
| Cumshewa Island (CUM-2)   | Metal only (right)                         |
| Kingsway Rock (KNG-1)     | White – metal                              |
| Limestone Island (ELI-2)  | Aluminum – black/metal                     |
| Reef Island (REE-2)       | White – brown/metal; black/metal – white   |
| Skedans Islands (SKE-6)   | White – metal; H2 (aluminum) – black/metal |
| Skedans Islands (SKE-10)  | Metal only (right); white – black/metal    |
| South Low (SLW-5)         | Aluminum – black/metal                     |
| South Low (SLW-8)         | White – white/metal                        |

### Glaucous-winged Gulls

At Kingsway Rock on 1 June we found many Glaucous-winged Gull *Larus glaucescens* nests with eggs, some with a full clutch (3 eggs): this is relatively early. Low Island was checked on 14 June (8 nests with eggs, 23 adults) and Kingsway Rock again on 20 June (48 nests with eggs, 109 adults). Then, strong winds prevented us from getting to the other colonies for a few weeks. At Lost Island on 2 July and there were fewer active nests than last year (184 nests with eggs, 121 empty, 920 adults); East Skedans Island was surveyed a few days later (3 nests with eggs, 16 adults) (Figure 3). Cumshewa Islet was checked on 3 July and no gulls or active nests were found, only one empty nest. The small gull colony on the south side of Reef Island was not counted this year.

**Figure 3**  
**Number of gull nests with eggs in Laskeek Bay, 1992-2002**



### Pigeon Guillemot Boxes

Ten boxes for Pigeon Guillemots *Cephus columba* were put in place in 2001. They were checked on the day before closing camp for the season (6 July), when we found three eggs in Box 10, the one farthest out on the rocks at Look-out Point. Two of the eggs were the same, but the third was of a different colour and was about two-thirds of the way along the tunnel, towards the artificial nest cup. Clearly, two different females used the box.

## Seabird Surveys by boat

We managed four nearshore/offshore surveys this year (20-23 April, 12 May, 8-9 June and 3 July), two short of our target. In addition, we traveled 9 km into the Hecate Strait twice to look for Shearwaters and other pelagic migrants (23 May and 19 June). Our boat ran very well this year, especially with the new bench and adjustments to the centre driving position, but the weather was generally too rough for surveys during most of May and June.

Marbled Murrelet counts are the primary reason we run the nearshore transects because this species continues to be red-listed in BC (Threatened), federally listed as endangered (Council on the Status of Endangered Wildlife In Canada) and internationally listed as vulnerable (Birdlife International). The total counts of murrelets for transects run continuously for 13 years and for all transects combined were, respectively: 20 April- 109 and 150; 12 May - 193 and 215; 8 June - 49 and 121; 3 July - 357 and 503. These counts were higher than those in 2001 (peak 165 on 23 June).

Eighteen species were seen on the nearshore/offshore transects: Common and Pacific Loon *Gavia immer* and *G. pacifica*, Horned Grebe *Podiceps auritus*, Double-crested and Pelagic Cormorant *Phacrocorax auritus* and *P. pelagicus*, Brant *Branta bernicla*, Bufflehead *Bucephala alveola*, Long-tailed Duck *Clangula hyemalis*, Black Oystercatcher, Glaucous-winged Gull, Black-legged Kittiwake *Rissa tridactyla*, Ancient Murrelet, Marbled Murrelet *Brachyrhynchus marmoratus*, Rhinoceros Auklet *Cerorhinca monocerata*, Pigeon Guillemot, Cassin's Auklet *Ptychoramphus aleuticus*, Bald Eagle *Haliaeetus albicilla* and Northwestern Crow *Corvus caurinus*. Notable by their absence were: Harlequin Duck *Histrionicus histrionicus*, White-winged and Black Scoters *Melanitta fusca* and *M. nigra*, Common Merganser *Merganser merganser* and Red-necked Grebe *Podiceps grisegena*.

Black-legged Kittiwakes were rarely seen in Laskeek Bay this year, in sharp contrast to the hundreds seen in 2001 on Kingsway Rock. Ten sub-adult kittiwakes were flocking with Glaucous-winged Gulls near Cumshewa Rocks on 3 July and Tony Gaston saw several between Skedans and Reef Islands in early July.

Eight species were seen on the two Hecate Strait surveys: Sooty Shearwater *Puffinus griseus*, Pink-footed Shearwater *Puffinus creatopus*, Glaucous-winged Gull, Pigeon Guillemot, Cassin's Auklet, Ancient Murrelet, Rhinoceros Auklet and Red-necked Phalarope *Phalaropus lobatus*. As in previous years, we were no more than 7 km beyond Reef Island when we intercepted hundreds of shearwaters cork-screwing southward just above the waves. We were unable to get very close to the stream of birds but are fairly certain that we saw Pink-footed among the Sooty Shearwaters. On 23 May, we were literally surrounded by humpback whales, with animals stretching from the horizon near the Skedans Islands, south past Low Island and offshore up to at least 18 km.

*Correction to 2001 Report: The surveys referred to as 'offshore' in the 2001 Field Summary (p. 11) were Hecate Strait surveys. The 'nearshore' surveys included both the nearshore and offshore transects.*

## Marine Mammals

Nine species of marine mammals were seen in Laskeek Bay in 2002, including the sometimes-marine river otters (Table 4, Appendix 1). The pinnipeds were the most numerous group with 2577 Steller's sea lions *Eumetopias jubatus* and 316 harbour seals *Phoca vitulina* counted, although these totals merely reflect the frequency of visits to haul-out sites. Each year we consistently see the same core group of species (humpback whales, sea lions, killer whales, dolphins) while other species, like the Dall's porpoise, minke and fin whales, are irregular visitors to Laskeek Bay. Dall's porpoises were more frequent than usual in 2002.

Humpback whales were frequently spotted within 100 m of Limestone Island and spectacular displays of breaching, fin slapping and tail slapping occurred in the offshore waters, beyond Low Island. In Laskeek Bay, total numbers were lower than last year but reports from the sailboat tour operators indicated that these whales were numerous in Skincuttle Inlet and Juan Perez Sound, south of us.

On 5 July, students with Tony Gaston's Ontario Universities Field course were treated to a very spectacular display of breaching a by a pod of 9 Orcas, including two large males with tall fins. This group was seen first off East Limestone Island lookout, where they split up, with two animals, including one male, circling anticlockwise around

the island, while the rest dived and surfaced several minutes later close to South Low Island. About 1 h later the same group passed along the North shore of Reef Island within 100m of land and gave a continuous series of breaches, including roll-overs and back-flips, as well as a great deal of spy-hopping. Joelle Fournier thought it was the most spectacular display she had seen in many years of boating in Haida Gwaii waters. Between their appearance off East Limestone and their display at Reef Island, the group would have had time to make a kill at the nearby sea lion haul-out. This type of behaviour is sometimes seen after a successful kill (Graeme Ellis, pers. comm. to AJG).

**Table 4**  
**Total counts of marine mammals from marine surveys and sea-watches from East Limestone Island for four of last six years**

| Species (common name)                           | 2002 | 2001 | 1998 | 1997 |
|---|------|------|------|------|
| Dall's porpoise <i>Phocoenoides dalli</i>       | 29   | 0    | 0    | 9    |
| N. elephant seal <i>Mirounga angustirostris</i> | 0    | 2    | 0    | 2    |
| Fin whale <i>Balaenoptera physalis</i>          | 0    | 4    | 0    | 0    |
| Grey whale <i>Eschrichtius robustus</i>         | 2    | 0    | 0    | 6    |
| Harbour porpoise <i>Phocoena phocoena</i>       | 21   | 19   | 25   | 21   |
| Humpback whale <i>Megaptera novaeangliae</i>    | 49   | 140  | 6    | 2    |
| Killer whale <i>Orcinus orca</i>                | 29   | 16   | 17   | 36   |
| Minke whale <i>Balaenoptera acutorostrata</i>   | 0    | 0    | 3    | 8    |
| Pacific white-sided dolphin                     | 22   | 93   | 10   | 42   |
| <i>Lagenorhynchus obliquidens</i>               |      |      |      |      |
| TOTALS  | 3060 | 2016 | 2875 | 1462 |

### Wildlife Trees

In 2002, we checked 54 wildlife trees (WT) for cavity nesting species. By mid-June, 19 trees were being used, including three new trees (WT 85-87). Red-breasted Sapsuckers *Sphyrapicus ruber* nested in 16 trees, Chestnut-backed Chickadees *Poecile rufescens* in two, and one pair of Hairy Woodpeckers *Picoides villosus* nested in WT 64. Sapsucker chicks began called from 29 May - 19 June and fledged between 5 - 23 June.

WT 20 (in Spring Valley) was used for the ninth consecutive year by sapsuckers, making it the longest running sapsucker nest tree on Limestone Island. At WT 43 (in C-plot), a colour-banded sapsucker was seen four times, the same bird that was seen from 1996-98 (yellow/yellow – red/metal).

A tree that supported the first Northern Saw-whet Owl *Aegolius acadicus* nest on Limestone Island last year fell down over the winter. Of the 15m original snag, only 5.5 m remains standing. We were able to locate the nest hole among the bits lying on the ground and estimated that the nest had been at 9 m. The nest opening measured 74 x 77 mm and the actual cavity measured 18 cm wide by 30 cm tall. The snag had split open during the fall so we were able to examine the nest contents from last year. The nest cup contained two dull, white eggshell fragments and was lined with grass and small, dark feathers. In mid April, a fresh owl pellet was on top of the toppled snag fragment, directly above the old nest hole. An owl called from the forest above the cabin, near the junction of the main and north cove trails and on the north side in the forest, above funnel 3 and 4 but we were unable to locate a day roost site, or determine if there was a female owl was on the island.

### Songbird Banding

In partnership with the Research Group on Introduced Species, a songbird banding and genetics study ran from 22 June - 15 July. The five mist-net stations used this year were East Limestone Island, West Skedans Island, Reef Island (2 sites) and Low Island; birds were not banded at Vertical Point (Louise Island). Each station had four banding sessions, generally from 0700 to 1200, with a two or four day rest between sessions. The Limestone Island staff ran the East Limestone and West Skedans mist-net stations for 7 of 8 scheduled sessions and the Reef banding staff ran the other three stations and finished off the last session at West Skedans Island.

Morphometric data were collected from the birds (wing, bill and tarsus length, weight) plus age, plumage and breeding status; fat score and molt were not recorded. Blood was drawn from the brachial vein on the wing of a number of songbirds for a project initiated by Dr. Vicki Friesen and two of her students, Dr. Theresa Burg (a post-Doctoral fellow) and Roger Bull (an M.Sc. student) at Queens' University, Ontario. The blood samples will be used for DNA analyses to test whether resident songbirds on Haida Gwaii are distinct from their counterparts on the mainland coast. This will allow us to measure how much interchange there is between island and mainland populations - a question of great conservation interest.

We captured 152 birds at the Limestone and West Skedans stations between 22 June and 6 July, 118 new and 34 retraps. Seventeen species were caught, 12 at each station. On East Limestone Island (ELI), Townsend's Warbler *Dendroica townsendi* was the most common species (25), followed by Golden-crowned Kinglet *Regulus satrapa* (14), Chestnut-backed Chickadee (12) and Hermit Thrush *Catharus guttatus* (6). On W. Skedans Island (WSK), Fox Sparrow *Passerella iliaca* was the most common (21), then Rufous Hummingbirds *Selasphorus rufus* (not banded, 17), Orange-crowned Warbler *Vermivora celata* (12), Swainson's Thrush *Catharus ustulatus* (11) and Hermit Thrush (5). All other species comprised less than five individuals: Brown Creeper *Certhia americana* (3 on ELI), Dark-eyed Junco *Junco hyemalis* (1 on ELI), Golden-crowned Kinglet (1 on WSK), Orange-crowned Warbler (4 on ELI), Pine Siskin *Carduelis pinus* (2 on ELI), Pacific-sloped Flycatcher *Empidonax difficilis* (1 on WSK), Red-breasted Sapsucker (2 on ELI), Red Crossbill *Loxia curvirostra* (1 on WSK), Song Sparrow *Melospiza melodia* (3 on WSK), Swainson's Thrush (1 on ELI), Townsend's Warbler (2 on WSK), Varied Thrush *Ixoreus naevius* (2 on ELI, 1 on WSK) and Winter Wren *Troglodytes troglodytes* (1 on ELI, 3 on WSK). One retrap from a previous year involved a movement between islands. A Winter Wren, banded as a juvenile bird at Vertical Point last year, was recaptured on West Skedans Island.

Joelle Fournier has been tracking a female Hermit Thrush that was banded on Limestone Island in 1998 and retrapped each year we have used the mist nets. We caught this bird in 2002, again with a brood patch, which makes four years of known breeding. We noticed that a banded Hermit Thrush had built a nest in the limestone wall beside the cabin, in the columbine bushes. We regularly watch this bird feeding directly in front of camp and wonder if it is this banded bird from 1998.

## NATURAL HISTORY

### Daily Bird Checklist

Our daily checklist of birds on Limestone Island and Laskeek Bay reached a high on 20 April with 38 birds (average was 25 birds per day). A total of 71 species were seen throughout the season with many species seen regularly each week. As in other years, the male Blue Grouse *Dendragapus obscurus* drummed almost daily from 6 April to 9 June, sometimes playing tag with the Northern Saw-whet Owl for continuous day and night calling on the east side of the island. Cassin's Auklets and Fork-tailed Storm-petrels *Oceanodroma furcata* were frequently heard in the middle of the night when we were awake for Ancient Murrelet chick or adult banding. Storm-petrels were probably breeding on the east side of the island, north of camp, and we would hear their 'laugh' as they circled the shoreline after midnight. A lone Red-necked Grebe was in the cabin cove when we opened camp on 29 March. We suspect that this same bird stayed for five weeks, occasionally joined by two other adult grebes. Three Common Snipes *Gallinago gallinago* were seen on East Limestone Island after two days of southeast gale force winds on 26 April. The snipes were on the ground in the interior of the island, one alone and two together. Wandering Tattlers *Heteroscelus incanus*, usually a reliable visitor to Limestone Island, did not appear this year. Instead, a small flock of Whimbrels *Numenius phaeopus* landed on our eastern shore on 7 May. The Black Oystercatchers called loudly when the Whimbrels landed near their nest and continued to alarm until the 'foreigners' left. The always-spectacular large flocks of Sooty Shearwaters flew within 50 m of Lookout Point on 28 May, a foggy, windy day. We generally see these birds in the Hecate Strait and only rarely are they this close to shore, but the dense fog may be the reason we saw hundreds of shearwaters so close to land.

## Birds of Prey

Bald Eagles were the only bird of prey known to nest on Limestone Island in 2002. The eagle nest above the Spring Valley murrelet plot (BAEA-2) was active in early April and when we left camp on 7 July, a chick was large enough to be standing up in the nest. The eagle nest at Cassin's Tower all but fell down this year, although an eagle was seen sitting on the tree above the nest on several occasions. A search below this nest on Cassin's Tower in May brought the discovery of another Ancient Murrelet band in a regurgitated pellet but the bird was banded on Reef Island, not Limestone (1313-63528)!

All other eagle nests were checked during the season and were vacant (spring, Crow Valley, North cove). Painted tags (1 to 5) were nailed to all eagle trees except the active nest. Measurements were taken at nest trees this year to quantify the eagle nest sites: tree height and diameter, nest height, tree species, alive or dead, and presence of dead branches. A new nest (for us) may have been located along the southern ridge, west of the junction of the ridge trail out to Cassin's Tower. The suspected nest is in a very large live spruce (210 cm diameter) on a branch with lots of mistletoe. This last nest would bring the total number of eagle nests to 6 on Limestone Island.

Common Ravens *Corvus corax* frequently sat in the spruce trees near camp, vocalising and searching for unattended lunches on the beach. A quick visit to last year's raven nest tree in May turned up another Ancient Murrelet band, an adult banded on Limestone in 2000. This raven nest was not used in 2002 and we were unable to find their new nest, if in fact they nested this year. Charlotte Tarver remarked that the ravens were unusually quiet this year and some days, we hardly saw or heard them on the island. A Northwestern Crow pair nested under the trailing currant bushes below Cassin's Tower but we're not sure how successful it was. On 7 July, we found a dead fledgling below the nest when we put the new tag on the eagle nest tree.

There was no activity at the Peregrine Falcon *Falco peregrinus* eyrie on the south side of Limestone Island and indeed falcons were rarely heard or seen this year. Sharp-shinned Hawks were heard twice and Rob Cameron saw a Northern Harrier on Limestone Island.

## Plants

Warm, dry weather in April, followed by rain in May and June created a lush and colourful array of flowers on Limestone Island. All plants in the deer exclosures were growing well, particularly the huckleberry and sword ferns. The rare plant locations were catalogued with GPS coordinates and occurrence was noted for all the plants inventoried in 1998. The cut-leafed anemone (*Anemone multifida*) and Richardson's geranium (*Geranium richardsonii*) continue to grow safely in three locations around the island. The few-flowered shooting star (*Dodacatheon pulchellum*) grows in seven cliff or wall locations and showy Jacob's ladder (*Polemonium pulcherrimum*) has still been found only near the boat cove. The marker for Menzies pipsissewa (*Chimaphila menziesii*) was accidentally removed in 1999 or 2000 and we have not found this plant again, blooming or otherwise.

## Introduced Species

We surveyed the shores of Louise and the Limestone Islands twice for raccoons *Procyon lotor*. On 22 May, Charlotte and Jo found a raccoon on the eastern shore of Louise Island, very close to the large sandy beach with the old logging equipment. On 6 June, Jen Rock and Jo spotted a small raccoon on a beach facing West Limestone Island. Both surveys were done at low tide but the tidal height was not especially low (6.2' and 6.9' respectively), which may have influenced the results. No raccoons were spotted on either of the Limestone Islands, or at Vertical Point.

Mr. Yellow and Red, a collared Sitka black-tailed deer, was seen on Limestone Island from 11 April to 10 June. While he may wander the whole island, he spends a fair bit of time on the north and east sides and we spotted him 19 times. He is quite tame, feeding on spruce and grasses within 10 m of the cabin. A female deer and fawn were seen twice on the island and later a dead fawn was found in the interior of the island.

## **Other species**

River otters were frequently spotted in Cabin Cove and on the shoreline of the island. The area near the Look-out Point was heavily used and there were many 'slides' up from the forested edge, crustacean bits and otter scat. Otters have also created a trail up from the water near where the spring drains to the beach by the cabin.

## **CONCLUSIONS**

This year's research saw the completion of the research program of the Research Group on Introduced Species (RGIS), in which the Laskeek Bay Conservation Society was a partner. Monitoring of vegetation on Reef, Kunga and East Limestone islands will continue, probably at 2 year intervals. In addition, the Society hopes to extend part of the songbird banding programme initiated by RGIS. A conference and workshop dealing with the results of the RGIS studies, as well as other work on introduced species in Haida Gwaii, was held in Queen Charlotte City in October 2002. The proceedings of that conference will be published in 2003.

The Society's normal monitoring activities went well in 2002, despite some adverse weather. Breeding of Ancient Murrelets at East Limestone Island was typical of previous years, but the attendance of pre-breeding birds late in the season was lower than normal, reducing the number of adult birds captured by the flight nets. The paucity of pre-breeding birds visiting the colony, the apparently low success of Glaucous-winged Gulls breeding at Lost Islands, and the almost total failure of breeding by Black Oystercatchers, seemed to indicate a year of unusually low productivity for seabirds in the area.

Despite the evidence of poor conditions for seabirds in 2002, there were many sightings of large whales in Laskeek Bay, although not as many as in 2001. It appears that Humpback Whales have become more regular in Hecate Strait in spring than was true 20 years ago. A record count of Steller's Sea Lions at the Reef Island rocks suggests that the sea lion population also may be increasing in the area.

**Appendix 1**  
**Marine mammal observations in Laskeek Bay, 2002**

| <b>Date</b>         | <b>Time</b> | <b>Location</b>                            | <b>No.</b> | <b>Behaviour</b>                | <b>SS,Wind</b>        |
|---------------------|-------------|--|------------|---------------------------------|-----------------------|
| <b>River otter</b>  |             |  |            |                                 |                       |
| 06-May-02           | 1900        | scampering up<br>rock, Cabin Cove          | 1          | running                         | -                     |
| 17-May-02           | 1350        | mist net lane near cabin                   | 1          | running from water              | sun,no rain           |
| 18-May-02           | 1500        | forest above Boat Cove,<br>near crabapples | 1          | running to water                | sun, no rain          |
| 20-May-02           | 1700        | Rocks SW of boat cove                      | 1          | scampering up rocks             | -                     |
| 23-May-02           | 1835        | path from cabin to<br>tent#1               | 1          | running                         | -                     |
| 25-May-02           | 0830        | front cabin, crossed<br>steps              | 1          | easing along                    | -                     |
| 27-May-02           | 1700        | N. Cove, slope between<br>Fun1+2           | 1          | carrying something in<br>mouth  | SE15-20               |
| 30-May-02           | 2050        | Cabin Cove                                 | 1          | eating,grunting on<br>rocks     | SE18,rough,10         |
| 16-Jun-02           | 1723        | 10m E Lookout Point                        | 2          | swimming                        | SS0, calm, VIS 6      |
| 25-Jun-02           | 1600        | Cabin Cove                                 | 1          | feeding and then came<br>ashore | E 15, VIS 5           |
| 26-Jun-02           | 0630        | Cabin Cove intertidal                      | 2          | playing                         | calm                  |
| 26-Jun-02           | 0730        | intertidal rocks in cabin<br>cove          | 2          | running to water                | calm                  |
| <b>Harbour seal</b> |             |  |            |                                 |                       |
| 01-Apr-02           | 1530        | Cabin Cove                                 | 1          | resting                         | SS2,NE5, 10 mile      |
| 02-Apr-02           | 1730        | Cabin Cove                                 | 1          | resting                         | SS1,NE5, 15 mile      |
| 02-Apr-02           | 1930        | Cabin Cove                                 | 1          | resting                         | SS1, NE5, 15<br>mile  |
| 04-Apr-02           | 1230        | Cabin Cove                                 | 1          | resting                         | SS1, NE5, 10 mile     |
| 05-Apr-02           | 1130        | Cabin Cove                                 | 1          | resting                         | SS2, SE10, 10<br>mile |
| 06-Apr-02           | 1230        | Cabin Cove                                 | 1          | resting                         | SS3, S12, 10 mile     |
| 10-Apr-02           | 1530        | Skedans Bay                                | 1          | surfing                         | SS1, S5, 15 mile      |
| 10-Apr-02           | 1545        | Skedans Islands, middle                    | 1          | surfing                         | SS1, S5, 15 mile      |
| 20-Apr-02           | 1140        | 200mN of E side Reef                       | 1          | hanging at surface              | NE5,SS2,15+           |
| 20-Apr-02           | 1229        | Cumshewa Rocks                             |            | hauled-out                      | SS1,NE5, 15+          |
| 20-Apr-02           | 1240        | Kingui Island                              |            | hauled-out                      | SS2,NE10+,15          |
| 22-Apr-02           | 2115        | Boat Cove                                  | 1          | resting                         | SS1,calm,15+          |
| 12-May-02           | 1440        | Cumshewa Rocks                             | 4          | hauled-out                      | SS2,SE5,VIS 15        |

|           |      |                                |    |                            |                     |
|-----------|------|--------------------------------|----|----------------------------|---------------------|
| 12-May-02 | 1442 | Cumshewa Island                | 1  | in water                   | SS2,SE8,VIS 15      |
| 12-May-02 | 1520 | Skedans Bay                    | 1  | swimming                   | SS0,SE2,VIS 15      |
| 24-May-02 | 1530 | Skedans Island, N              | 25 | hauled-out,then water      | SS0,SE5, 15         |
| 28-May-02 | 1430 | Cabin Cove                     | 1  | -                          | S25,very rough,8    |
| 03-Jun-02 | 2100 | 100m W of ELI                  | 1  | -                          | SE15,SS3,5          |
| 04-Jun-02 | 0815 | 5m off rocks Cabin Cove        | 1  | -                          | SW05,SS1,VIS 15     |
| 08-Jun-02 | 1122 | 2m off rocks, Cabin Cove       | 2  | feeding                    | SS1, gentle,VIS 15  |
| 21-Jun-02 | 2315 | Cabin Cove                     | 1  |                            | calm, VIS 15        |
| 22-Jun-02 | 2150 | Cabin Cove                     | 1  | swimming and looking about | SS1, calm, VIS 3    |
| 26-Jun-02 | 2115 | Reef Island, boat cove         | 1  | resting on kelp            | SS0, calm, VIS >15  |
| 27-Jun-02 | 0650 | Skedans Island, west           | 30 | hauled out                 | calm, SS0, VIS 15   |
| 27-Jun-02 | 1400 | Skedans Islands, middle        | 25 | hauled out                 | calm, SE 15, VIS 15 |
| 02-Jul-02 | 1500 | Lost Islands, hauled out       |    | hauled out                 |                     |
| 03-Jul-02 | 2115 | Cabin Cove                     | 1  | traveling                  | SS1, calm, VIS 15   |
| 03-Jul-02 | 0955 | Cumshewa Rocks                 | 15 | hauled out                 | SS2, calm, VIS 15   |
| 03-Jul-02 | 1030 | Kingui Island                  | 98 | haul out                   | SS2, calm, VIS 15   |
| 03-Jul-02 | 1355 | between S. Low and Skedans Is. | 1  | traveling Seast            | SS0, calm, VIS 15   |
| 03-Jul-02 | 1420 | W. Skedans Islet               | 35 | hauled out                 | SS0, calm, VIS 15   |

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**Steller's sea lion**

|           |      |                            |     |                         |                   |
|-----------|------|----------------------------|-----|-------------------------|-------------------|
| 01-Apr-02 | 1400 | 100m E of ELI              | 1   | traveling S             | SS2,NE10, 10 mile |
| 07-Apr-02 | 1800 | 400m E of ELI              | 1   | going S                 | SS2, NE8, 15 mile |
| 10-Apr-02 | 1550 | Skedans haul-out           | 173 | haul out                | SS1,S5, 15 mile   |
| 10-Apr-02 | 1555 | Reef Island haul-out       | 888 | haul out                | SS1,S5, 15 mile   |
| 14-Apr-02 | 0930 | 100m E of ELI              | 1   | traveling S             | NE15,SS3, 10 mile |
| 20-Apr-02 | 1127 | Reef Island haul-out       | 542 | hauled-out              | -                 |
| 20-Apr-02 | 1215 | Skedans haul-out           | 156 | hauled-out              | SS1,calm,15+      |
| 04-May-02 | 1045 | 15m from NW Nwst Pt of ELI | 3   | at surface still        | NW10,SS2,15       |
| 12-May-02 | 1315 | Reef Island haul-out       | 200 | hauled-out              | SS1,SE5,VIS 15    |
| 12-May-02 | 1421 | Skedans haul-out           | 15  | hauled-out              | SS1,SE5,VIS 15    |
| 24-May-02 | 1300 | Reef Island haul-out       | 590 | resting                 | SS0,calm, 15      |
| 24-May-02 | 1520 | Skedans Islands            | 1   | hauled-out high on rock | SS0,SE5, 15       |

|                                    |      |                                  |    |                            |                        |
|------------------------------------|------|----------------------------------|----|----------------------------|------------------------|
| 16-Jun-02                          | 1326 | Cabin Cove                       | 1  | fishing                    | SS0, calm, VIS 12      |
| 18-Jun-02                          | 1130 | Cabin Cove                       | 1  | swimming in kelp           | SS0, calm, VIS 15      |
| 21-Jun-02                          | 2300 | 100m E of ELI                    | 1  | traveling S                | calm, VIS 15           |
| 25-Jun-02                          | 1020 | between ELI and WLI              | 2  | swimming and looking about | SS0, calm, VIS 3       |
| 02-Jul-02                          | 1830 | Reef Island haul-out             |    | hauled out                 |                        |
| 03-Jul-02                          | 0900 | 15m S of Low I.                  | 1  | swimming                   | SS2, calm, VIS 15      |
| <b>Pacific white-sided dolphin</b> |      |                                  |    |                            |                        |
| 20-Apr-02                          | 1148 | 1.5nm N of Reef Island           | 10 | traveling S                | SS2,NE5, 15+           |
| 20-May-02                          | 2000 | between Low + cabin cove         | 6  | feeding                    | SS1,calm,15 mile       |
| 30-Jun-02                          | 2200 | 200m N of Reef Island, in middle | 6  | traveling, bow-riding      | SS2, calm, VIS 10      |
| <b>Harbour porpoise</b>            |      |                                  |    |                            |                        |
| 18-Apr-02                          | 0915 | 200m East of Cabin Cove          | 1  | traveling S                | VAR light              |
| 19-Apr-02                          | 1600 | N of Low I, .5 way out           | 1  | traveling S                | VAR light,SS1, 15 mile |
| 19-Apr-02                          | 1730 | 400m E of ELI                    | 2  | traveling S                | calm,calm, 15+         |
| 19-Apr-02                          | 2015 | 100m E of ELI                    | 2  | traveling S                | calm,0wind,15+         |
| 21-Apr-02                          | 1930 | 250m east ELI                    | 1  | going N                    | SS2,NE10,15+           |
| 24-Apr-02                          | 1330 | 200m East of Cabin Cove          | 1  | going N,S,N                | SS1,SE5,15+            |
| 07-May-02                          | 1910 | 100m E of ELI                    | 3  | feeding                    | NS1,calm,15            |
| 22-May-02                          | 2040 | 2nm SE of Cabin Cove             | 3  | feeding                    | SS0,calm,15            |
| 13-Jun-02                          | 2130 | Cabin Cove                       | 1  | traveling N                | SS0, calm, VIS 15      |
| 14-Jun-02                          | 1334 | 500m West of Low Island          | 1  | feeding                    | SS0, light, VIS 15     |
| 16-Jun-02                          | 1326 | Cabin Cove                       | 2  | fishing                    | SS0, calm, VIS 12      |
| 17-Jun-02                          | 2125 | Cabin Cove                       | 2  | traveling N                | SS1, calm, VIS 15      |
| 03-Jul-02                          | 1350 | 100m S of S. Low I.              | 1  | traveling S                | SS0, calm, VIS 15      |
| <b>Dall's porpoise</b>             |      |                                  |    |                            |                        |
| 01-May-02                          | 1530 | 500m                             | 25 | -                          | -                      |
| 12-May-02                          | 1645 | 400m N of Kingsway Rock          | 3  | swimming                   | SS1,SE5,VIS 15         |
| 16-Jun-02                          | 1705 | 500m S of Lookout point          | 1  | feeding                    | SS0, calm,VIS 6        |
| <b>Orca</b>                        |      |                                  |    |                            |                        |
| 07-Apr-02                          | 1230 | west of low Island               | 5  | traveling S                | SS3, SE12, 15 mile     |

|           |      |                      |   |                               |                    |
|-----------|------|----------------------|---|-------------------------------|--------------------|
| 07-Apr-02 | 1315 | 100m E of ELI        | 3 | traveling S                   | SS2, SE10, 15 mile |
| 07-Apr-02 | 1430 | E of Heming Head     | 9 | traveling S                   | SS2, SE8, 15 mile  |
| 12-May-02 | 1310 | Reef Island haul-out | 3 | hunting                       | SS1,SE5,VIS 15     |
| 05-Jul-02 | 1530 | ELI - Louise - Reef  | 9 | hunting? Traveling west and S | SS2, SW10, VIS15   |

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**Humpback whale**

|           |      |                                    |    |                   |                       |
|-----------|------|------------------------------------|----|-------------------|-----------------------|
| 19-Apr-02 | 2000 | E of Heming Head                   | 1  | traveling east    | calm,0wind,15+        |
| 05-May-02 | 1130 | 100m S of S.Low                    | 3  | traveling N       | NW15,SS3-4,12+        |
| 18-May-02 | 1730 | Louise Is.shore, N of ELI          | 2  | feeding           | SS2,SE10,VIS 13       |
| 19-May-02 | 0030 | ELI shore, N and E                 | 1  | -                 | SS1,NE2, 0 VIS        |
| 19-May-02 | 0930 | 100m E of ELI                      | 1  | feeding off kelp  | SS1,NE5,15 miles      |
| 19-May-02 | 1000 | 200m East of Cabin Cove            | 2  | going N, feeding  | SS1,NE5,15 mile       |
| 20-May-02 | 1300 | 200m East of Cabin Cove            | 1  | feeding           | SS1,NE5,10 mile       |
| 20-May-02 | 1315 | 200m East of Cabin Cove            | 2  | feeding           | SS1,NE5, 10 mile 12   |
| 21-May-02 | 0030 | ELI shore, N and E                 | 2  | feeding           | SS0,calm,dark         |
| 22-May-02 | 2030 | offshore N of Low, 10 miles        | 2  | tail + fin slaps  | SS0,calm, 15          |
| 23-May-02 | 0050 | 50m N of ELI                       | -  | feeding           | SS0,calm, 15          |
| 23-May-02 | 0600 | 200m East of Cabin Cove            | 1  | feeding           | SS0,calm,15           |
| 23-May-02 | 2045 | 3nm NE of Cabin Cove, off Low I.   | 2  | feeding           | SS0,calm,15           |
| 24-May-02 | 1400 | 2mELow-reef+skedans                | 10 | feeding           | SS0,SE5, 15           |
| 25-May-02 | 1130 | 1 nm N of ELI, towards Skedans Is. | 1  | feeding           | SS3,SE15,15           |
| 25-May-02 | 1930 | S+E Low Is. 1 mile                 | 1  | blow              | SE15,SS4,10           |
| 07-Jun-02 | 0600 | at edge of kelp off Cabin Cove     | 1  | traveling S, blow | NW 5, SSO, VIS 15     |
| 07-Jun-02 | 1830 | 50m East of Cabin Cove             | 1  | traveling S, blow | NE 07, SS1, VIS 15    |
| 07-Jun-02 | 2115 | offshore, N of Low 1 mile          | 1  | blowing           | SS1, calm, VIS 15     |
| 09-Jun-02 | 1140 | Kingui Island                      | 1  | feeding           | SS0, calm, VIS 15     |
| 21-Jun-02 | 1100 | 1nm E of ELI                       | 1  | traveling S       | SS3, SE 10-15, VIS 15 |

|           |      |   |   |                          |                       |
|-----------|------|---|---|--------------------------|-----------------------|
| 21-Jun-02 | 1600 | 200m East of Cabin Cove                   | 1 | diving and feeding       | SS3, SE 10-15, VIS 15 |
| 25-Jun-02 | 0920 | 50m west ELI, at boat cove                | 1 | swimming and blowing     | SS0, calm, VIS 3      |
| 25-Jun-02 | 1100 | S of Skedans village                      | 1 | swimming and blowing     | SS0, E 15, VIS 3      |
| 27-Jun-02 | 0645 | Skedans Island, N                         | 1 | feeding                  | calm, SS0, VIS 15     |
| 29-Jun-02 | 1720 | 100m E of ELI                             | 1 | close to shore, swimming | SS4, S20, VIS 5       |
| 30-Jun-02 | 0920 | 100m E of ELI                             | 1 | resting                  | SS2, calm, VIS 15     |
| 01-Jul-02 | 2100 | 100m E of ELI                             | 1 | feeding, traveling N     | SS2, S10, VIS 10      |
| 03-Jul-02 | 1030 | 100m E of ELI                             | 1 | traveling S              |                       |
| 03-Jul-02 | 0940 | 250m N of Skedans Is.                     | 1 | traveling N              | SS2, calm, VIS 15     |
| 04-Jul-02 | 0930 | 100m S of Vertical Pt campsite, Louise I. | 2 | feeding                  | SS1, calm, VIS 15     |
| 04-Jul-02 | 2105 | 50m E of ELI (cabin cove)                 | 1 | feeding                  | SS2, calm, VIS 15     |

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**Grey whale**

|           |      |                            |   |             |                    |
|-----------|------|----------------------------|---|-------------|--------------------|
| 14-Apr-02 | 1615 | 1.75 nm East of Cabin Cove | 2 | traveling N | VAR12,SS4, 15 mile |
|-----------|------|----------------------------|---|-------------|--------------------|

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