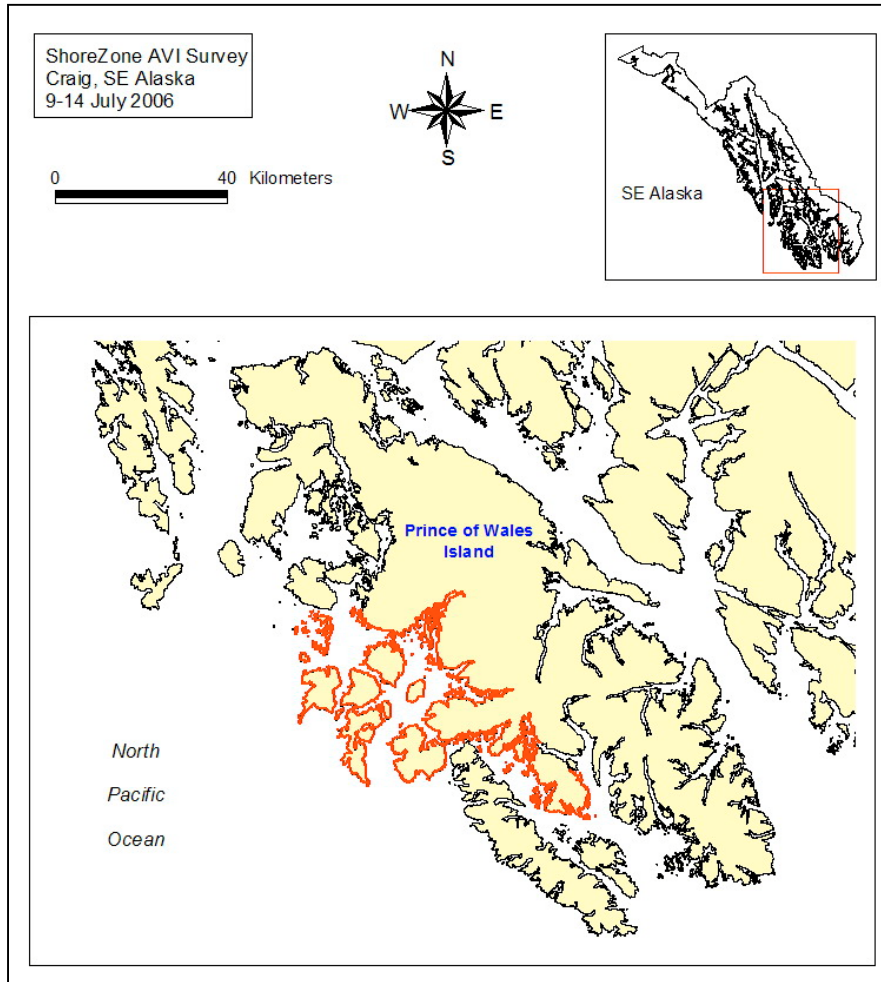


FLIGHT REPORT

ShoreZone Aerial Video Imaging (AVI) Survey

Craig, SE Alaska, 9-14 July 2006



Prepared for
The Nature Conservancy
Juneau, Alaska
by



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ShoreZone is a coastal habitat mapping and classification system in which georeferenced aerial imagery is collected specifically for the interpretation and integration of geological and biological features of the intertidal zone and nearshore environment. Oblique low-altitude aerial video and digital still imagery of the coastal zone is collected during summer low tides (zero tide level or lower), usually from a helicopter flying at <100 m altitude. The flight trackline is recorded at 1-second intervals using Fugawi electronic navigation software and is continuously monitored in-flight to ensure all shorelines have been imaged. Video and still imagery collected are georeferenced and time-synchronized. Video imagery is accompanied by continuous, simultaneous commentary by a geologist and a biologist aboard the aircraft. The imagery and commentary are later used in the definition of discrete along-shore coastal habitat units and the “mapping” of observed physical, geomorphic, sedimentary, and biological features in those units. Units are digitized as shoreline segments in ArcView or ArcGIS, then integrated with the along-shore and across-shore geological and biological data housed in a Microsoft Access database. Mapped habitat features include degree of wave exposure, substrate type, sediment texture, intertidal flora and fauna (abundance and community composition), subtidal algae, and some subtidal fauna.

The purpose of this flight report is to summarize the field activities of the ShoreZone aerial video imaging (AVI) survey conducted in **Craig, Alaska** during the low-tide window **9-14 July 2006**. The survey was conducted by **Coastal & Ocean Resources Inc.** (CORI, Sidney, British Columbia) under contract to The Nature Conservancy (TNC, Juneau, Alaska). A coastal ecologist from Archipelago Marine Research Ltd. (AMR, Victoria, British Columbia) was sub-contracted by CORI to provide biological expertise. **Table 1** provides a summary of crew affiliations and responsibilities. The survey crew was based in Craig; helicopter operations were based at the Klawock air strip. The aircraft used in this survey was a Bell 206 Jet Ranger helicopter chartered from Coastal Helicopters in Juneau. Fuel (in barrels) was provided by PetroMarine Services in Craig and delivered to the Klawock air strip. Remote fueling by truck took place on two survey days in Hydaburg with assistance from local Tim Koentopp and pilot Bill Snider.

The length of shoreline imaged during the survey was **1,805 km** (from the Maurelle Islands to Hydaburg on East Prince of Wales Island). Particular attention was paid to the location and size of seal haul-outs in the region. Locations were plotted in the navigation software pre-flight and were avoided during the aerial survey. The timing of the zero-tide windows and generally agreeable weather conditions enabled the collection of 300 km of additional imagery on Sukkwan Island, just south of Hydaburg. The tables and figures on the following pages summarize, by video tape number, the extent and location of the AVI data and imagery collected. Maps for each tape are annotated with representative geographic names, trackline times (in hh:mm:ss UTC), and photo numbers. UTC time is imprinted on video imagery (provided on DVD with this report). The final section of this report contains daily updates with selected photos prepared while in the field. These field summaries were delivered by email during the field survey and are included here for reference.

Table 1. Southeast Alaska AVI Flight Personnel and Responsibilities (Team Coho - CH)

Crew Member	Individual / Affiliation	Responsibilities
<i>Geomorphologist</i>	Jodi Harney CORI, Sidney BC	survey coordination, videography, geologic commentary, post-flight data processing, project reporting
<i>Coastal Ecologist</i>	Mary Morris AMR, Victoria BC	digital photography, biologic commentary, post-flight data processing
<i>Navigator</i>	Kalen Morrow, CORI, Sidney BC	in-flight navigation, post-flight data processing
<i>Pilot</i>	Bill Snider Coastal Helicopters Juneau, Alaska	

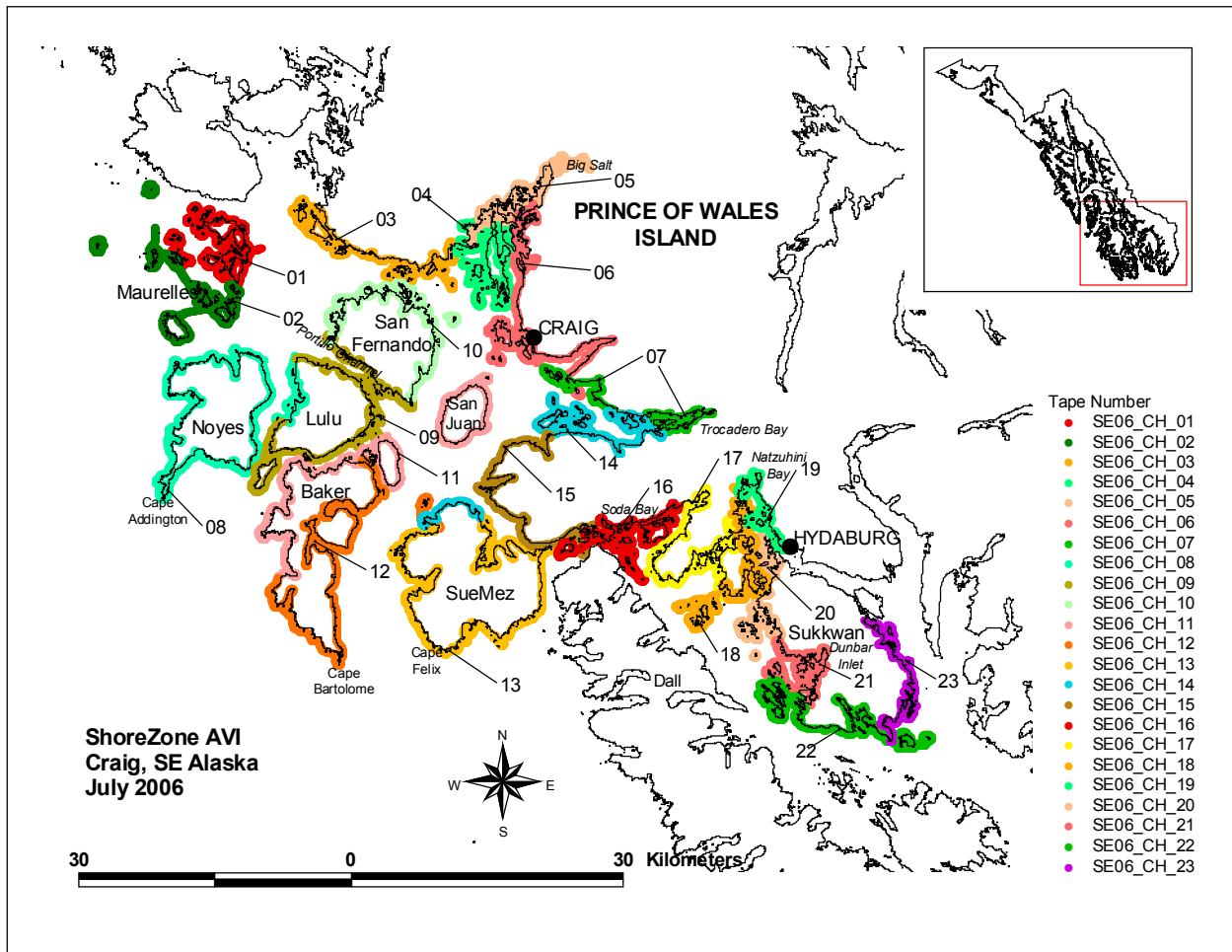


Figure 1. Summary of Craig AVI coverage (1,805 km shoreline), by tape number.

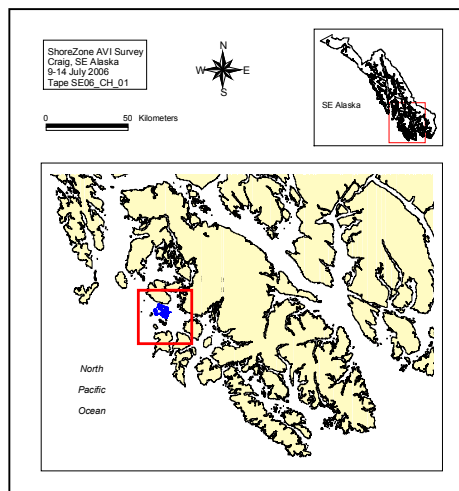
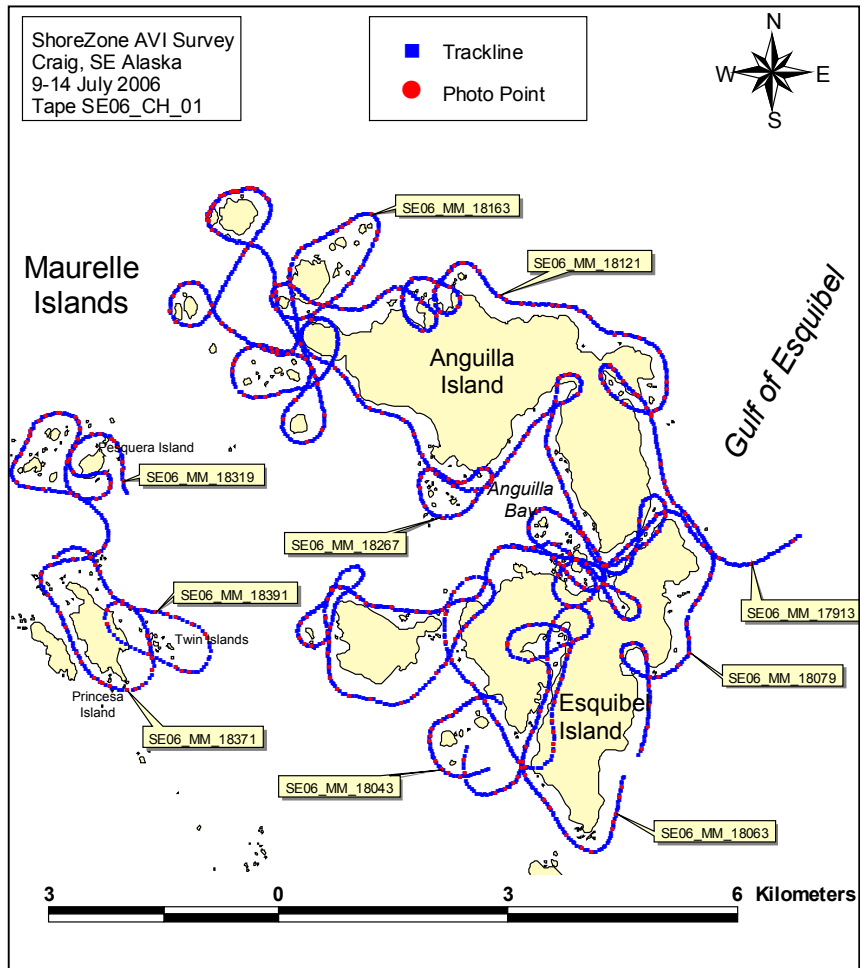


Figure 2. Location of Tape SE06_CH_01, 9 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_01** **Date:** **09 Jul 06**

General Location: Maurelle Island Group, Gulf of Esquibel, East Prince of Wales Island

Time Start (UTC):	130507 (02:35 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	140019 (57:17 on tape)	Nav:	Morrow
Tape Length:	54:42	Pilot:	Snider

Weather: Generally sunny; high ceiling

Time (UTC)	Location	Photo
130528	NE Esquibel Island, Maurelle Island Group	SE06_MM_17913
132240	S Esquibel Island	SE06_MM_18063
132848	N Anguilla Island, Maurelle Island Group	SE06_MM_18121
133314	Tonina Islands	SE06_MM_18163
134443	Anguilla Bay, South Anguilla Island	SE06_MM_18267
135328	Pesquera Island	SE06_MM_18319
135805	Princesa Island	SE06_MM_18371
135935	Twin Islands	SE06_MM_18391

Notes:

No mid-tide refuel

Other short tape breaks:

break (lens)	132012	17:09	
restart	132138	18:35	
break (transit)	135100	47:57	
restart	135323	50:20	Pesquera Island

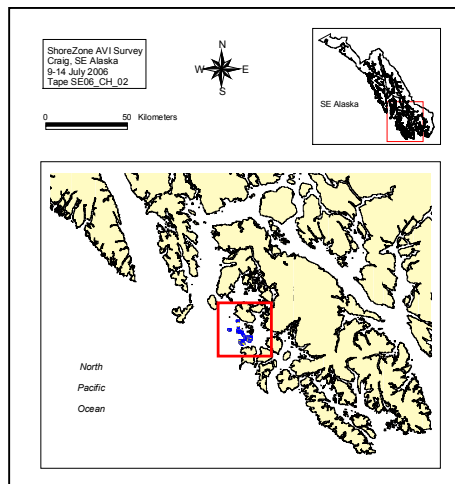
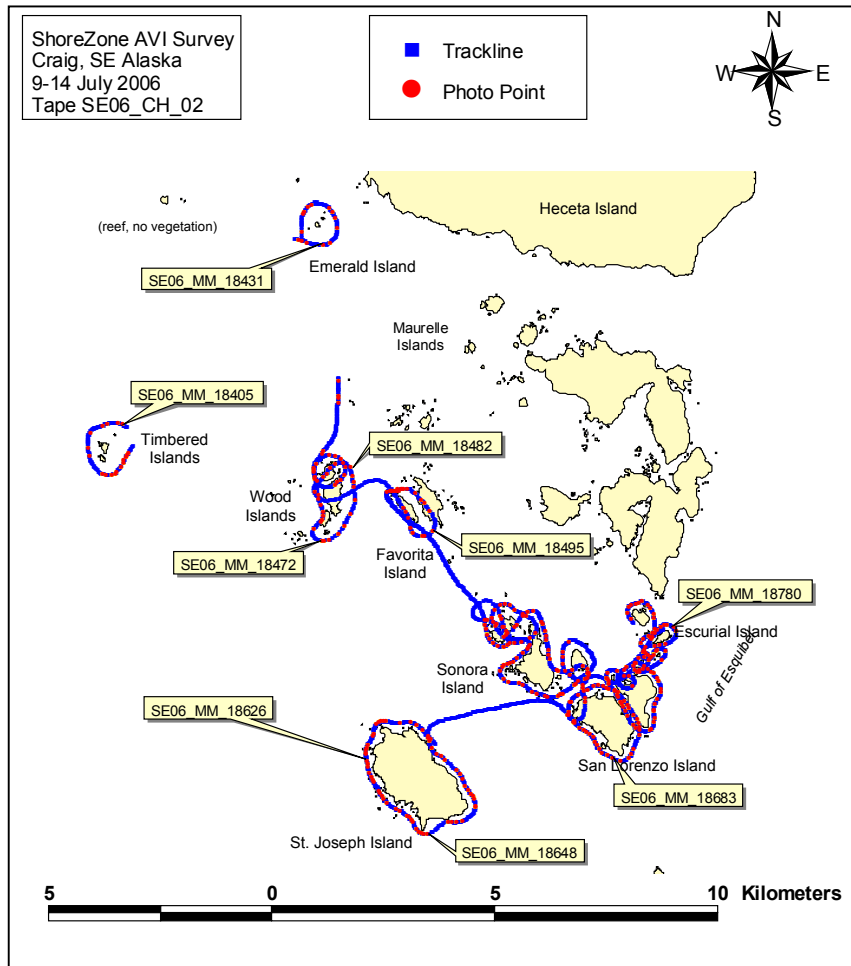


Figure 3. Location of Tape SE06_CH_02, 9 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_02** **Date:** **09 Jul 06**

General Location: Maurelle Island Group, Gulf of Esquibel, East Prince of Wales Island

Time Start (UTC):	140355	(04:00 on tape)	Geo:	Harney
Fuel break:	none		Bio:	Morris
Time End (UTC):	145048	(50:53 on tape)	Nav:	Morrow
Tape Length:	46:53		Pilot:	Snider

Weather: Generally sunny; high ceiling

Time (UTC)	Location	Photo
140359	Timbered Islands, western Maurelle Island Group	SE06_MM_18405
140901	Emerald Island	SE06_MM_18431
141501	Wood Islands	SE06_MM_18472
141748	Favorita Island	SE06_MM_18495
143446	St. Joseph's Island	SE06_MM_18648
143854	San Lorenzo Island	SE06_MM_18683
144813	Escorial Island	SE06_MM_18780

Notes:

No mid-tide refuel

Other short tape breaks:

break (transit)	140532	05:37	
restart	140844	08:49	
break (transit)	141011	10:16	end Emerald Island
restart	141144	11:48	Feather Rock
break (transit)	142958	30:03	
restart	143150	31:55	St. Joseph's Island

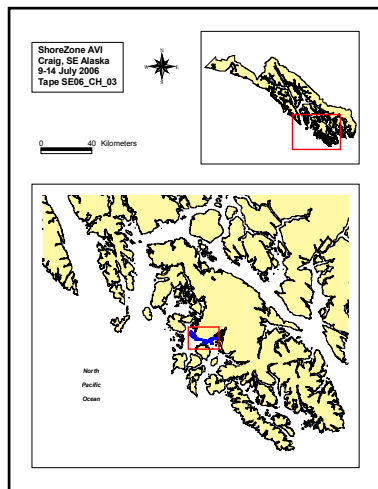
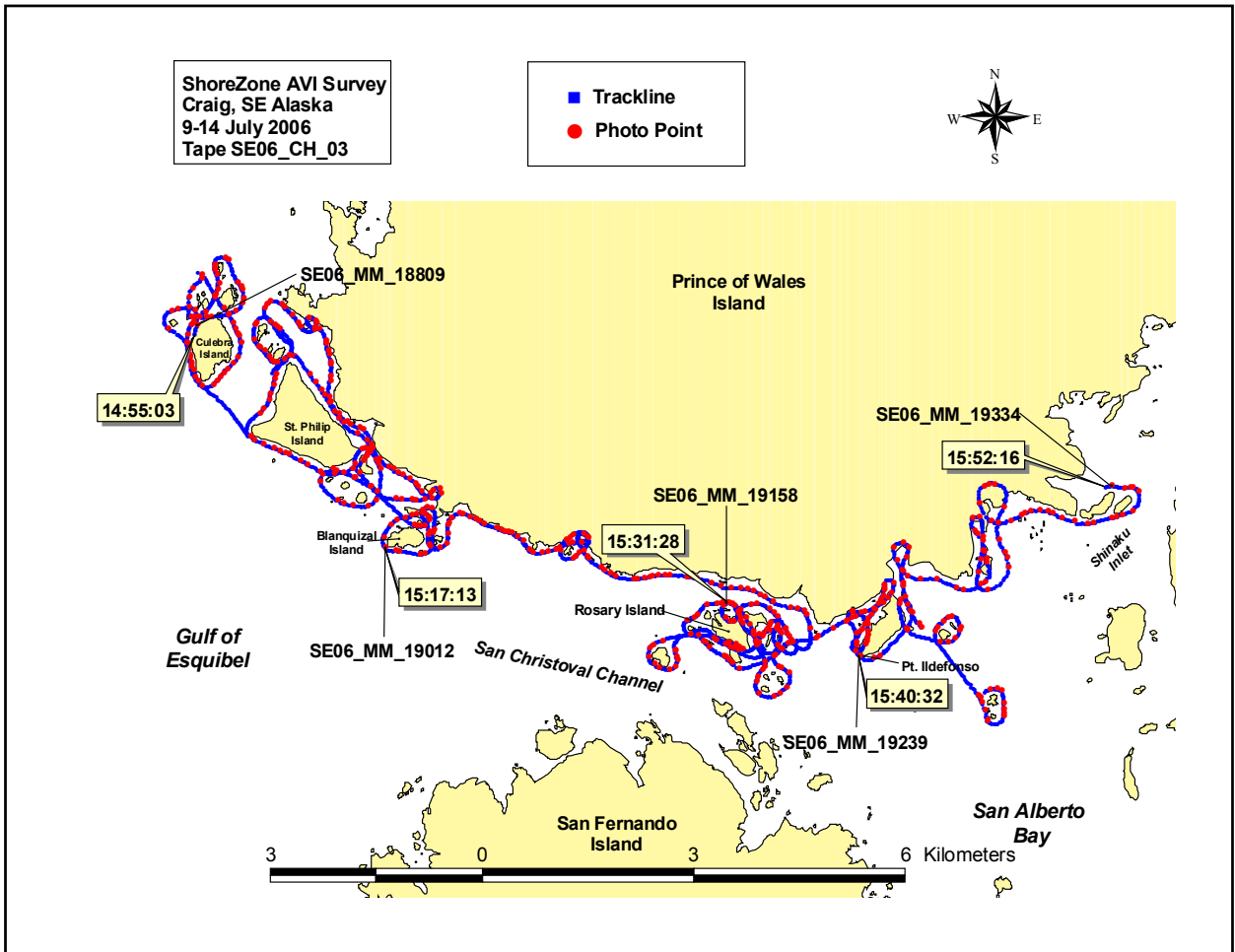


Figure 4. Location of Tape SE06_CH_03, 9 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_03** **Date:** **09 Jul 06**

General Location: Maurrelle Island Group, Gulf of Esquibel, East Prince of Wales Island

Time Start (UTC):	145503 (02:46 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	155216 (59:58 on tape)	Nav:	Morrow
Tape Length:	57:12	Pilot:	Snider

Weather: Generally sunny; high ceiling

Time (UTC)	Location	Photo
145503	Culebra Island (near Bob's Place)	SE06_MM_18809
151713	Blanquizal Island	SE06_MM_19012
153128	Rosary Island	SE06_MM_19158
154032	Point Ildefonso	SE06_MM_19239
155216	Shinaku Inlet	SE06_MM_19334

Notes:

No mid-tide refuel

Other short tape breaks:

break	150458	12:41
restart	150552	13:35
break	154441	52:24
restart	154539	53:21

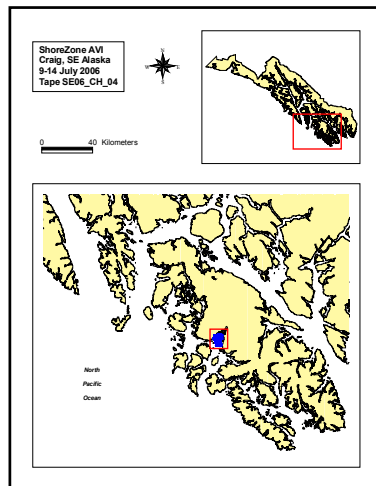
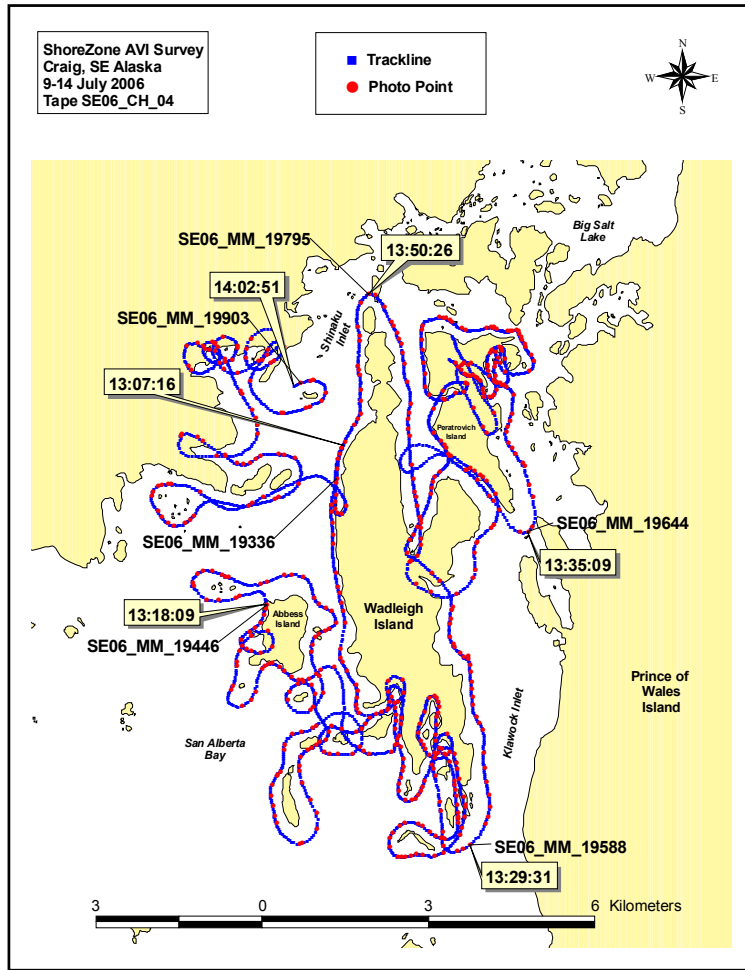


Figure 5. Location of Tape SE06_CH_04, 10 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_04** **Date:** **10 Jul 06**

General Location: Big Salt Lake, Klawock, Craig, Port St. Nicholas, east Trocadero Bay
(East Prince of Wales Island)

Time Start (UTC): 130716 (02:15 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 140251 (57:49 on tape) **Nav:** Morrow

Tape Length: 55:34 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
130716	West side of Wadleigh Island	SE06_MM_19336
131809	NW corner of Abbess Island	SE06_MM_19446
132931	Entrance Point, South end of Wadleigh Island	SE06_MM_19588
133509	Cemetery Point, South end of Peratrovich Island	SE06_MM_19644
135026	North end of Wadleigh Island	SE06_MM_19795
140251	Shinaku Inlet	SE06_MM_19903

Notes:

Other short tape breaks:

break (card) 133803 Peratrovich Island
restart 133848 Peratrovich Island

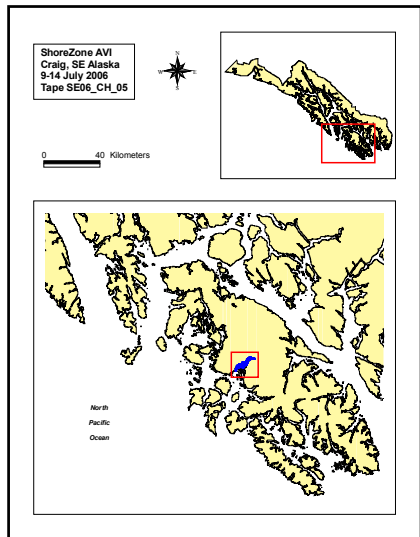
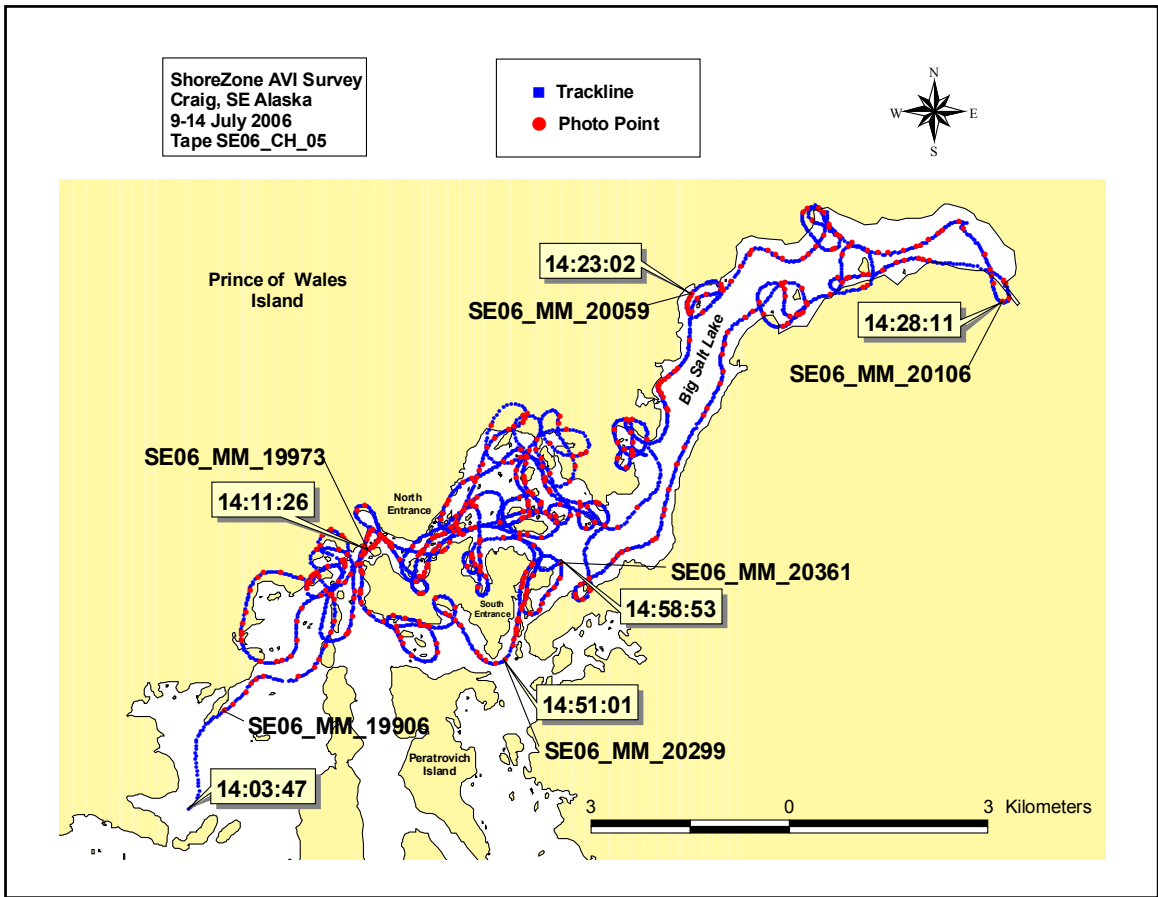


Figure 6. Location of Tape SE06_CH_05, 10 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_05** **Date:** **10 Jul 06**

General Location: Big Salt Lake, Klawock, Craig, Port St. Nicholas, east Trocadero Bay
(East Prince of Wales Island)

Time Start (UTC): 140347 (02:11 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 145853 (57:17 on tape) **Nav:** Morrow

Tape Length: 55:06 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
140347	Shinaku Inlet	SE06_MM_19906
141126	North entrance of Big Salt Lake	SE06_MM_19973
142811	Head of Big Salt Lake	SE06_MM_20106
145101	South entrance of Big Salt Lake	SE06_MM_20299
145853	South entrance of Big Salt	SE06_MM_20361

Notes:

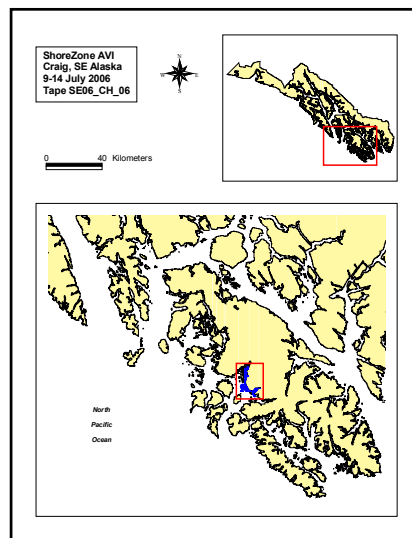
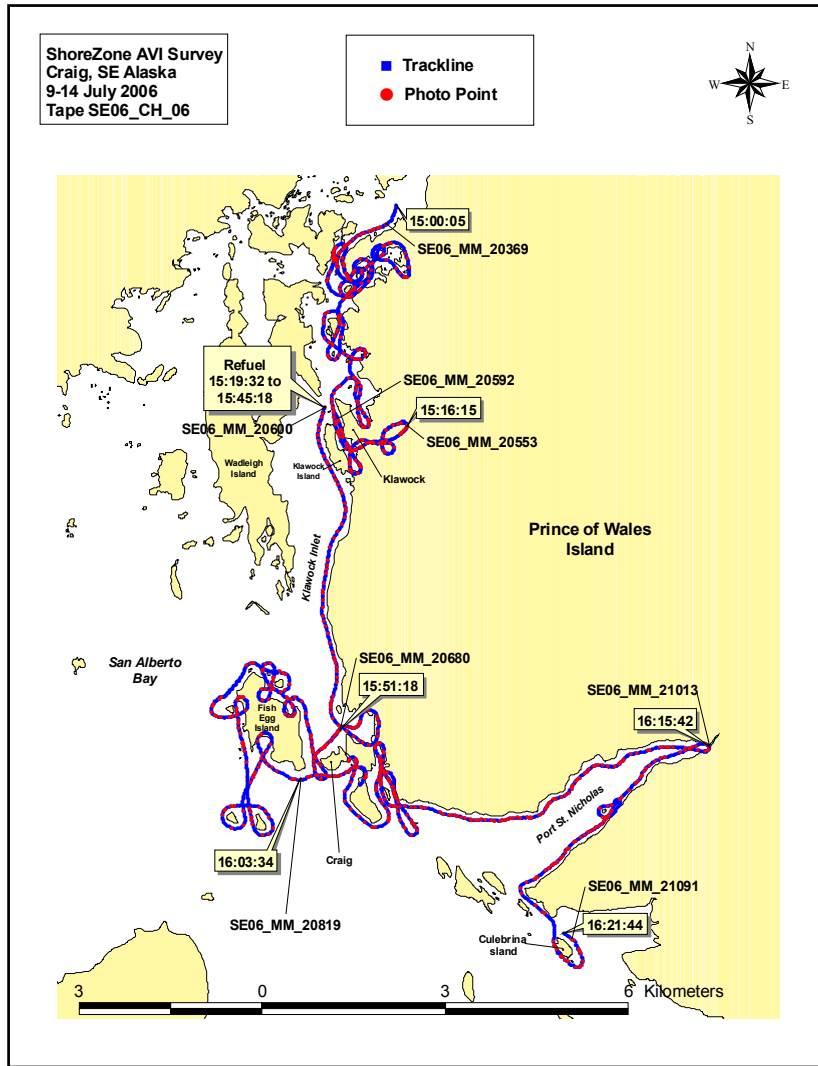


Figure 7. Location of Tape SE06_CH_06, 10 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: SE06_CH_06 Date: 10 Jul 06

General Location: Big Salt Lake, Klawock, Craig, Port St. Nicholas, east Trocadero Bay
(East Prince of Wales Island)

Time Start (UTC): 150005 (02:16 on tape) **Geo:** Harney
Fuel break: 151932-154517 (21:43-23:00) **Bio:** Morris
Time End (UTC): 162144 (59:26 on tape) **Nav:** Morrow
Tape Length: 57:10 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
150005	South entrance to Big Salt Lake	SE06_MM_20369
151615	Klawock River	SE06_MM_20553
151932	Refuel break	SE06_MM_20592
154518	Restart after refuel, north end of Klawock Island	SE06_MM_20600
155118	Craig Island	SE06_MM_20680
160334	South end of Fish Egg Island	SE06_MM_20819
161542	Head of Port St. Nicholas	SE06_MM_21013
162144	Culebrina Island	SE06_MM_21091

Notes:

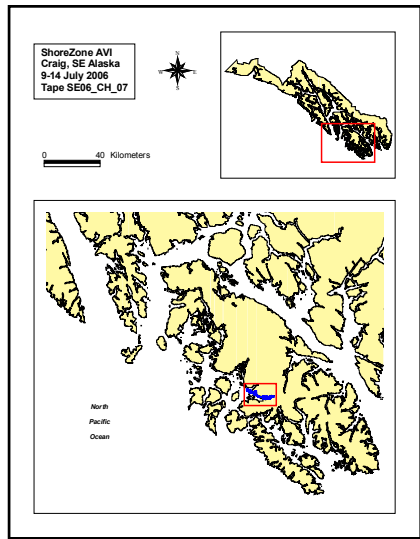
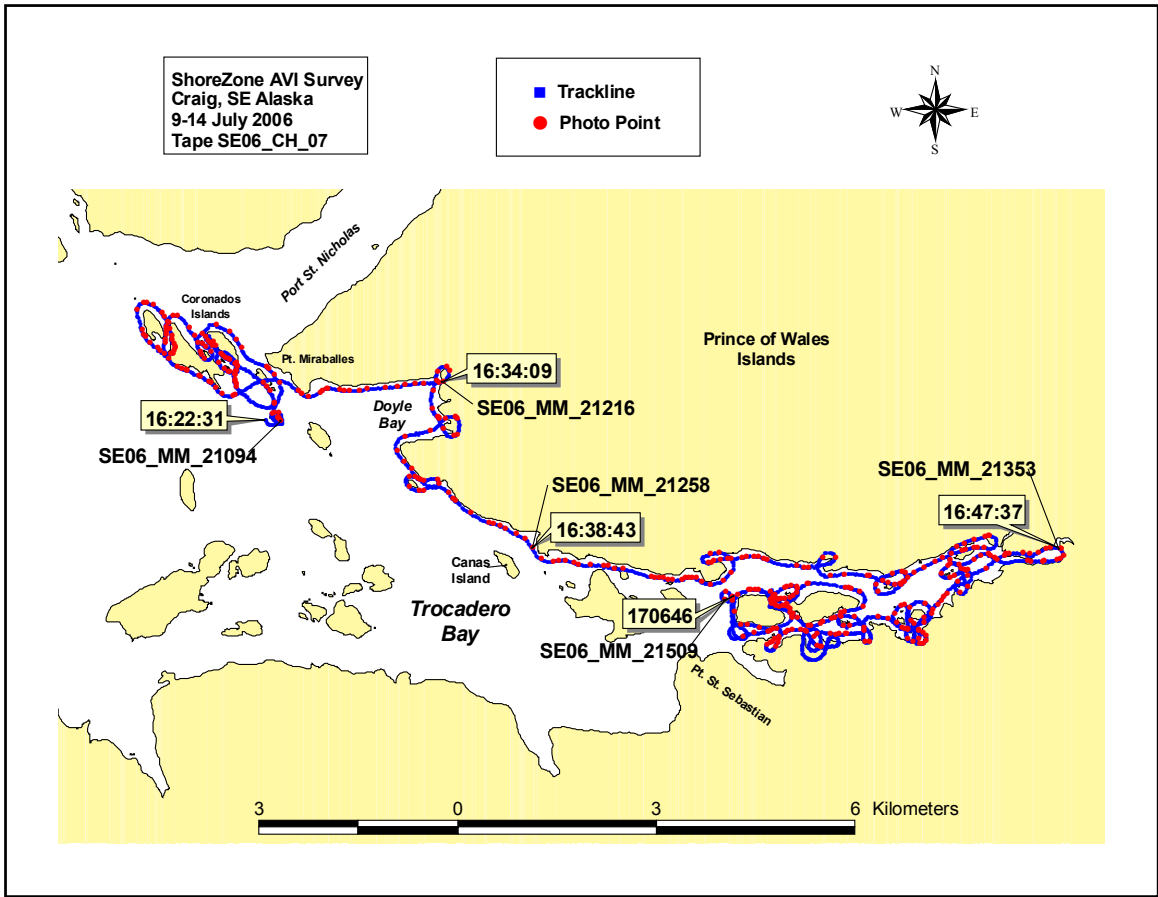


Figure 8. Location of Tape SE06_CH_07, 10 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_07** **Date:** **10 Jul 06**

General Location: Big Salt Lake, Klawock, Craig, Port St. Nicholas, east Trocadero Bay
(East Prince of Wales Island)

Time Start (UTC): 162231 (02:16 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 170646 (46:31 on tape) **Nav:** Morrow

Tape Length: 44:15 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
162231	Coronados Islands near Pt. Mirabelles	SE06_MM_21094
163409	Doyle Bay	SE06_MM_21216
163843	Canoe Pt., Trocadero Bay	SE06_MM_21258
164737	Head of Trocadero Bay	SE06_MM_21353
170646	Trocadero Bay, north of Pt. St. Sebastian	SE06_MM_21509

Notes:
No other tape breaks

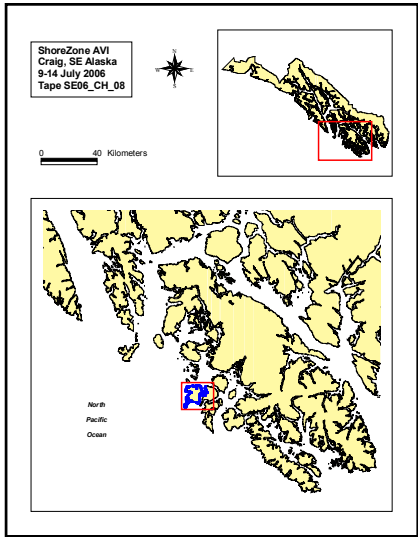
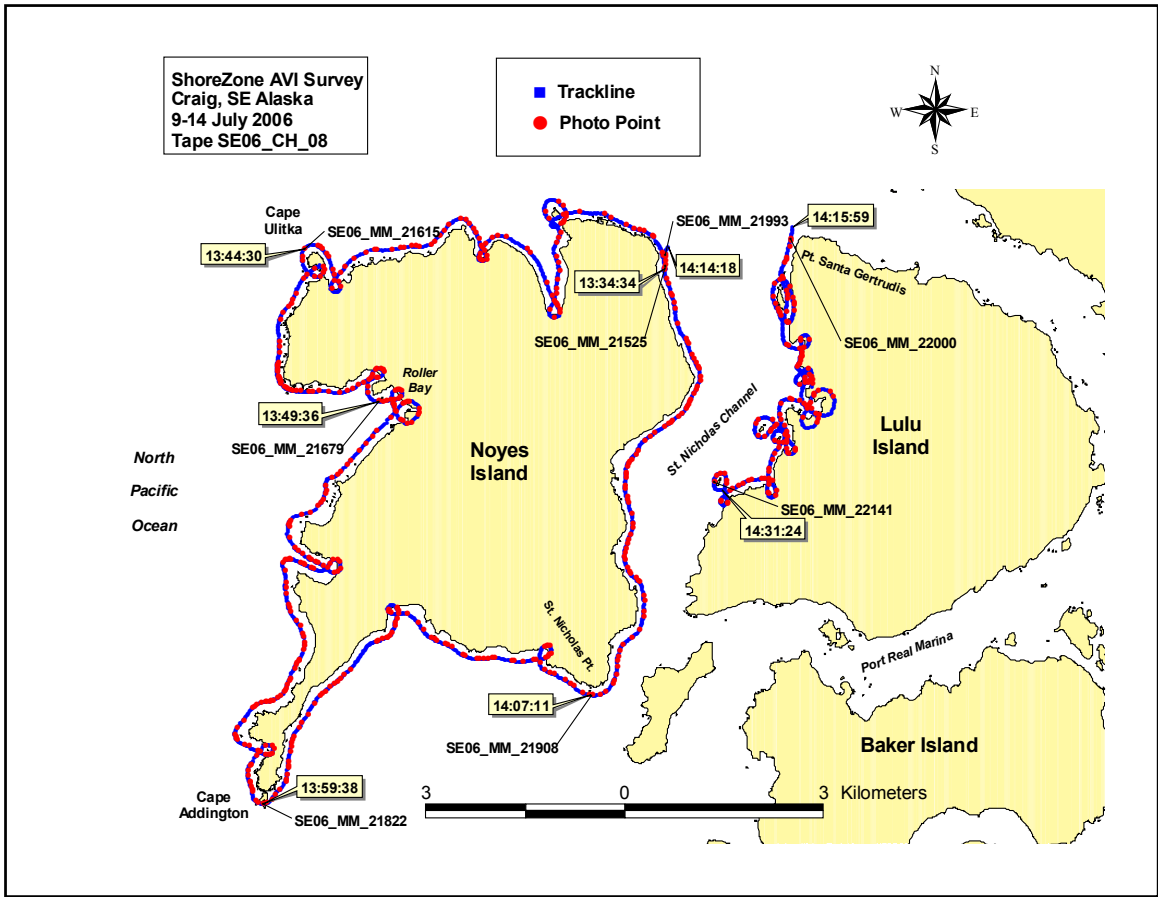


Figure 9. Location of Tape SE06_CH_08, 11 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_08** **Date:** **11 Jul 06**

General Location: Islands west of Craig: Noyes, San Fernando, Lulu, San Juan
Bautista, NW Baker (East Prince of Wales Island)

Time Start (UTC): 133434 (00:51 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 143124 (56:08 on tape) **Nav:** Morrow

Tape Length: 55:17 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
133434	NE corner of Noyes Island	SE06_MM_21525
134430	Cape Uliitka, NW corner of Noyes Island	SE06_MM_21615
134936	Roller Bay, Noyes Island	SE06_MM_21679
135938	Cape Addington	SE06_MM_21822
140711	St. Nicholas Pt	SE06_MM_21908
141418	NE corner of Noyes Island	SE06_MM_21993
141559	Pt. Santa Gertrudis, North Lulu Island	SE06_MM_22000
143124	Lulu Island, St. Nicholas Channel	SE06_MM_22141

Notes:

Other short tape breaks:
break 141418 40:35
restart 141559 40:44 northern Lulu
break 142109 45:54
restart 142127 46:11

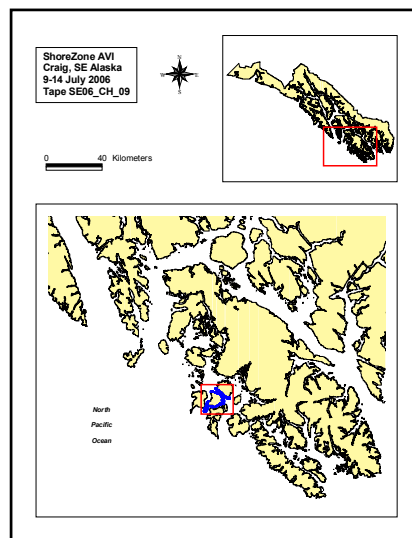
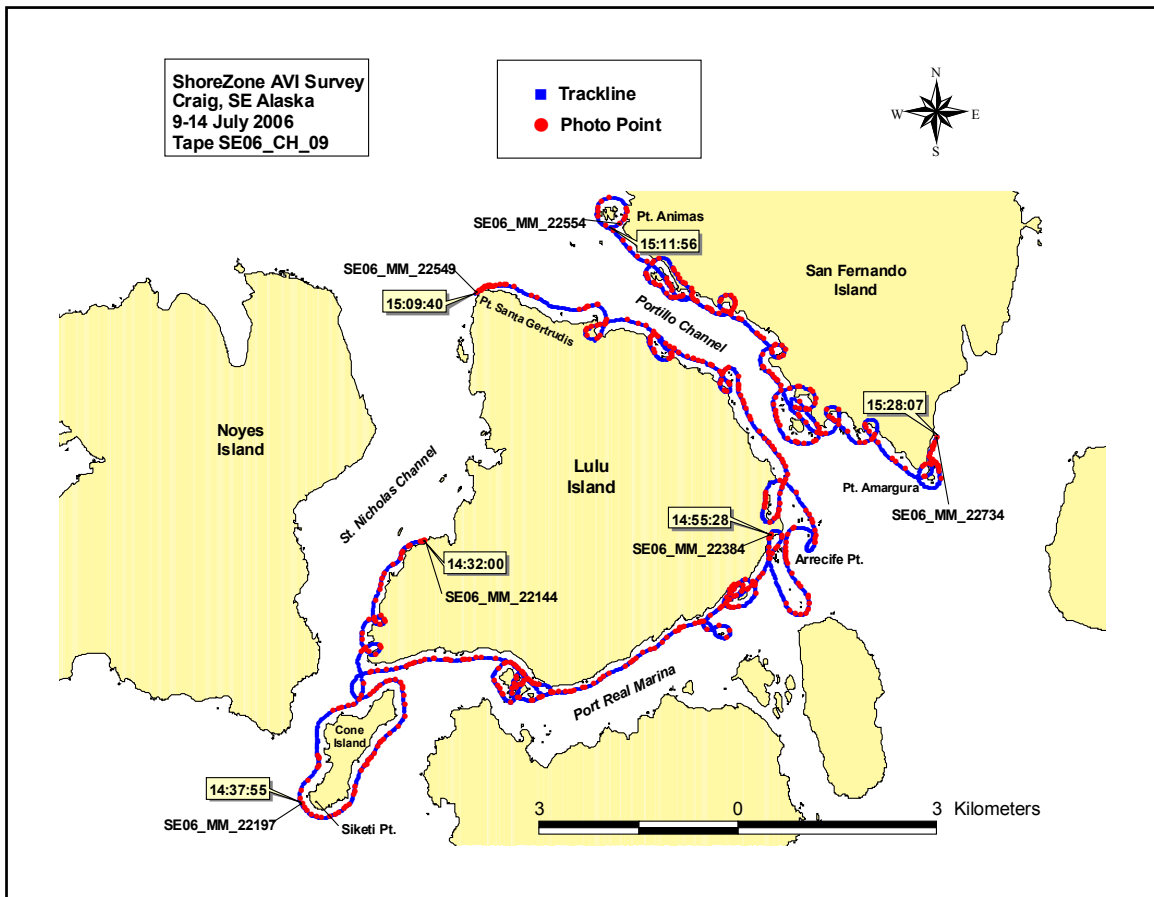


Figure 10. Location of Tape SE06_CH_09, 11 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_09** **Date:** **11 Jul 06**

General Location: Islands west of Craig: Noyes, San Fernando, Lulu, San Juan
Bautista, NW Baker (East Prince of Wales Island)

Time Start (UTC): 143200 (02:02) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 152807 (58:09) **Nav:** Morrow

Tape Length: 56:07 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
143200	St. Nicholas Channel, west Lulu Island	SE06_MM_22144
143755	Siketi Pt., south Cone Island	SE06_MM_22197
145528	Arrecife Pt., east Lulu Island	SE06_MM_22384
150940	Pt. Santa Gertrudis	SE06_MM_22549
151156	Pt. Animas, west San Fernando Island	SE06_MM_22554
152807	Pt. Amargura, south tip of San Fernando Island	SE06_MM_22734

Notes:

Other short tape breaks:

break 150940 39:42 Lulu Island
restart 151156 41:58 San Fernando Island

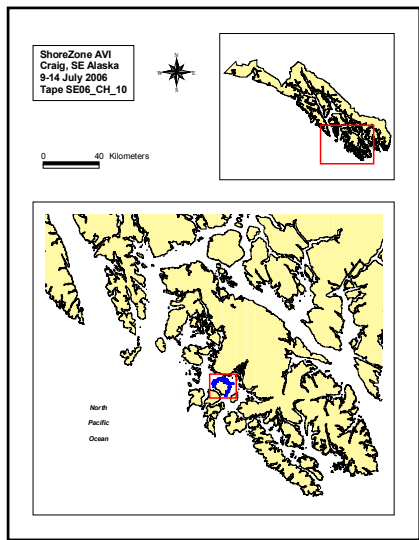
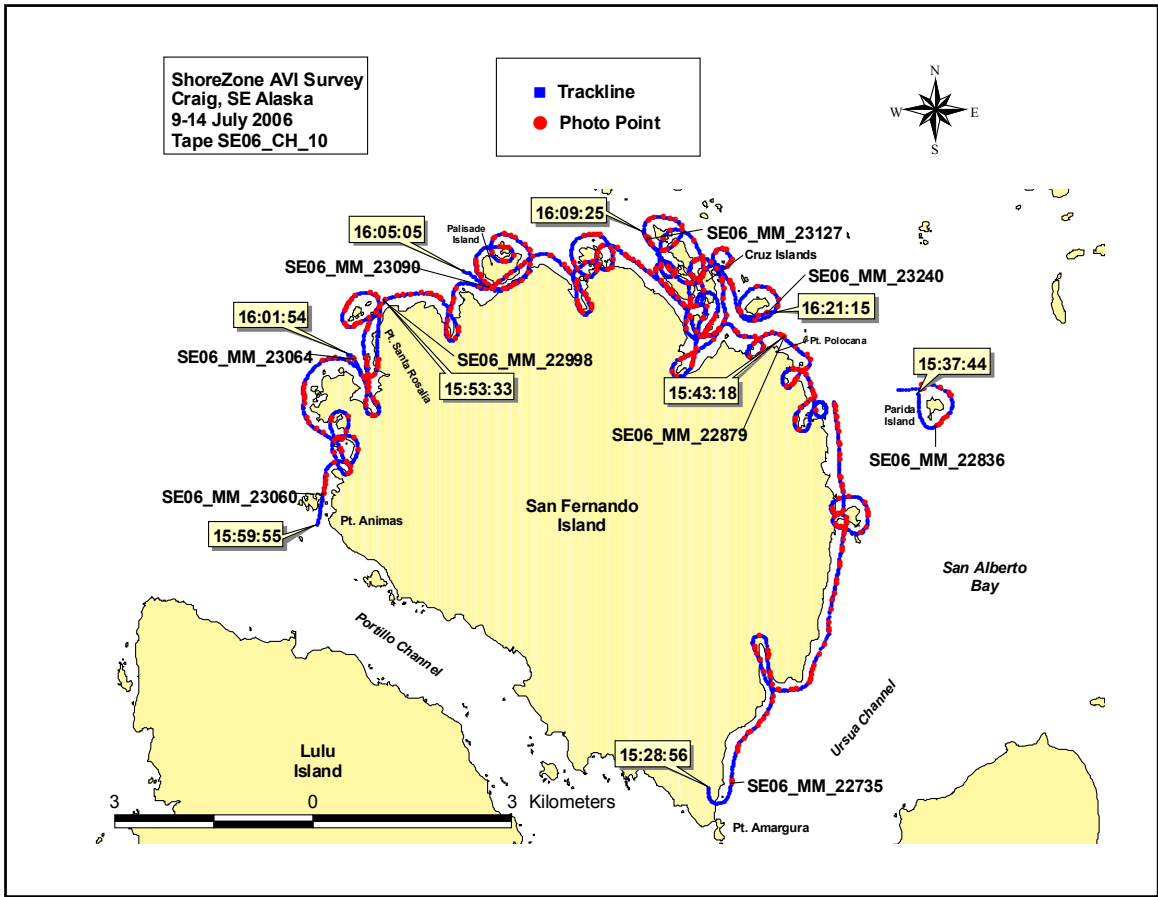


Figure 11. Location of Tape SE06_CH_10, 11 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_10** **Date:** **11 Jul 06**

General Location: Islands west of Craig: Noyes, San Fernando, Lulu, San Juan
Bautista, NW Baker (East Prince of Wales Island)

Time Start (UTC):	152856 (02:02 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	162115 (54:22 on tape)	Nav:	Morrow
Tape Length:	52:20	Pilot:	Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
152856	Pt. Amargura, south San Fernando Island	SE06_MM_22735
153744	Parida Island	SE06_MM_22836
154318	Pt. Polocano	SE06_MM_22879
155333	Pt. Santa Rosalia	SE06_MM_22998
155955	Pt. Animas	SE06_MM_23060
160154	Islands off Pt. Santa Rosalia	SE06_MM_23064
160505	Palisade Island	SE06_MM_23090
160925	Cruz Islands	SE06_MM_23127
162115	Catalina Island, Cruz Islands	SE06_MM_23240

Notes:

Other short tape breaks:

break	153644	09:50	
restart	153744	10:49	Parida Island
break	153905	12:11	Parida Island
restart	154000	13:06	
break	155956	33:03	Pt. Animas
restart	160154	35:00	Islands off Pt. Santa Rosalia
break	160408	37:14	Islands off Pt. Santa Rosalia
restart	160505	38:11	Palisade Island
break	160817	41:23	Palisade Island
restart	160925	42:31	Cruz Islands

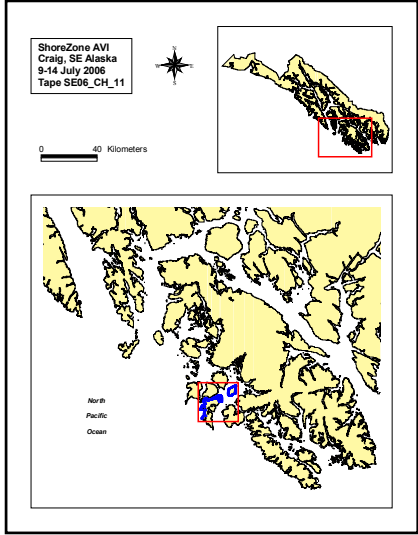
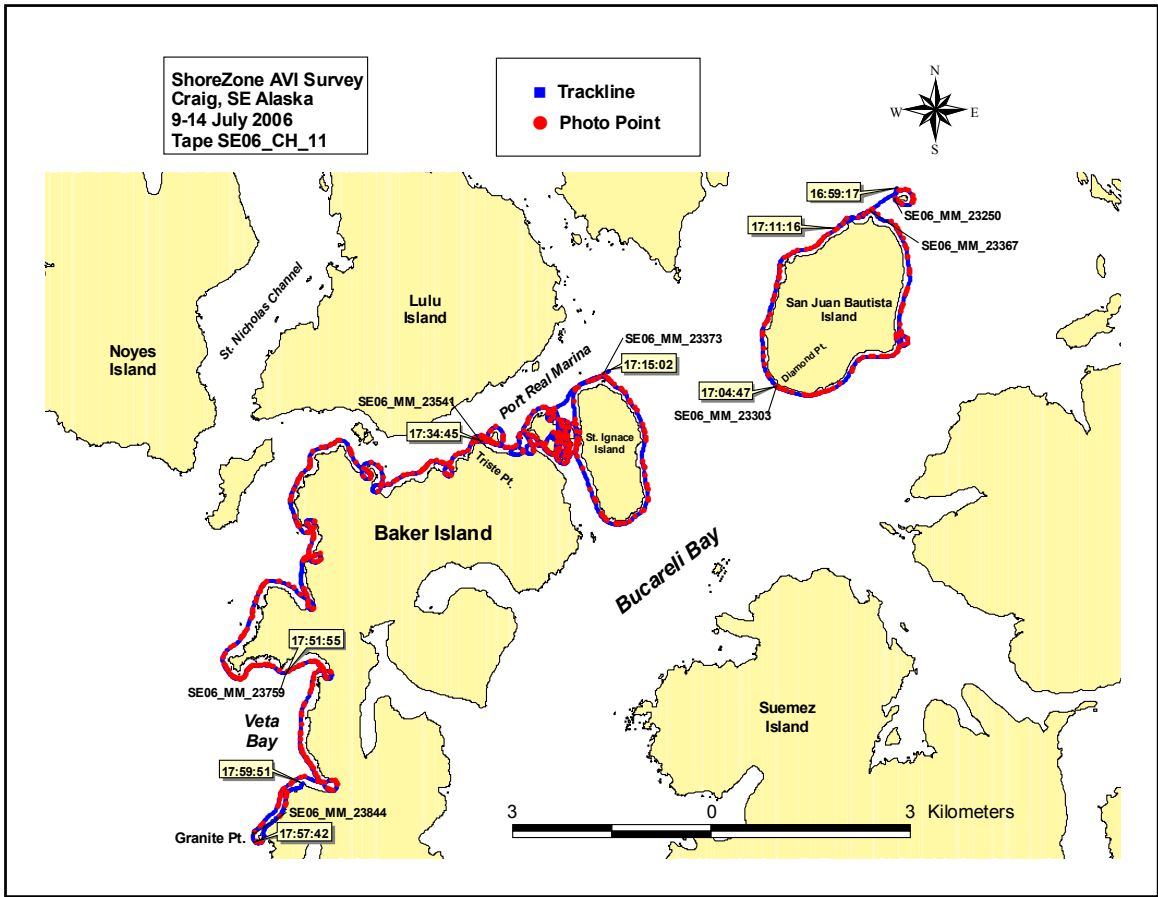


Figure 12. Location of Tape SE06_CH_11, 11 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_11** **Date:** **11 Jul 06**

General Location: Islands west of Craig: Noyes, San Fernando, Lulu, San Juan
Bautista, NW Baker (East Prince of Wales Island)

Time Start (UTC): 165917 (02:50 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 175951 (59:52 on tape) **Nav:** Morrow

Tape Length: 57:02 **Pilot:** Snider

Weather: Generally clear and calm; some patchy fog at dawn; no wind or rain;
beautiful conditions

Time (UTC)	Location	Photo
165917	Balandra Island (off San Juan Bautista Island)	SE06_MM_23250
170447	Diamond Pt., San Juan Bautista Island	SE06_MM_23303
171116	Northern San Juan Bautista Island	SE06_MM_23367
171502	St. Ignace Island	SE06_MM_23373
173445	Triste Pt., Baker Island	SE06_MM_23541
175155	Veta Bay, west side of Baker Island	SE06_MM_23759
175742	Granite Pt., west side of Baker Island (end of commentary, start of low and slow flight)	SE06_MM_23844
175951	North of Granite Pt., Baker Island (end of low and slow flight)	SE06_MM_23858

Notes:

Other short tape breaks:

break	171117 14:52	finished San Juan Bautista
restart	171502 15:04	start St. Ignace Island
break	175743 57:44	start of low and slow (no longer commenting)
end	175951 59:52	west Baker at Granite Point (south of Veta Bay)

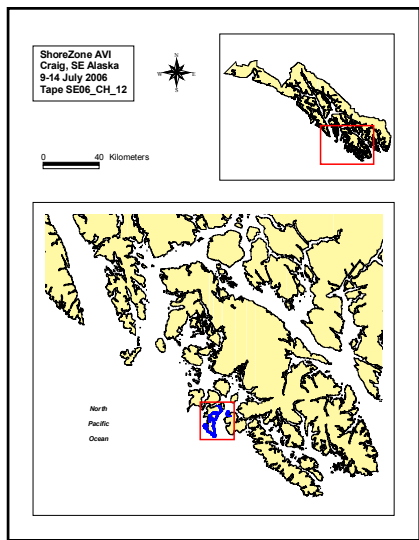
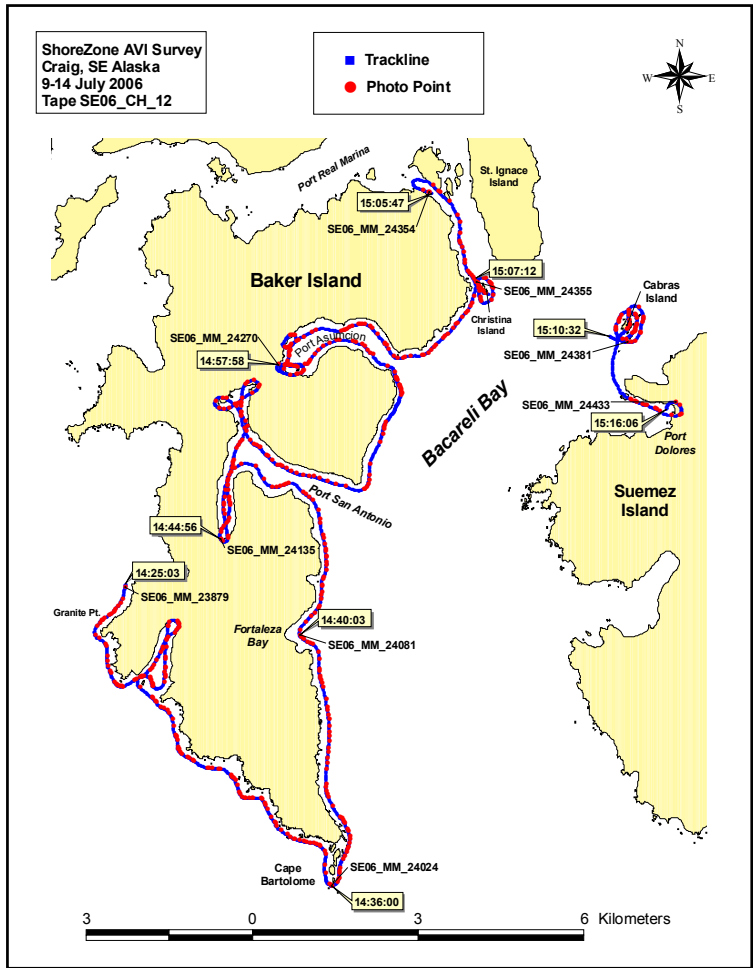


Figure 13. Location of Tape SE06_CH_12, 12 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_12** **Date:** **12 Jul 06**

General Location: East Baker Island, SueMez Island, west Trocadero Bay
Ulloa Channel, Tlevak Narrows

Time Start (UTC): 142503 (02:52 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 151606 (52:14 on tape) **Nav:** Morrow

Tape Length: 49:22 **Pilot:** Snider

Weather: Intermittent rain and wind; some patchy fog at dawn; variable ceiling;
patchy low clouds

Time (UTC)	Location	Photo
142503	Granite Pt., west Baker Island	SE06_MM_23879
143600	Cape Bartolome, south tip of Baker Island	SE06_MM_24024
144003	Fortaleza Bay, east Baker Island	SE06_MM_24081
144456	Port San Antonio, east Baker Island	SE06_MM_24135
145758	Port Asumcion, east Baker Island	SE06_MM_24270
150547	NE corner of Baker Island	SE06_MM_24354
150712	Christina Island (off Pt. Cocoas, off Baker Island)	SE06_MM_24355
151032	Cobras Island, north end of SueMez Island	SE06_MM_24381
151606	Port Dolores, SueMez Island	SE06_MM_24433

Notes:

Other short tape breaks:

break	150548 43:38	Finish Baker and transit to Christina
restart	150712 45:02	Christina Island
break	150841 46:31	Transit to Cabras Island
restart	151032 46:40	Cabras Island (off SueMez Island)

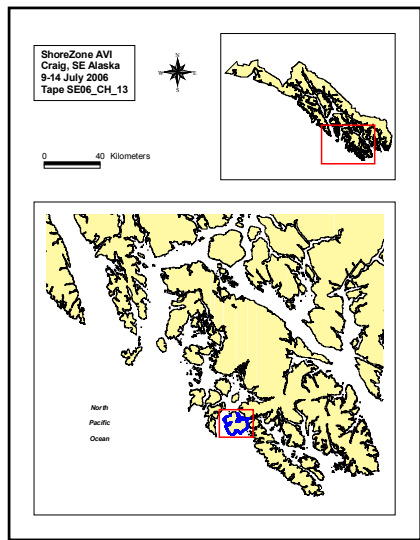
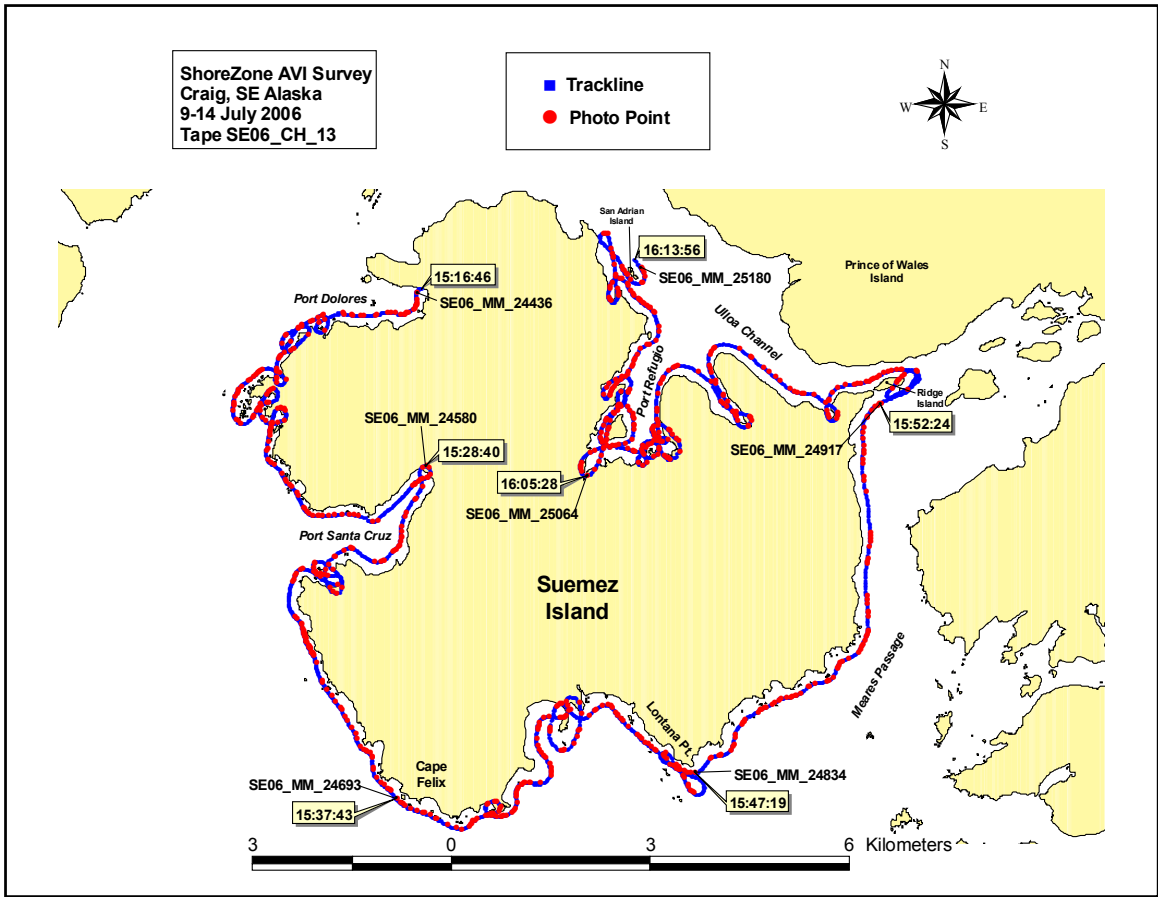


Figure 14. Location of Tape SE06_CH_13, 12 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_13** **Date:** **12 Jul 06**

General Location: East Baker Island, SueMez Island, west Trocadero Bay
Ulloa Channel, Tlevak Narrows

Time Start (UTC): 151646 (01:59 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 161356 (59:10 on tape) **Nav:** Morrow

Tape Length: 57:11 **Pilot:** Snider

Weather: Intermittent rain and wind; some patchy fog at dawn; variable ceiling;
patchy low clouds

Time (UTC)	Location	Photo
151646	Port Dolores, SueMez Island	SE06_MM_24436
152840	Port Santa Cruz, SueMez Island	SE06_MM_24580
153743	Cape Felix, SueMez Island	SE06_MM_24693
154719	Lontana Pt., SueMez Island	SE06_MM_24834
155224	Ridge Island	SE06_MM_24917
160528	Port Refugio, SueMez Island	SE06_MM_25064
161356	San Adrian Island, Ulloa Channel	SE06_MM_25180

Notes:

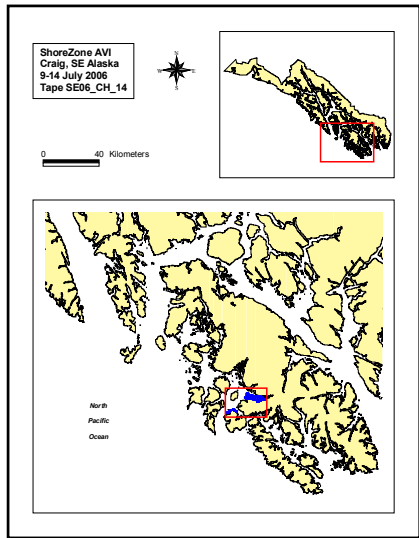
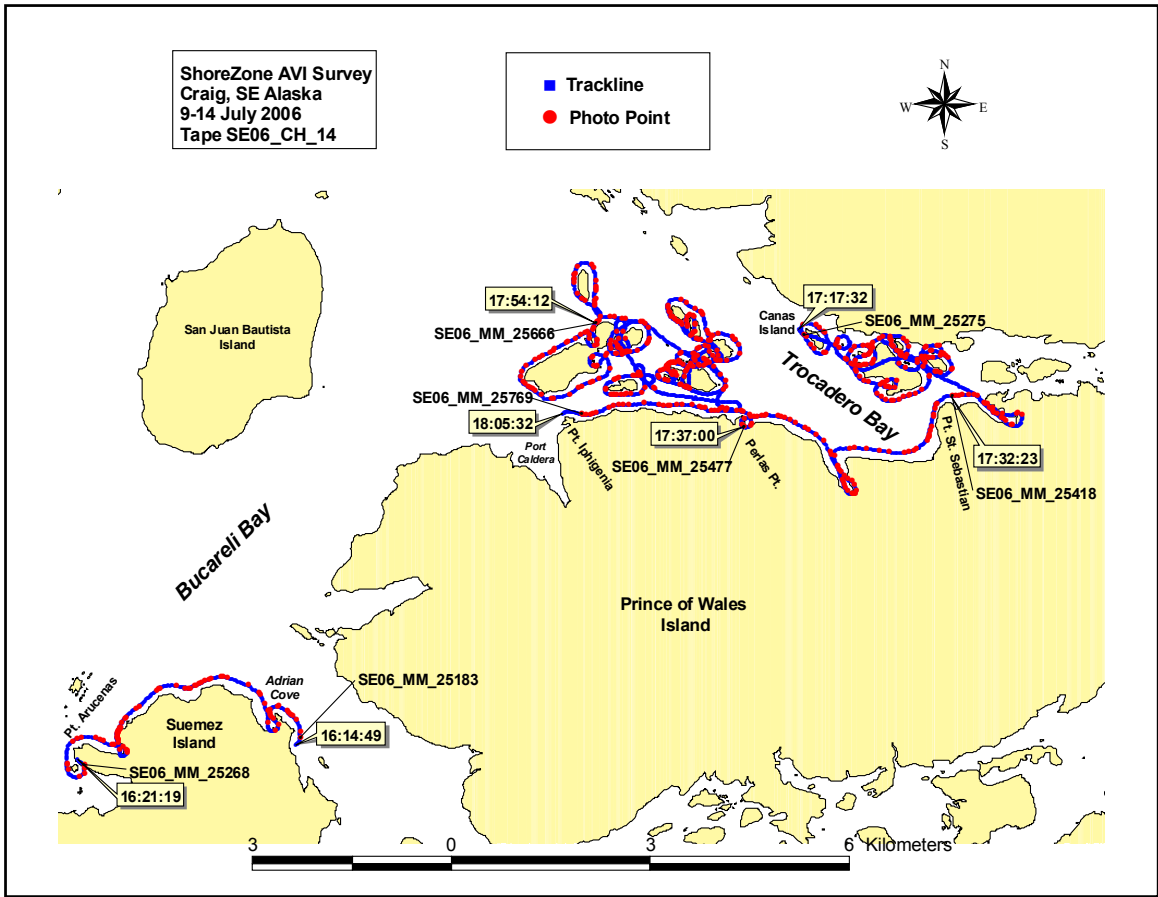


Figure 15. Location of Tape SE06_CH_14, 12 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_14** **Date:** **12 Jul 06**

General Location: East Baker Island, SueMez Island, west Trocadero Bay
Ulloa Channel, Tlevak Narrows

Time Start (UTC): 161449 (02:09 on tape) **Geo:** Harney
Fuel break: 162120-171731 (08:40-09:41) **Bio:** Morris
Time End (UTC): 180532 (57:42 on tape) **Nav:** Morrow
Tape Length: 55:33 **Pilot:** Snider

Weather: Intermittent rain and wind; some patchy fog at dawn; variable ceiling;
patchy low clouds

Time (UTC)	Location	Photo
161449	Adrian Cove, NE SueMez Island	SE06_MM_25183
162119	Pt. Arucenas, NW SueMez Island	SE06_MM_25268
162120	Refuel until 171731	
171732	Restart after refuel, Kanas Island, Trocadero Bay	SE06_MM_25275
173223	Pt. St. Sebastian, Trocadero Bay	SE06_MM_25418
173700	Perlas Pt., Trocadero Bay	SE06_MM_25477
175412	Madre de Dios Island, Trocadero Bay	SE06_MM_25666
180532	Pt. Iphigenia, Port Caldera	SE06_MM_25769

Notes:

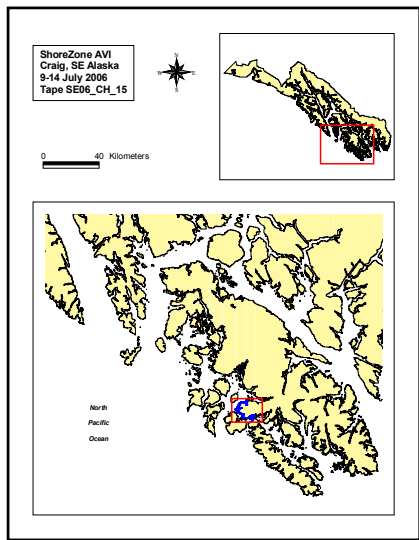
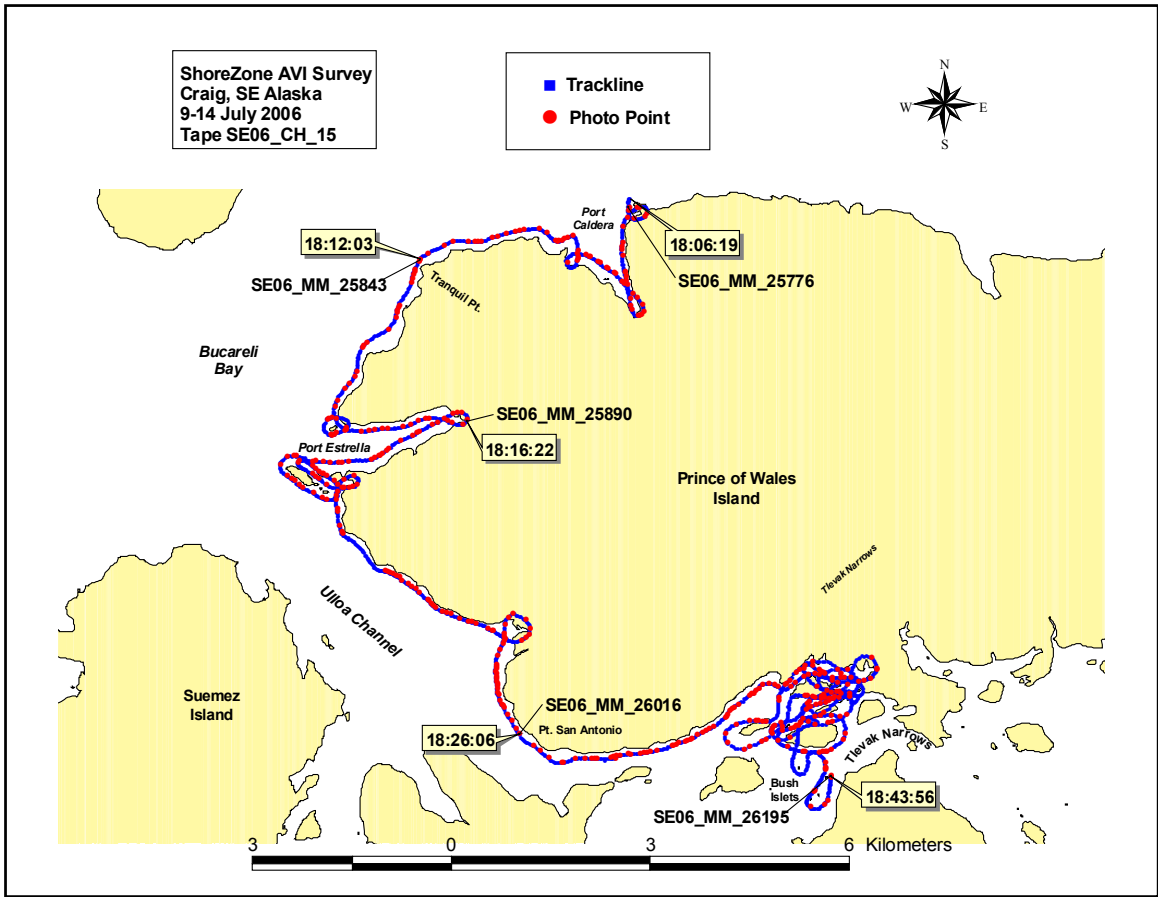


Figure 16. Location of Tape SE06_CH_15, 12 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_15** **Date:** **12 Jul 06**

General Location: East Baker Island, SueMez Island, west Trocadero Bay
Ulloa Channel, Tlevak Narrows

Time Start (UTC): 180619 (02:02 on tape) **Geo:** Harney

Fuel break: none **Bio:** Morris

Time End (UTC): 184356 (39:40 on tape) **Nav:** Morrow

Tape Length: 37:38 **Pilot:** Snider

Weather: Intermittent rain and wind; some patchy fog at dawn; variable ceiling;
patchy low clouds

Time (UTC)	Location	Photo
180619	Port Caldera	SE06_MM_25776
181203	Tranquil Pt.	SE06_MM_25843
181622	Port Estrella	SE06_MM_25890
182606	Pt. San Antonio	SE06_MM_26016
184356	Bush Islands, Tlevak Narrows	SE06_MM_26195

Notes:

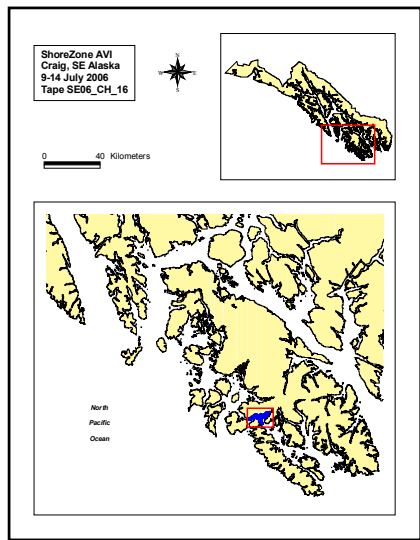
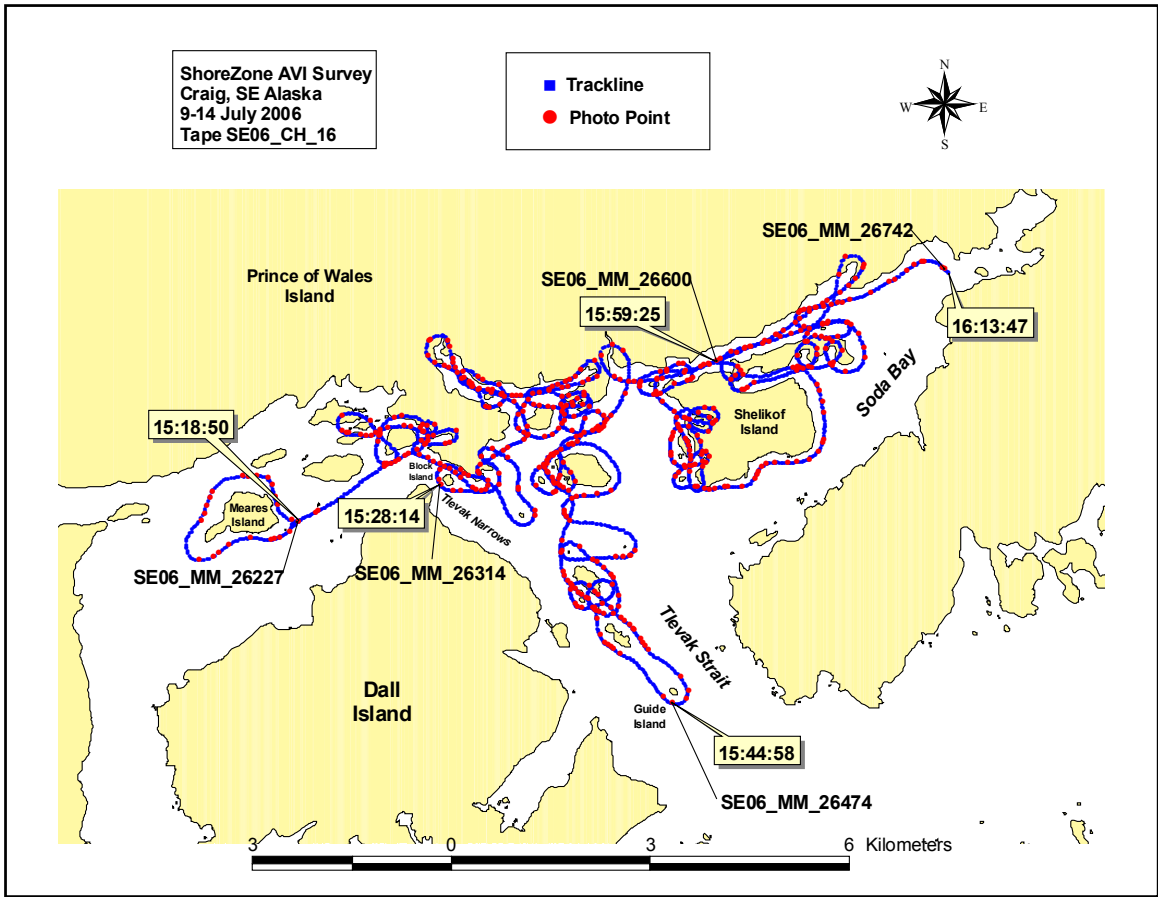


Figure 17. Location of Tape SE06_CH_16, 13 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_16** **Date:** **13 Jul 06**

General Location: Soda Bay, Middle Islands, Hydaburg

Time Start (UTC):	151850	(03:17 on tape)	Geo:	Harney
Fuel break:	none		Bio:	Morris
Time End (UTC):	161347	(58:15 on tape)	Nav:	Morrow
Tape Length:	54:58		Pilot:	Snider

Weather: High ceiling, overcast, light rain, sunny periods

Time (UTC)	Location	Photo
151850	Meares Island, Tlevak Narrows	SE06_MM_26227
152814	Block Island, Tlevak Narrows	SE06_MM_26314
154458	Guide Island	SE06_MM_26574
155925	Shelikof Island, Soda Bay	SE06_MM_26600
161347	Head of Soda Bay	SE06_MM_26742

Notes:

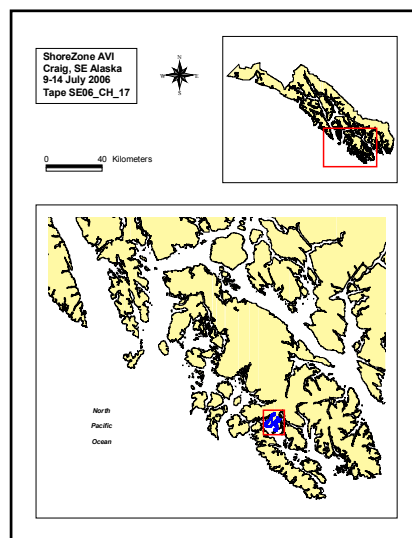
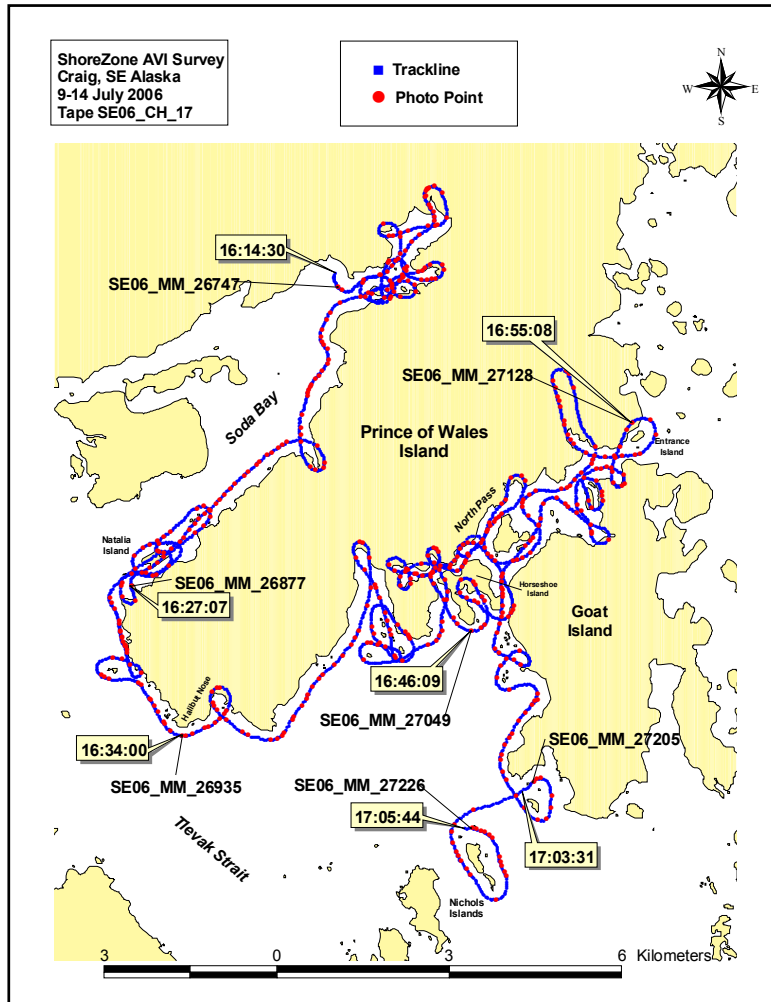


Figure 18. Location of Tape SE06_CH_17, 13 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_17** **Date:** **13 Jul 06**

General Location: Soda Bay, Halibut Nose, North Pass of Natzuhini Bay

Time Start (UTC):	161430	(02:15 on tape)	Geo:	Harney
Fuel break:	none		Bio:	Morris
Time End (UTC):	170331	(51:16 on tape)	Nav:	Morrow
Tape Length:	49:01		Pilot:	Snider

Weather: High ceiling, overcast, light rain, sunny periods

Time (UTC)	Location	Photo
161430	Head of Soda Bay	SE06_MM_26747
162707	Natalia Pt. / Natalia Island	SE06_MM_26877
163400	Halibut Nose	SE06_MM_26935
164609	Horseshoe Island, North Pass of Natzuhini Bay	SE06_MM_27049
165508	Entrance Island, Natzuhini Bay	SE06_MM_27128
170331	SW corner of Goat Island (last islet recorded with both mics working)	SE06_MM_27205
170544	Nichols Islands (filming w/o sound)	SE06_MM_27226

Notes:
Audio problem; set down to fix following end of tape

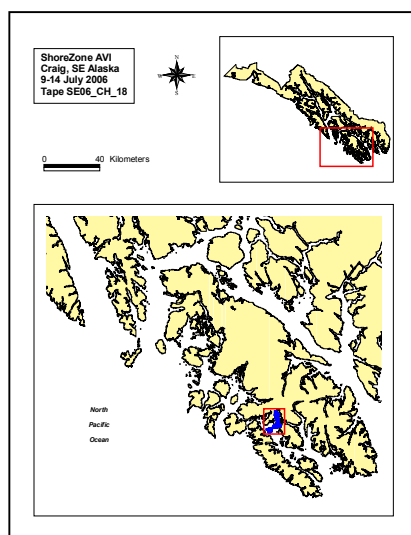
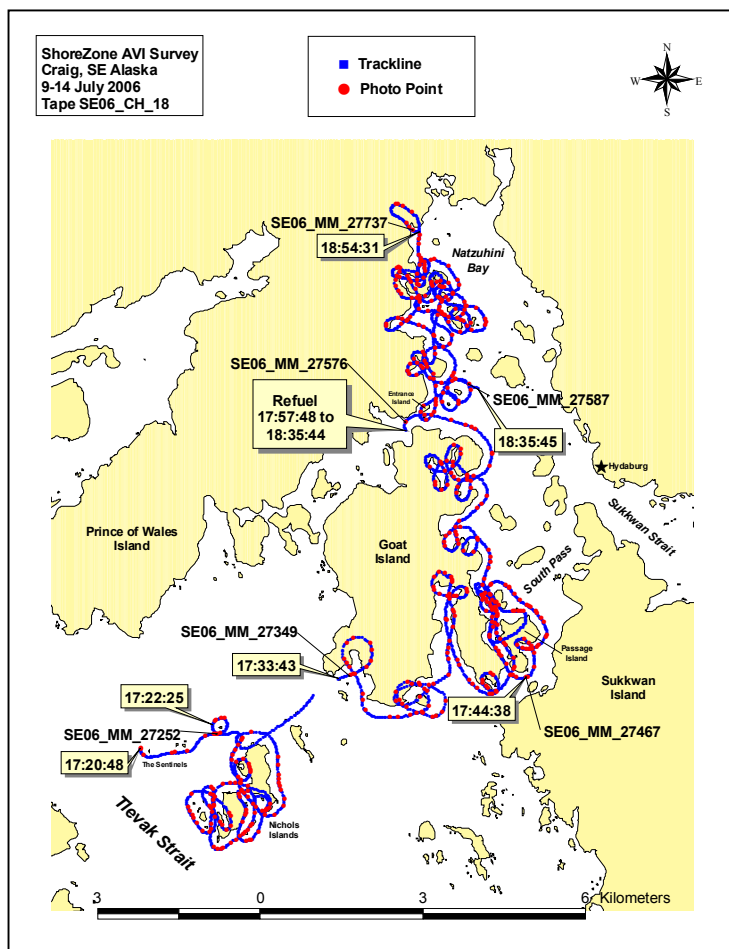


Figure 19. Location of Tape SE06_CH_18, 13 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: SE06_CH_18 Date: 13 Jul 06

General Location: Goat Island, western Natzuhini Bay

Time Start (UTC):	172225	(03:49 on tape)	Geo:	Harney
Fuel break:	175748-183544	(39:12-39:35)	Bio:	Morris
Time End (UTC):	185431	(58:21 on tape)	Nav:	Morrow
Tape Length:	55:33		Pilot:	Snider

Weather: Intermittent rain and wind; some patchy fog at dawn; variable ceiling; patchy low clouds

Time (UTC)	Location	Photo
172233	The Sentinels (after set-down to fix audio on tape 17)	SE06_MM_27252
173343	SW Goat Island, Natzuhini Bay	SE06_MM_27349
174438	Passage Island, SE Goat Isl, South Pass of Natzuhini	SE06_MM_27467
175751	northern Goat Island (finished)	SE06_MM_27576
175748	refuel until 183544	
183552	restart, SW corner Natzuhini Bay, near Entrance Island	SE06_MM_27587
185426	end, NW Natzuhini Bay	SE06_MM_27737

Notes:

Other short tape breaks:

break	173246 14:10	transit
restart	173343 15:07	Goat Island, Natzuhini Bay
break	175748 39:12	finished Goat Island (refuel)
restart	183545 39:36	Entrance Island, north side Natzuhini Bay

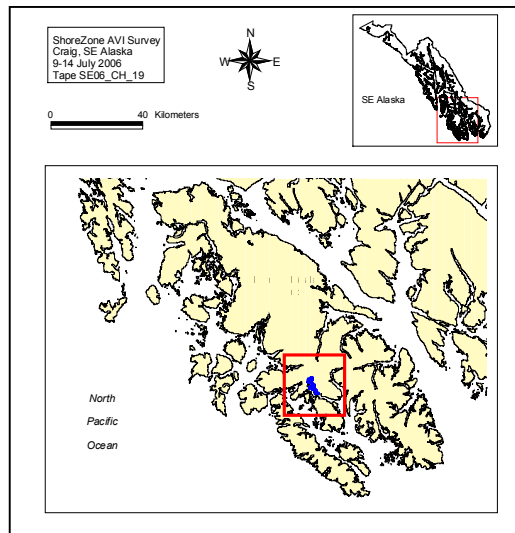
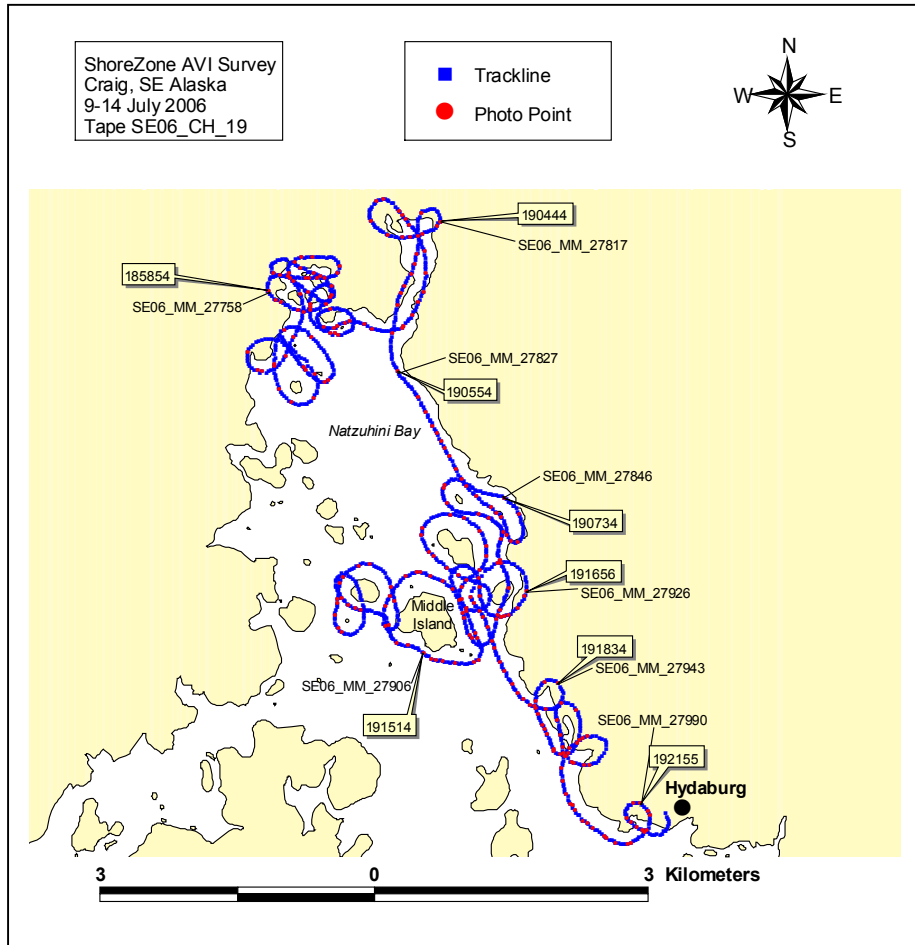


Figure 20. Location of Tape SE06_CH_19, 13 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_19** **Date:** **13 Jul 06**

General Location: Natzuhini Bay, Middle Islands, Hydaburg

Time Start (UTC):	185543 (02:26 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	192712 (33:55 on tape)	Nav:	Morrow
Tape Length:	31:29	Pilot:	Snider

Weather: High ceiling, overcast, light rain, sunny periods

Time (UTC)	Location	Photo
185854	NW corner Natzuhini Bay	SE06_MM_27758
190444	NW corner Natzuhini Bay	SE06_MM_27817
191514	Middle Island	SE06_MM_27906
192155	Hydaburg	SE06_MM_27990
192607	low-slow, bat stars in lagoon	
192645	letdown, <i>Salicornia</i>	

Notes:

Other short tape breaks:

break	192232	29:15	Hydaburg, end comment, transit
low-slow	192607	32:50	bat stars
setdown	192645	33:28	<i>Salicornia</i>

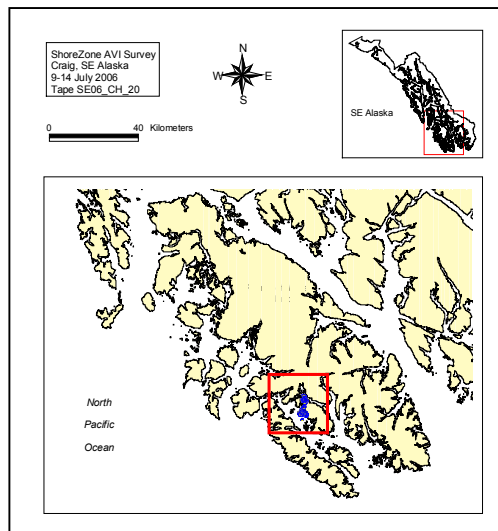
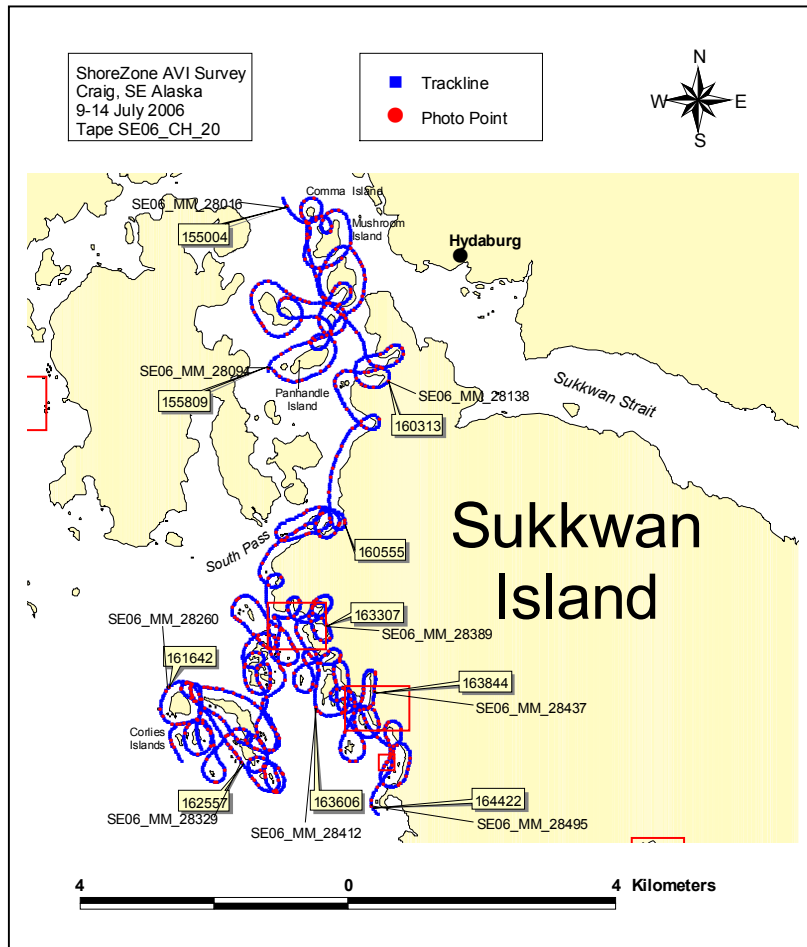


Figure 21. Location of Tape SE06_CH_20, 14 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_20** **Date:** **14 Jul 06**

General Location: NW Sukkwan Island, Corlies Islands

Time Start (UTC):	154959 (02:01 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	164427 (56:30 on tape)	Nav:	Morrow
Tape Length:	54:29	Pilot:	Snider

Weather: Variable ceiling, overcast, light rain

Time (UTC)	Location	Photo
155004	Comma Island	SE06_MM_28016
155809	Panhandle Island	SE06_MM_28094
160313	NW Sukkwan Island	SE06_MM_28138
161642	Northern Corlies Islands	SE06_MM_28260
162557	Southern Corlies Islands	SE06_MM_28329
163844	Bays of NW Sukkwan	SE06_MM_28437
164422	Bays of NW Sukkwan	SE06_MM_28495

Notes:

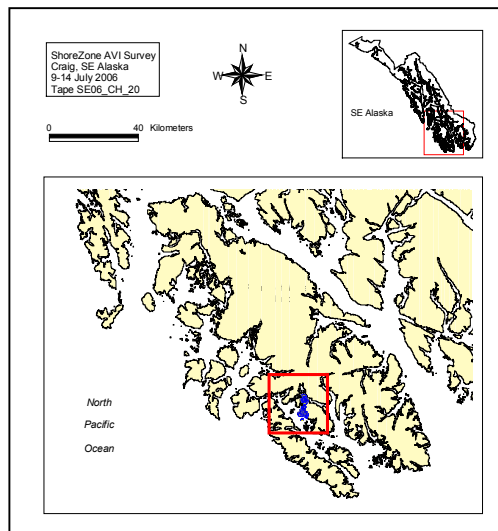
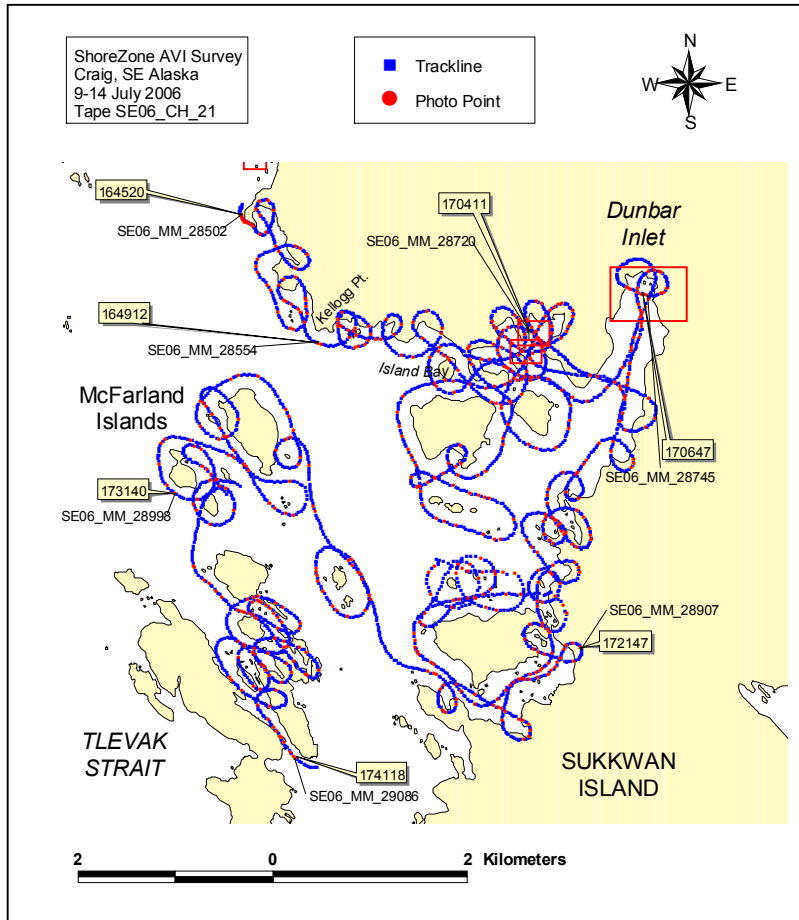


Figure 22. Location of Tape SE06_CH_21, 14 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_21** **Date:** **14 Jul 06**

General Location: McFarland Islands; Dunbar Inlet (West Sukkwan Island)

Time Start (UTC):	164509	(02:01 on tape)	Geo:	Harney
Fuel break:	none		Bio:	Morris
Time End (UTC):	174128	(58:20 on tape)	Nav:	Morrow
Tape Length:	56:19		Pilot:	Snider

Weather: Variable ceiling, overcast, light rain

Time (UTC)	Location	Photo
164520	start, low-slow north of Kellogg Point	SE06_MM_28502
164912	Kellogg Point	SE06_MM_28554
170411	Island Bay	SE06_MM_28720
170647	Dunbar Inlet	SE06_MM_28745
172147	Bays south of Dunbar, West Sukkwan Island	SE06_MM_28907
173140	Northern McFarland Islands	SE06_MM_28998
174118	Central McFarland Islands	SE06_MM_29086

Notes:

Other short tape breaks:
 break 173246 49:39 on tape
 restart 173304 49:56 on tape

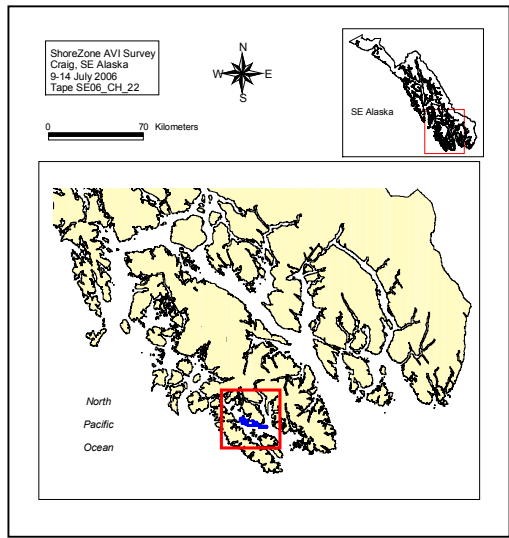
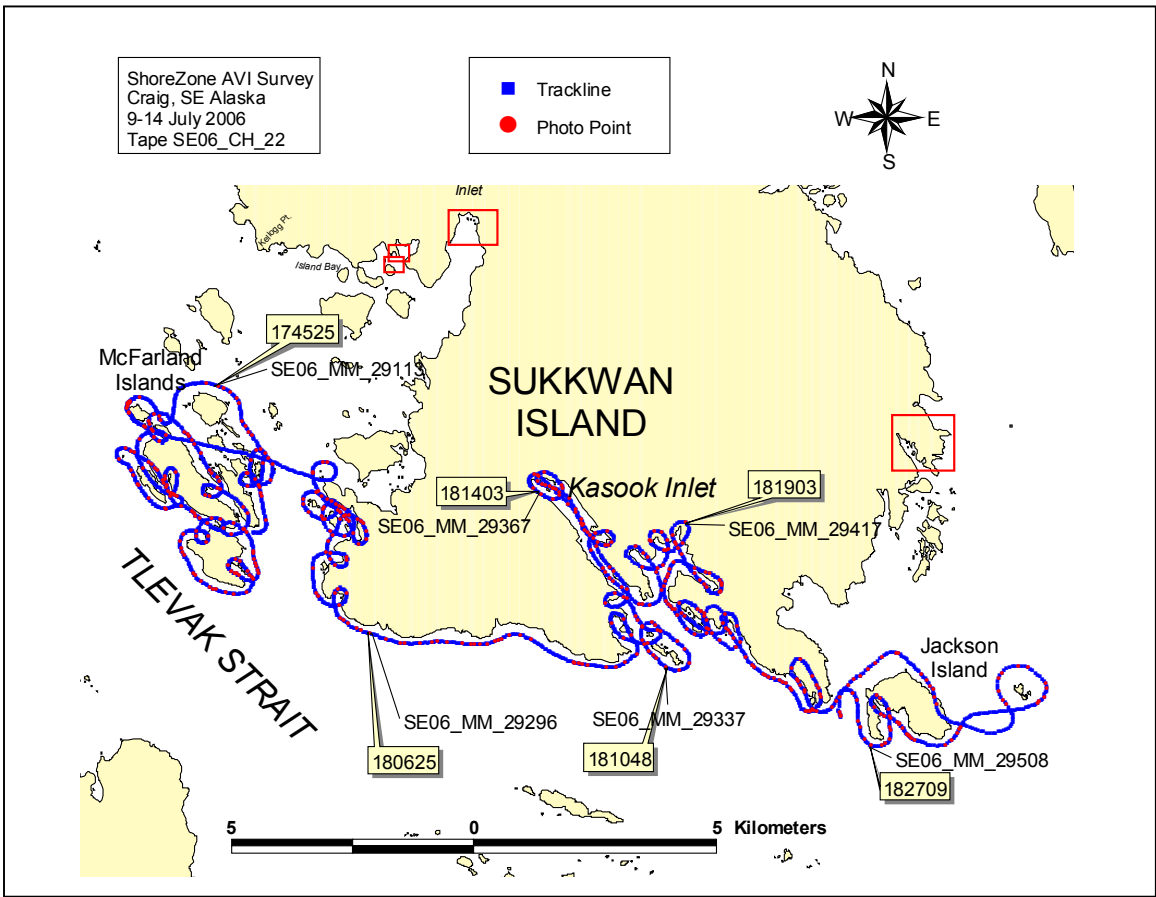


Figure 23. Location of Tape SE06_CH_22, 14 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_22** **Date:** **14 Jul 06**

General Location: McFarland Islands, Kasook Inlet, Jackson Island
(South Sukkwan Island)

Time Start (UTC):	174217 (02:15 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	183205 (52:03 on tape)	Nav:	Morrow
Tape Length:	49:48	Pilot:	Snider

Weather: Variable ceiling, overcast, light rain

Time (UTC)	Location	Photo
174525	Southern McFarland Islands	SE06_MM_29113
180625	SW Sukkwan Island	SE06_MM_29296
181048	Entrance to Kasook Inlet	SE06_MM_29337
181403	Head of Kasook Inlet	SE06_MM_29367
181903	East lagoon of Kasook Inlet	SE06_MM_29417
182709	Jackson Island	SE06_MM_29508

Notes:
Refuel after this tape; no tape breaks

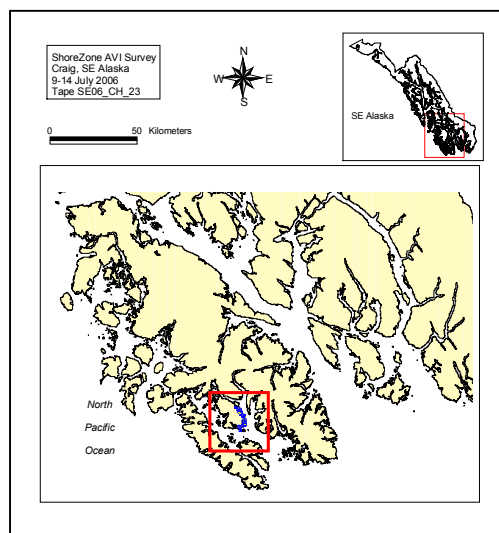
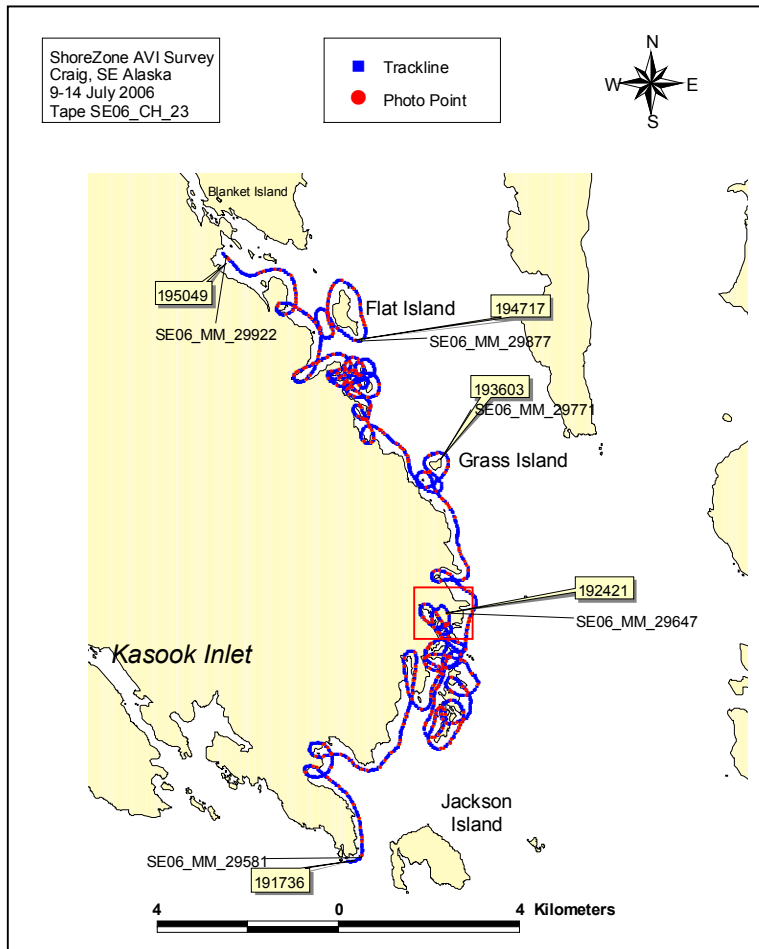


Figure 24. Location of Tape SE06_CH_23, 14 July 2006

**2006 Craig Aerial Video Imaging Survey
July 2006
Team Coho (CH)**

Tape: **SE06_CH_23** **Date:** **14 Jul 06**

General Location: South Sukkwan Island

Time Start (UTC):	191725 (03:05 on tape)	Geo:	Harney
Fuel break:	none	Bio:	Morris
Time End (UTC):	195053 (36:33 on tape)	Nav:	Morrow
Tape Length:	33:28	Pilot:	Snider

Weather: Variable ceiling, overcast, light rain

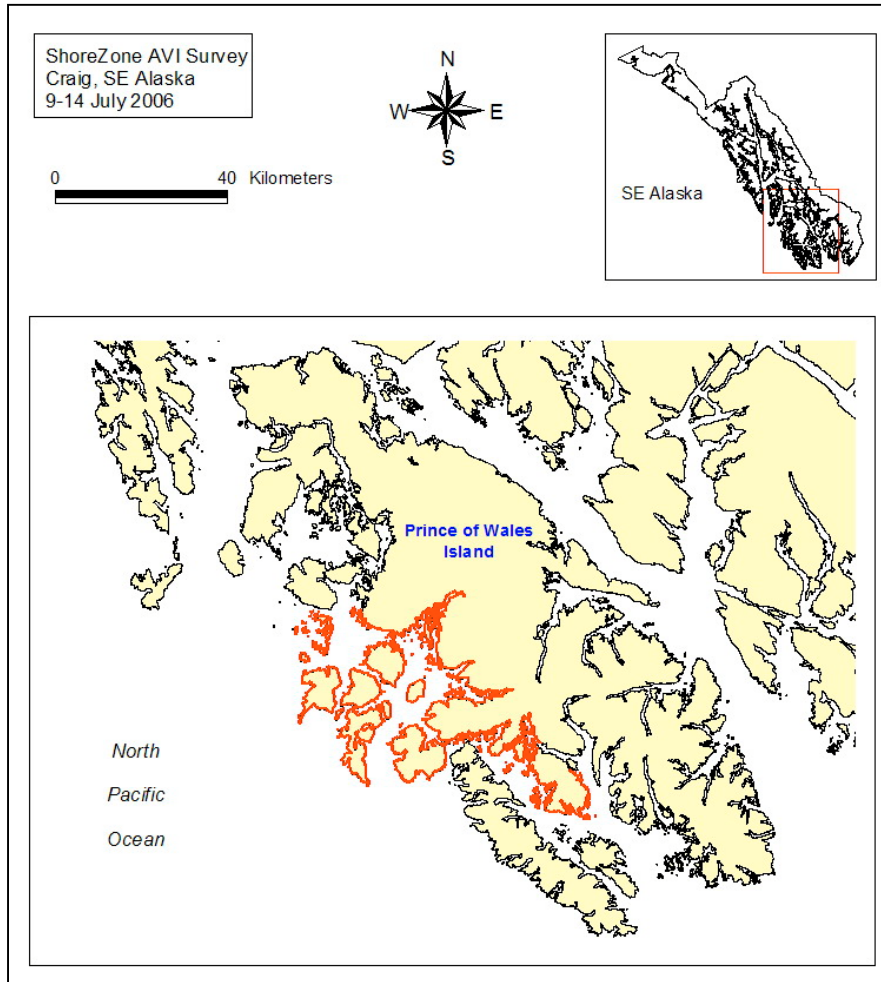
Time (UTC)	Location	Photo
191736	South Point, Sukkwan Island	SE06_MM_29581
192421	Unnamed cove, SE Sukkwan	SE06_MM_29647
193603	Grass Island	SE06_MM_29771
194717	Flat Island	SE06_MM_29877
195049	end, cove south of Blanket Island	SE06_MM_29922

Notes:
No tape breaks

DAILY FIELD SUMMARIES

ShoreZone Aerial Video Imaging (AVI) Survey

Craig, SE Alaska, 9-14 July 2006



Prepared for
The Nature Conservancy
Juneau, Alaska
by



COASTAL & OCEAN RESOURCES INC.

214-9865 West Saanich Road, Sidney BC V8L 5Y8 Canada
ph: 250.655.4035, web: www.coastalandoceans.com, email: jodi@coastalandoceans.com

ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)
Mary Morris (Archipelago Marine Research)
Bill Sneider (Coastal Helicopters, Juneau AK)

9 July 2006**Flown = 260 km:**

East Prince of Wales Island, northwest of Craig: Maurelle Island group, San Cristoval Channel from Bobs Place to Shinaku Inlet

Tide window (ADT): 0441 – 0818 (Craig)

Liftoff (ADT): 0445

Setdown: 0810

Heli time: 3.2 hours

Imagery collected: 3.0 hours

Tapes: SEAK06_CH_01 through CH_03

Conditions:

Generally sunny; high ceiling

Highlights and interesting features:

- extensive *Macrocystis* beds
- diverse habitats and lush biota
- numerous sea otters
- islets and tombolos with pebble beaches
- high-energy rock ramps with blocks and boulders
- cultural features of possible fish ponds, stone fish trap and several canoe runs

The Maurelle Islands group includes tremendous diversity of intertidal habitats, with protected shorelines and high energy shorelines in close proximity to each other. Much of the area was in the high semi-protected to semi-exposed habitat types, which have the highest diversity of species present. The complex spatial configuration of the island archipelago with lagoons and reefs, rock ramps and sediment-dominated shores show a full range of coastal habitats.

Marine mammal sightings included many sea otters, including two larger rafts of about 100 animals each; sea lions hauled out on the reef inside Timbered Island and several large whales (possibly humpbacks?) close to commercial fish boats.

Example photos from today's survey follow, as well as maps showing the survey trackline with photo points, and the shoreline surveyed today.



SE06_MM_17998

View across islets of Maurelle Islands group, near Angulia Island.



SE06_MM_18026

Extensive lush *Macrocytis* beds in Maurelle Island group.



SE06_MM_18406

Approaching Timbered Island, on westernmost Maurelle Islands group. Sea lions were hauled out on reef inside the island and were not disturbed.



SE06_MM_18888

Complex of protected beach and shoreline at Bobs Place, Saint Philip Island, northwest of Craig.



SE06_MM_19123

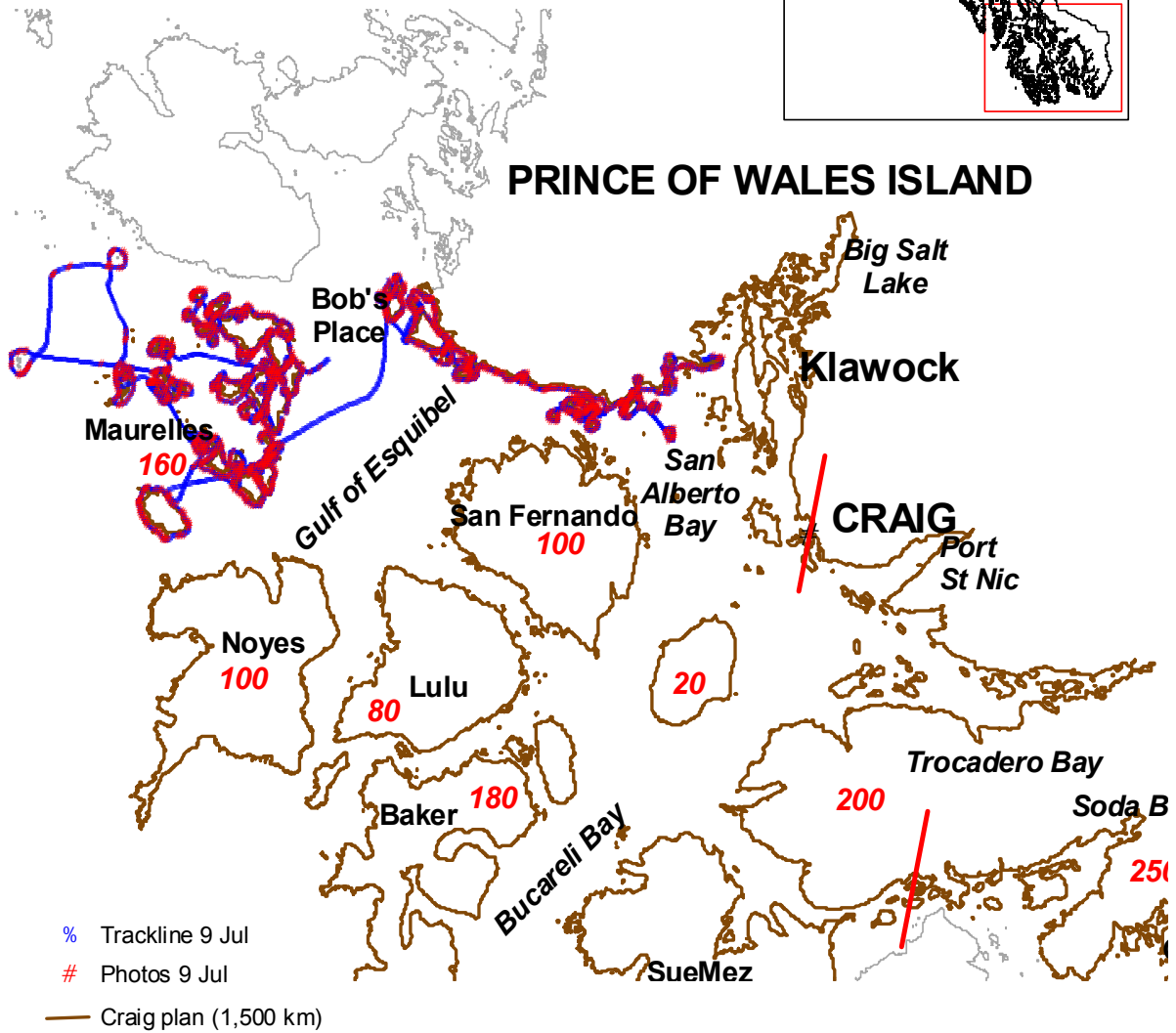
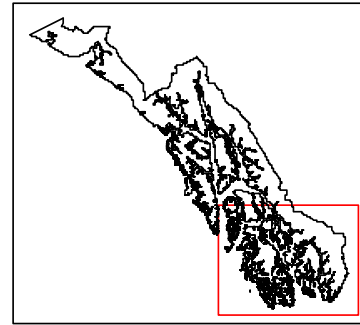
Islet with platform and wave-shadow beach, near entrance to Big Salt Lake, Klawock



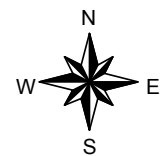
SE06_MM_19299

View eastward, looking into Big Salt Lake, Klawock.

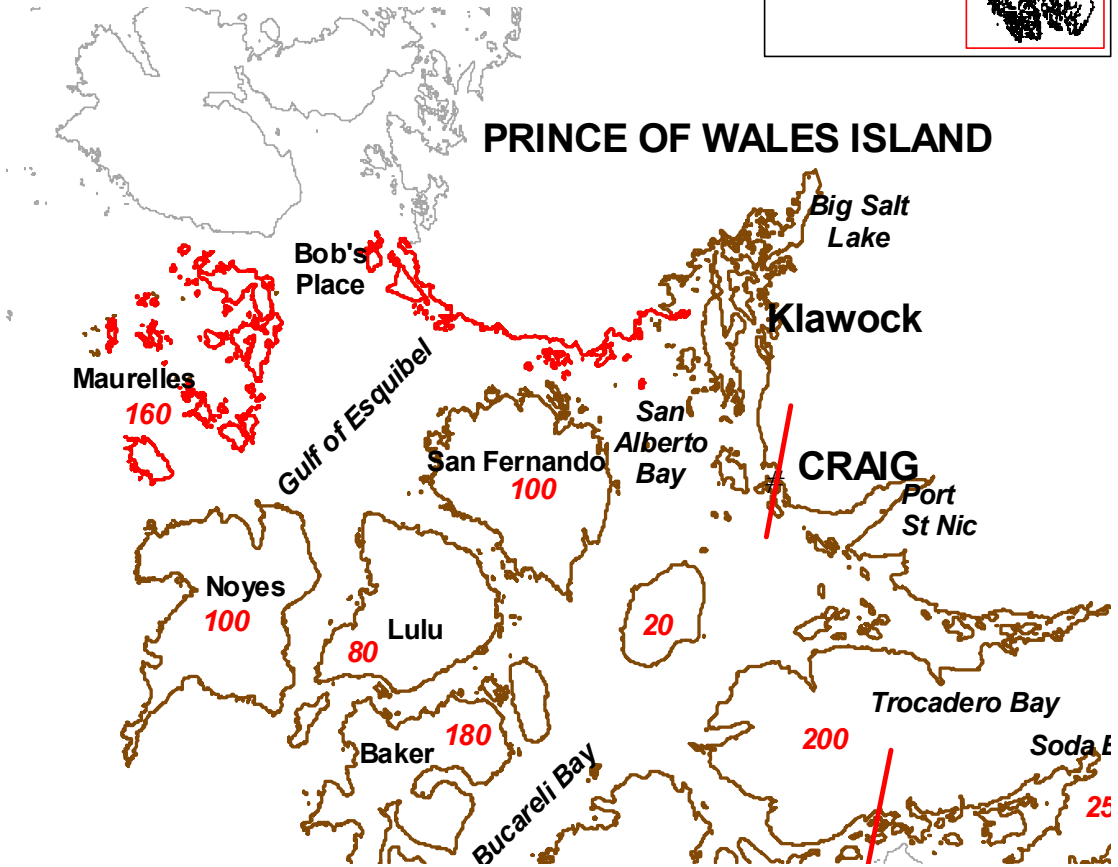
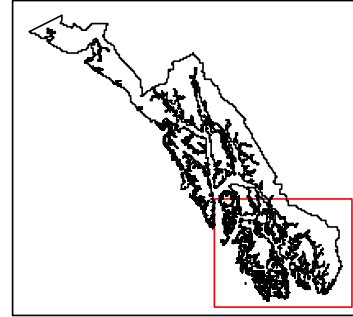
**ShoreZone AVI Survey
 Craig, SE Alaska
 Flown 9 July 06 (260 km)**





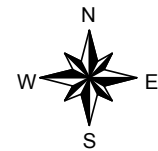
Map created 9 July 06
 J. Harney
 Coastal & Ocean Resources Inc.
 250.655.4035



**ShoreZone AVI Survey
 Craig, SE Alaska
 Flown 9 July 06 (260 km)**



 Flown 9 Jul = 250 km
 Jul06 Craig plan (1,500 km)



Map created 9 July 06
 J. Harney
 Coastal & Ocean Resources Inc.
 250.655.4035

ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)

Mary Morris (Archipelago Marine Research)

Bill Sneider (Coastal Helicopters, Juneau AK)

10 July 2006

Big Salt Lake, Klawock, Craig, Port St. Nicholas, east Trocadero Bay

Tide window (ADT): 0511 – 0910 (Craig)

Liftoff (ADT): 0500

Setdown: 0920

Heli time: 4.9 hours

Flown = 315 km:

Big Salt Lake, Klawock, Craig, Port St. Nicholas

Imagery collected: 3.8 hours

Tapes: SE06_CH04 – CH07

Conditions:

Generally clear and calm; some patchy fog at dawn; no wind or rain; beautiful conditions

Highlights and interesting features:


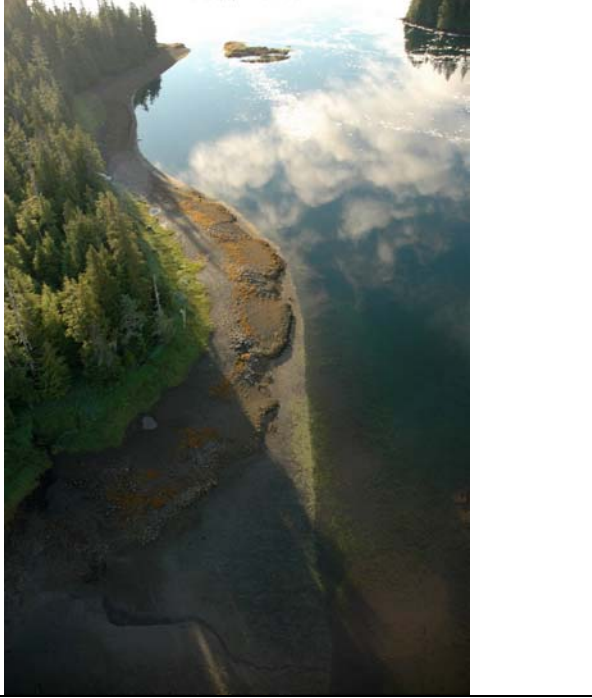
- Tidal falls in Big Salt Lake
- Large deltas and marshes in Port St. Nicholas and Trocadero Bay
- Cultural features: fish ponds, canoe runs, village sites
- Coastal communities, infrastructure (some abandoned or derelict), and shore modification in Klawock, Craig, and Port St. Nicholas

Big Salt Lake has a tremendous volume of water ponded behind the two constricted entrances that connect it to San Alberto Bay. Tidal falls mark the north and south channels into Big Salt. The “lake” is marine-influenced, but the tidal range is slight. Most of the margins of the lake were marked by marsh grasses growing right down to the waterline.

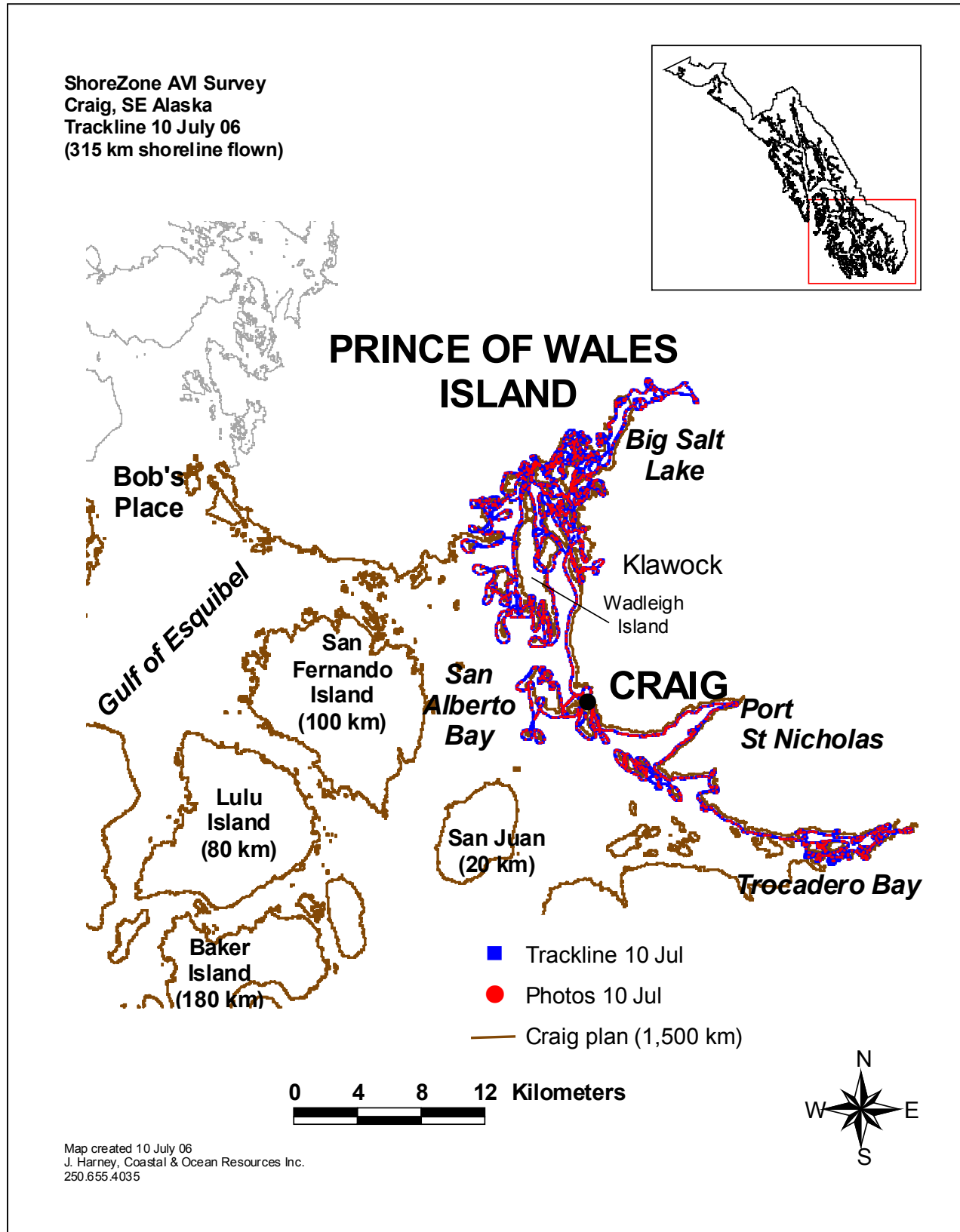
Human alteration of the shoreline between Klawock and Port St. Nicholas includes seawalls, riprap, harbors, piers (some elaborate), pilings, log booms, tailings, roads (logging and paved), private dwellings (ranging from small cabins to large waterfront homes), shipwrecks and abandoned boats

Abundant wildlife was observed in the estuaries of Shinaku Creek, Port St. Nicholas, and Trocadero Bay, including seals, several black bears (one female with cub), great blue herons, sandhill cranes, deer, and nesting bald eagles.

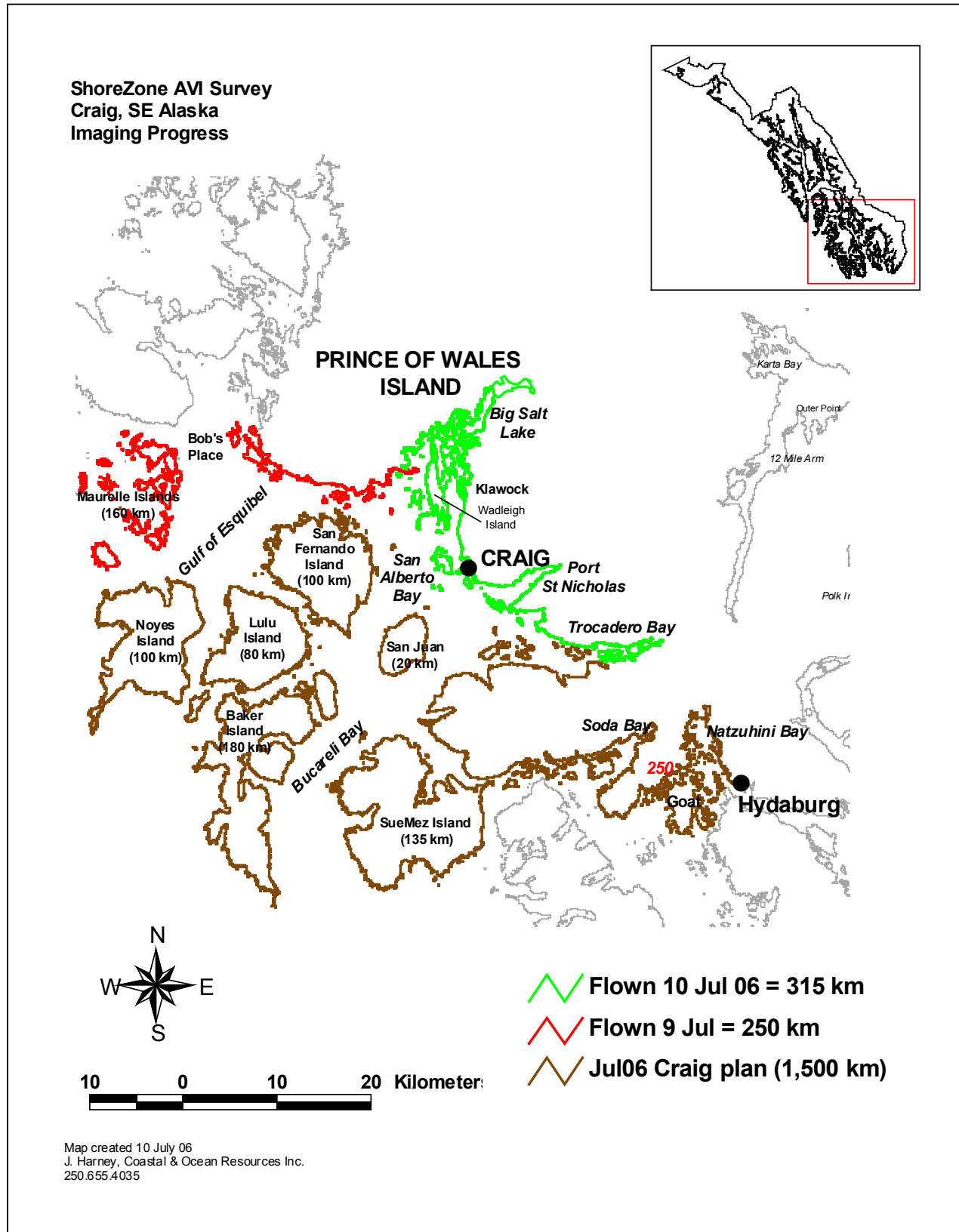
**ShoreZone Craig AVI Survey
10 July 2006 – Photo Picks**

	
<p>SE06_MM_19417.JPG</p>	<p>SE06_MM_19914.JPG</p>
<p>Glassy, pre-dawn transit to Wadleigh Island</p>	<p>Estuary at Shinaku Creek</p>
	
<p>SE06_MM_19532.JPG</p>	<p>SE06_MM_19975.JPG</p>
<p>Canoe runs, south Wadleigh Island</p>	<p>Tidal falls at, north entrance Big Salt Lake</p>
	
<p>SE06_MM_19417.JPG</p>	<p>SE06_MM_19944.JPG</p>
<p><i>Sargassum</i> in channel at entrance of Big Salt Lake</p>	<p>Rock walls (fish traps), Big Salt Lake</p>

**ShoreZone Craig AVI Survey
10 July 2006 Trackline Map**



**ShoreZone Craig AVI Survey
10 July 2006 Imaging Progress Map**



ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)

Mary Morris (Archipelago Marine Research)

Bill Snider (Coastal Helicopters, Juneau AK)

11 July 2006

Tide window (ADT): 0511 – 0910 (Craig)

Liftoff (ADT): 0515

Setdown: 0945

Heli time: 4.6 hours

Flown = 390 km:

Islands west of Craig: Noyes, San Fernando, Lulu, San Juan Bautista, NW Baker

Imagery collected: ~4.0 hours

Tapes: SE06_CH08 – CH11

Conditions:

Generally clear, sunny and calm; some patchy fog at dawn; no wind or rain; beautiful conditions

Highlights and interesting features:

- fish ponds and stone walls of Lulu Island
- wide, interconnected tombolos and gravel flats
- dramatic sea cliffs of West Baker Island

Wide platforms with islets and connecting tombolos were seen on Lulu and San Fernando Islands, along both sides of Portillo Channel. Fish trap complexes were observed in at stream deltas in these areas. Moderate wave energies (semi-protected and lower) characterize these areas and platforms were surrounded by lush *Macrocystis* beds.

Portillo Channel is current affected and includes several shoals and reefs covered with *Nereocystis*. The channel is also the main route for sport fish boats headed to the west coast and we saw 15 boats identical boats, traveling in a high speed convoy line, headed to the open coast like cars on a highway.

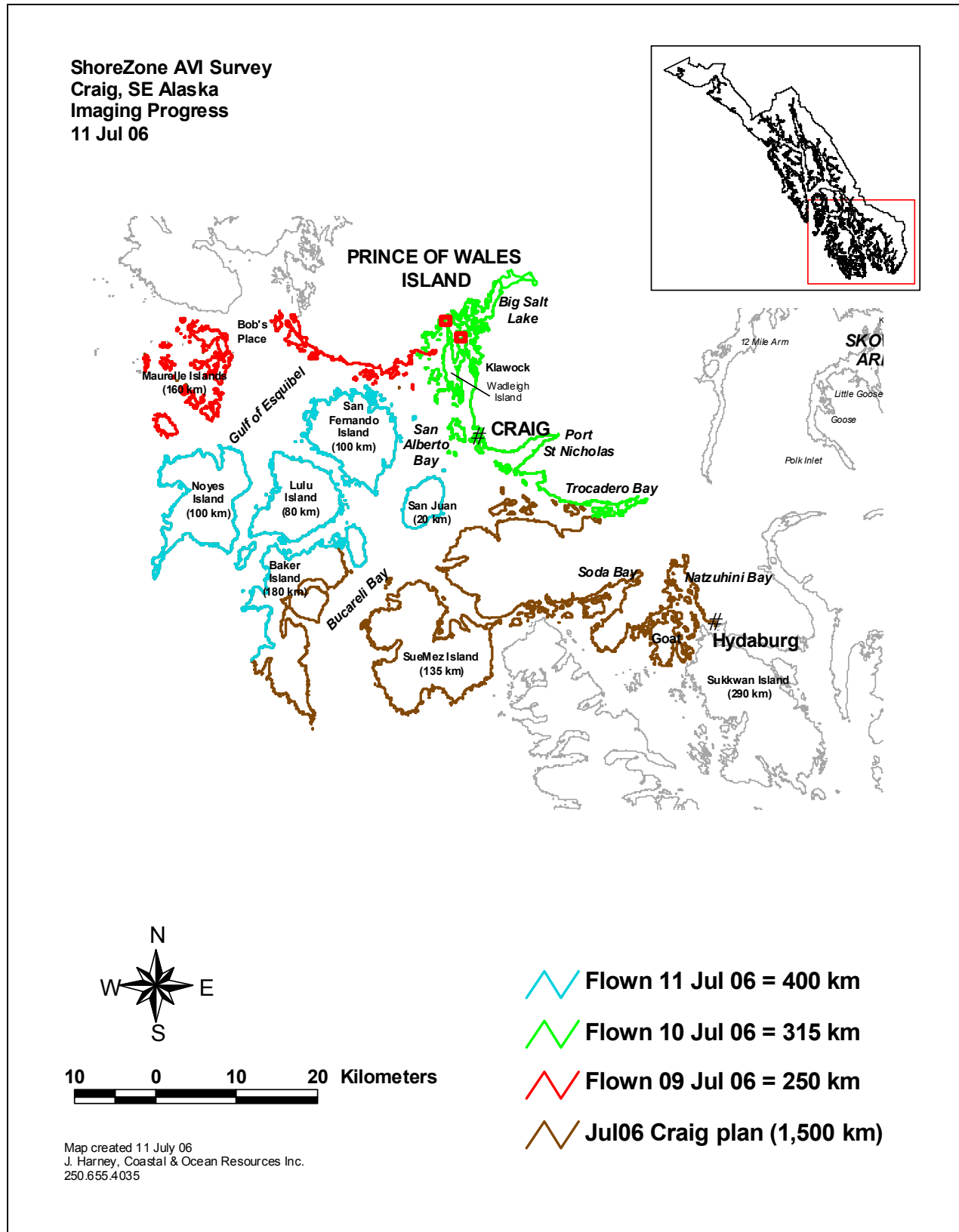
Conditions were glassy calm, which made whale spotting easy, as the spouts could be seen for miles. Numerous humpbacks were observed, including cow and calf pairs. We also saw sea lions hauled out at Cape Addington, numerous sea otters (though fewer than we saw in the Maurelle Group), and scattered groups of seals.

The outer west side of Baker Island is particularly spectacular, with vertical rock cliffs, curving sand beaches, sea caves and sea arches. We confirmed the presence of the gooseneck barnacle/California mussel bioband, which is new for Alaska mapping (though it is common on high energy BC shorelines).

**ShoreZone Craig AVI Survey
11 July 2006 – Photo Picks**

	
<p>SE06_MM_21698.JPG</p>	<p>SE06_MM_21963.JPG</p>
<p>Roller Bay, west Noyes Island</p>	<p>South Noyes carbonate beach</p>
	
<p>SE06_MM_22385.JPG</p>	<p>SE06_MM_22417.JPG</p>
<p>Rock walls (fish traps), south Lulu Island</p>	<p>Arrecife Point, southeast Lulu Island</p>
	
<p>SE06_MM_21952.JPG</p>	<p>SE06_MM_23737.JPG</p>
<p>Delta and swash ridges, south Noyes Island</p>	<p>Sea arch and sea caves, west side of Baker Island</p>

**ShoreZone Craig AVI Survey
11 July 2006 Imaging Progress Map**



ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)

Mary Morris (Archipelago Marine Research)

Bill Snider (Coastal Helicopters, Juneau AK)

12 July 2006

Tide window (ADT): 0630 – 1045 (Craig)

Liftoff (ADT): 0600

Setdown: 1105

Heli time: 4.2 hours

Flown = 346 km:

East Baker Island, SueMez Island, west Trocadero Bay, Ulloa Channel, Tlevak Narrows

Imagery collected: ~3.7 hours

Tapes: SE06_CH12 – CH15

Conditions:

Intermittent rain and wind; some patchy fog at dawn; variable ceiling; patchy low clouds

Highlights and interesting features:

- dramatic sea cliffs of Cape Felix, SW SueMez Island
- wide deltas in protected embayments (“ports”) and coves of SueMez Island
- several large beaches, with sand color variable from white, to brown to grey, according to the surrounding bedrocks







The southwest coast of Baker Island was impressive, with high wave exposures and several high energy sand beaches. Exposure dropped suddenly when we rounded the corner at Cape Bartolome, and protected wave exposures were observed in sediment-dominated shorelines in the big inlets on the east side of the island. Overall the diversity of coastal habitat types on Baker Island is amazing.

The exposed south coast of Suemez Island was also striking, with black and red basalts and wave cut platforms, odd shapes of eroded pinnacles, columnar basalt and a cliff that was ‘plus 90 degrees’, with a sheer wall several 100 meters high overhanging at Cape Felix. Large protected inlets also occur on the island.

Complex reefs and platforms of limestone occur in the Ladrone Islands, at the entrance to Trocadero Bay, representing spatial complexity of semi-protected and protected habitats.

Current dominated channels through the network of islands at the north end of Dall Island, just south of the resort at Waterfall (a former large cannery site) have areas of urchin barrens and large *Nereocystis* beds.

**ShoreZone Craig AVI Survey
12 July 2006 – Photo Picks**

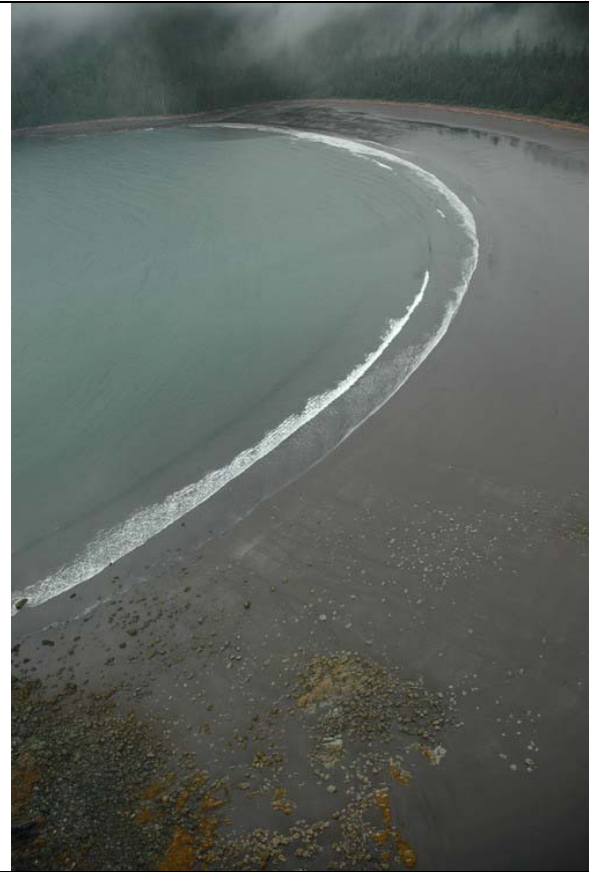
	
<p>SE06_MM_23889</p> <p>Exposed rock platform at Granite Point, west Baker Island</p>	<p>SE06_MM_24728</p> <p>Columnar basalt cliffs at Cape Felix, south Suemez Island</p>
	
<p>SE06_MM_25239</p> <p>Surfgrass on rock platform with lush RED bioband, at semi-exposed shoreline on northwest Suemez Island</p>	<p>SE06_MM_25367</p> <p>Typical protected shoreline, islet on north side of Trocadero Bay</p>
	
<p>SE06_MM_25561</p> <p>Protected limestone platforms and lagoons, with eelgrass and low turf of bleached red algae (HAL band), Ladrone Islands, west entrance Trocadero Bay</p>	<p>SE06_MM_25794</p> <p>Delta fan with soft brown algae (SBR band) and two deer, estuary at head of Port Caldera, southwest entrance Trocadero Bay</p>



SE06_MM_25982
Estuary with saltmarsh near Waterfall,
Prince of Wales Island



SE06_MM_26194
Rocky islets surrounded by *Nereocystis*
beds in current-affected channel, south
Ulloa Channel near Waterfall



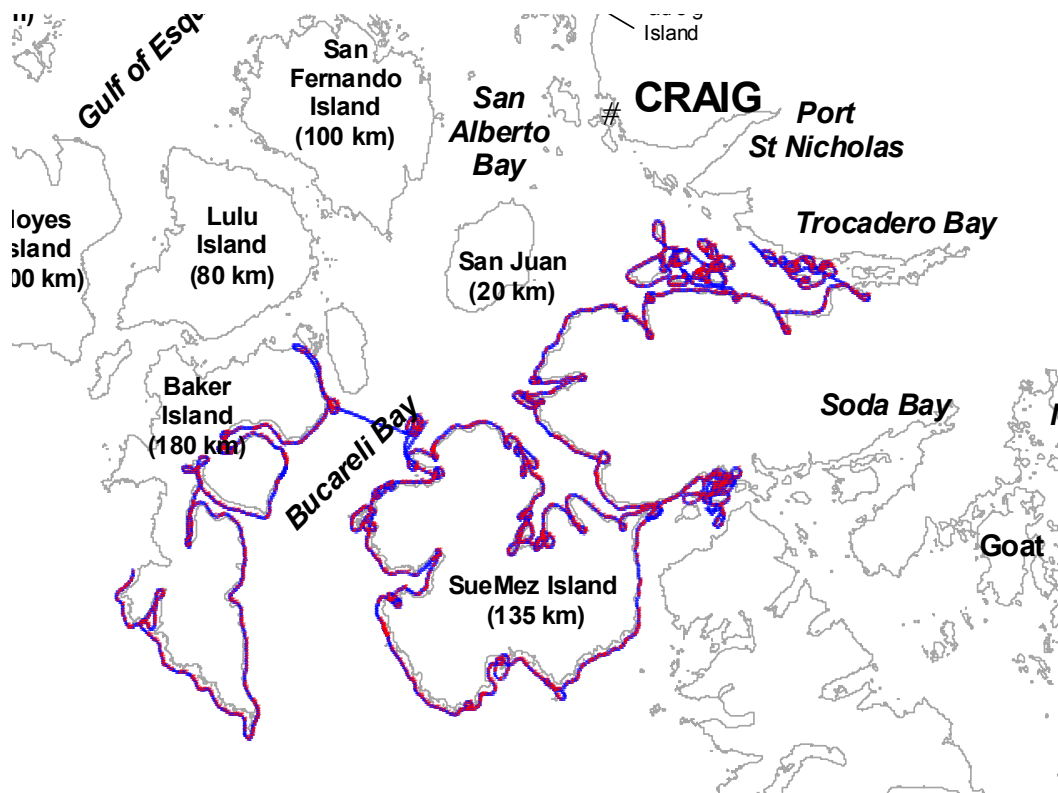
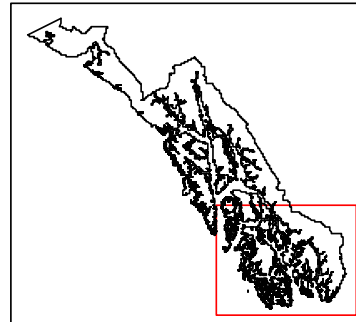
SE06_MM_24769
Curving grey sand beach at Arena Cove,
south Suemez Island.



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**ShoreZone Craig AVI Survey
12 July 2006 Trackline Map**

ShoreZone AVI Survey
Craig, SE Alaska
Trackline 12 July 06
(345 km shoreline flown)

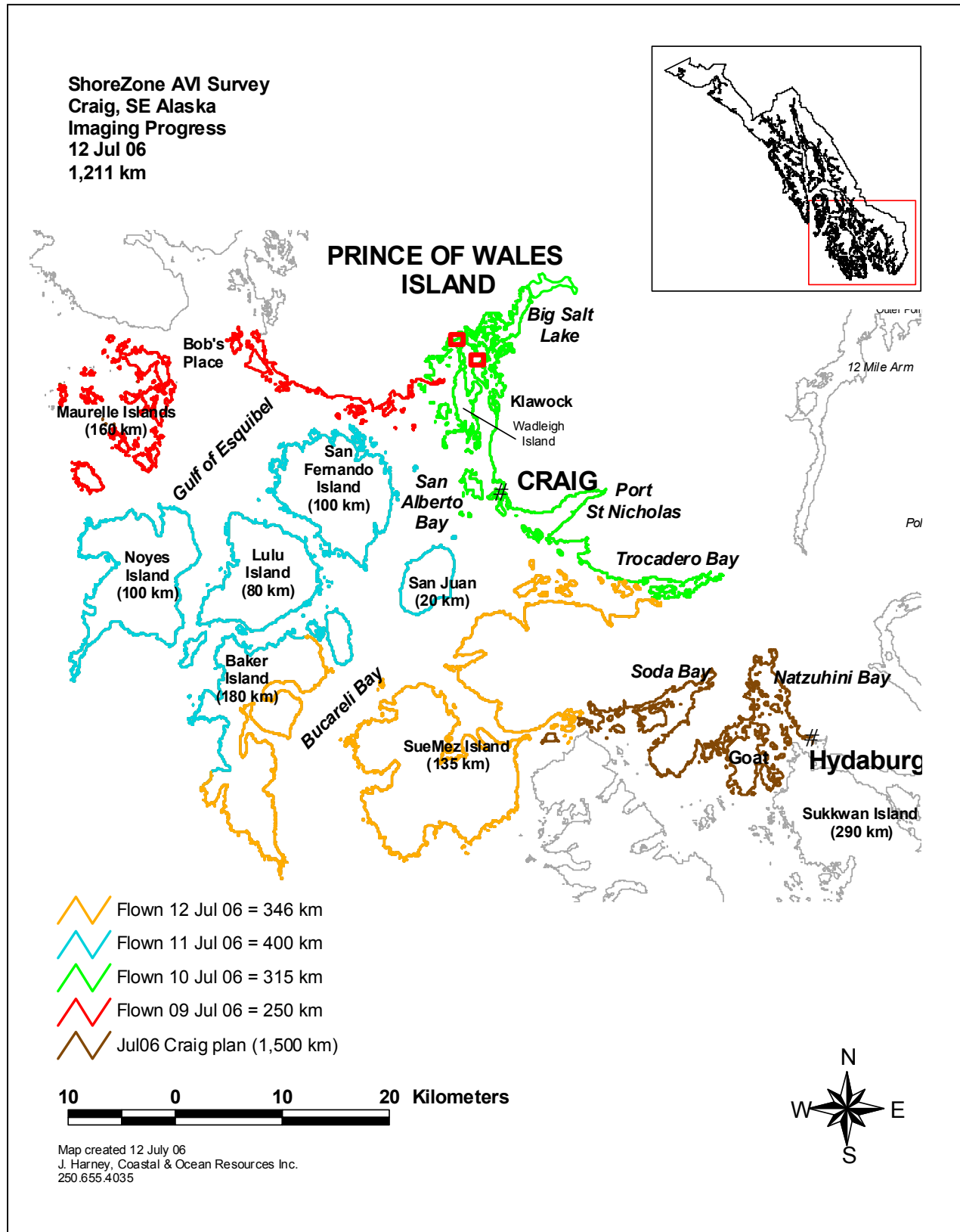


- % Trackline 12 Jul
- # Photos 12 Jul
- Craig plan (1,500 km)



Map created 12 July 06
J. Harney, Coastal & Ocean Resources Inc.
250.655.4035

**ShoreZone Craig AVI Survey
12 July 2006 Imaging Progress Map**



ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)

Mary Morris (Archipelago Marine Research)

Bill Snider (Coastal Helicopters, Juneau AK)

13 July 2006 Thursday

Survey Day 5

Tide window (ADT): 0730 – 1110 (Tlevak)

Liftoff (ADT): 0700

Setdown: 1115

Heli time: 4.1 hours

Flown = 244 km:

Soda Bay, Middle Islands, Hydaburg

Imagery collected: ~3.6 hours

Tapes: SE06_CH16 – CH19

Conditions:

High ceiling, overcast, light rain, sunny periods

Highlights and interesting features:

- islands and tomboles of Soda and Natzuhini Bays
- bears! bears! bears!
- soda? springs in Soda Bay
- town of Hydaburg, and meeting our personal 'fuel truck', arriving at scheduled time and place, by road from Craig

Tidal current-affected and current-dominated passages were surveyed in the complex of islets and reefs southeast of Waterfall, in Tlevak Passage. Urchin barrens were observed there, along with *Nereocystis*. An old lava flow was eroded to a flat platform, but showed a lobed dendritic flow pattern in the rock, and flat surface of cross-section of columnar basalt. Highly unusual intertidal shapes.

Soda Bay and the bay north of Hydaburg (Natzuhini Bay) are full of islands and islets, all in low wave energies and most are surrounded by wide, flat sediment beaches. Fringing saltmarsh vegetation was observed throughout, along with characteristic biobands of low exposure: Rockweed, bright green filamentous greens or Bleached Reds (or a mixture of those) on the lower intertidal, with Soft Brown Kelps in the lower intertidal. Nearshore canopy kelps were not widespread.

Another unusual feature we observed are the soda springs in Soda Creek. Surrounding soils and the sediment in the creek and estuary were stained dark brick red-brown. A number of seeps and springs were seen along the lower creek as well as on the hillside above and at a nearby small lake in the backshore.

A brief period of audio problems on the bio channel was repaired during the survey with a spare cable, after a short setdown on a tiny islet north of Nichols Island, in the Sentinel Group.

**ShoreZone Craig AVI Survey
13 July 2006 – Photo Picks**



Refuel from the Toyota at Hydaburg



View of islets off Waterfall, looking southeast

SE06_MM_26225



Both canopy kelps (*Nereocystis* and *Macrocystis*) in current-affected channel Tlevak Narrows, north end of Dall Island

SE06_MM_26307



One of the Lively Islets, at entrance to Soda Bay, northeast end of Dall Island

SE06_MM_26514



Complex platform of lava flow form, north shore entrance to Soda Bay

SE06_MM_26423



Detail of shapes and columnar pattern in lava flow, north shore entrance to Soda Bay

SE06_MM_26428



The Soda Spring seeps on both sides of lower Soda Creek, just upstream from the estuary at the head of Soda Bay

SE06_MM_26769



Complex of islets and platforms, with typical protected biobands of Rockweed, Bleach Reds, and Eelgrass, in small bay just east of Halibut Nose, south entrance of Soda Bay

SE06_MM_26942



Rocky islets in The Sentinels, southwest of Goat Island

SE06_MM_27245



This *Macrocyctis* bed, with associated Soft Brown Kelps was observed on the southeast corner of Goat Island

SE06_MM_27378



Many fish traps and other cultural features in the intertidal zone were seen today. This possible fish trap was on the south side of Goat Island.

SE06_MM_27406

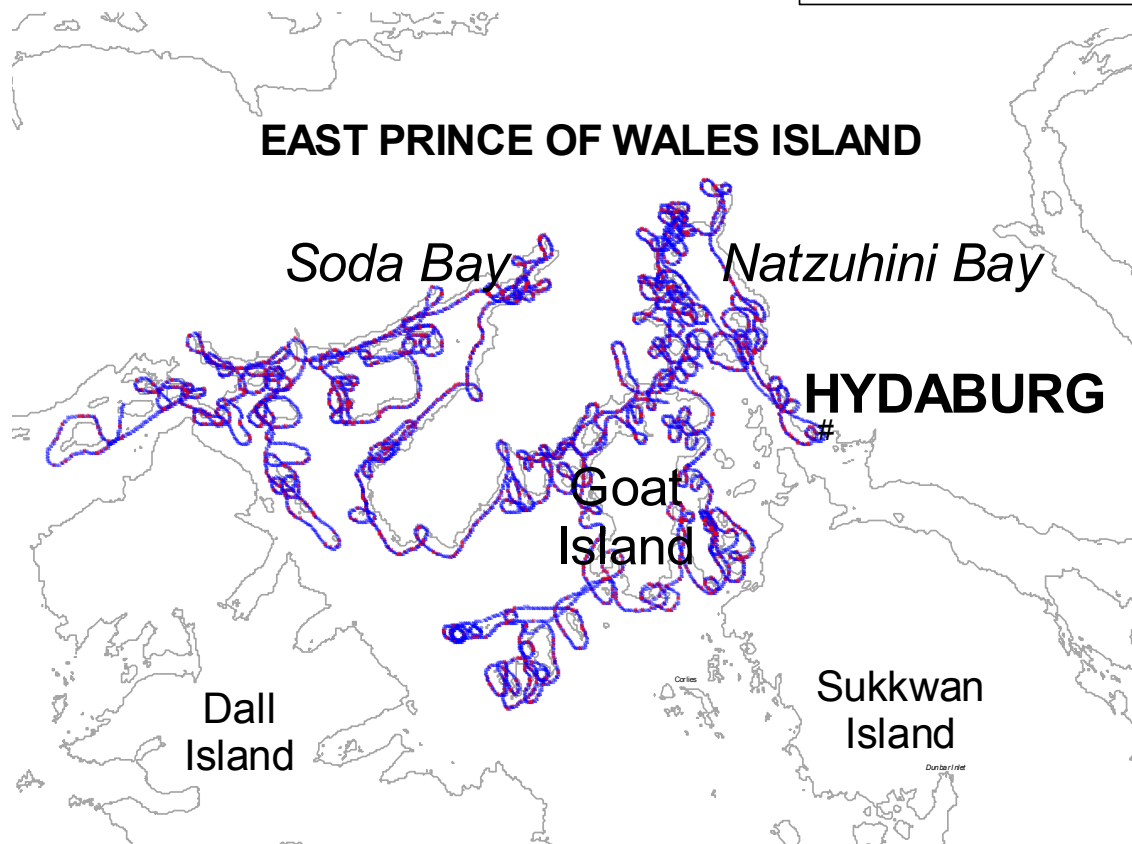
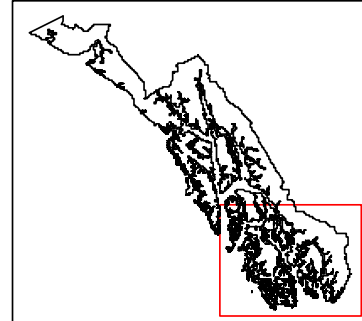


Wide, flat beaches were common in low energy bays, as seen on this sediment-dominated islet on the east side of Goat Island.

SE06_MM_27499

**ShoreZone Craig AVI Survey
13 July 2006 Trackline Map**

**ShoreZone AVI Survey
Craig, SE Alaska
Trackline 13 July 06
(244 km shoreline flown)**



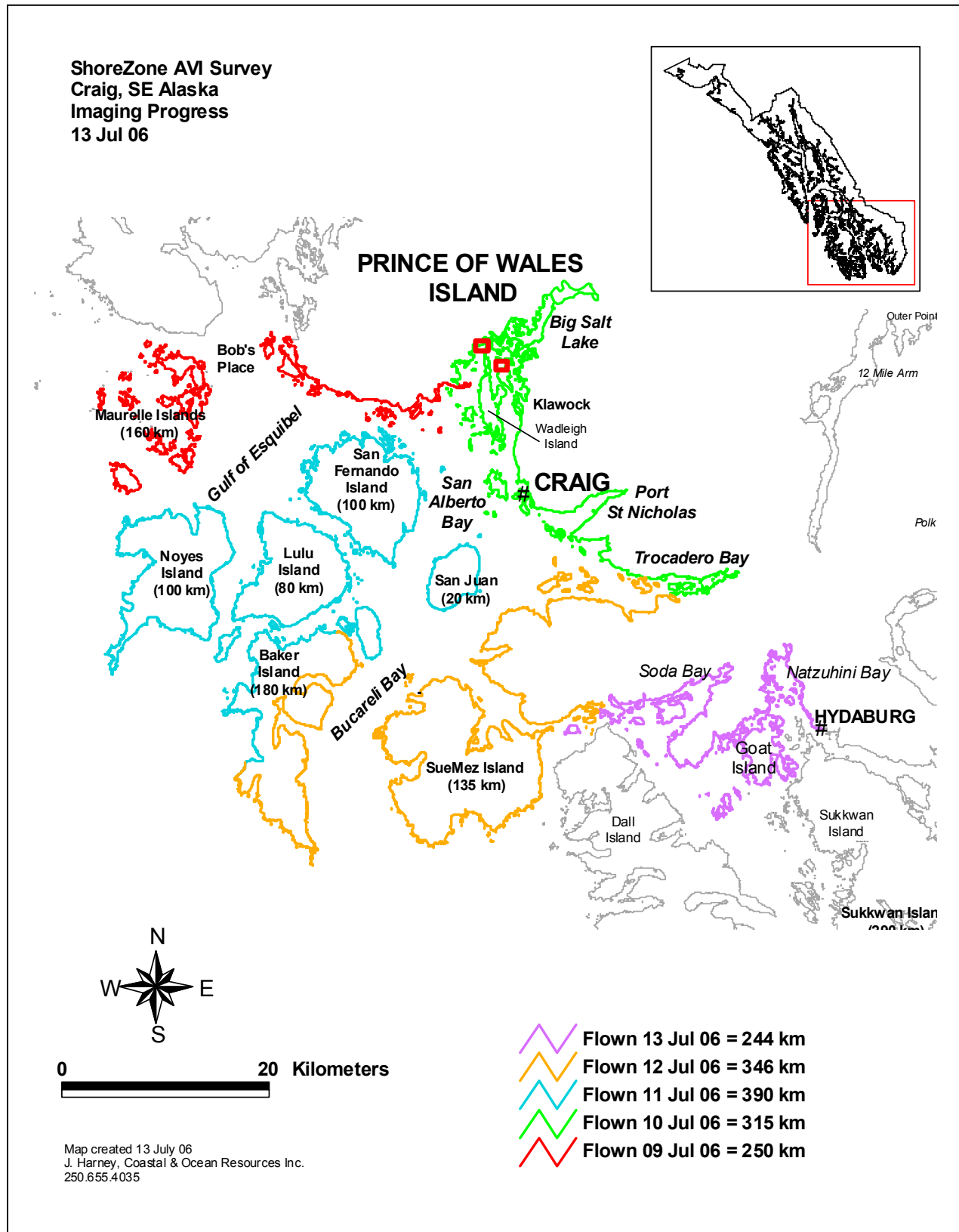
% Trackline 13 Jul

Photos 13 Jul



Map created 13 July 06
J. Harney, Coastal & Ocean Resources Inc.
250.655.4035

**ShoreZone Craig AVI Survey
13 July 2006 Imaging Progress Map**



ShoreZone Craig AVI Survey: July 2006

Jodi Harney, Kalen Morrow (Coastal & Ocean Resources)

Mary Morris (Archipelago Marine Research)

Bill Snider (Coastal Helicopters, Juneau AK)

14 July 2006 Friday

Survey Day 6

Tide window (ADT): 0815 – 1130 (Craig / Southpass)

Liftoff (ADT): 0740

Setdown: 1215

Heli time: 4.1 hours

Flown = 260 km:

Hydaburg Islands, east and south Sukkwan Island (around to Blanket Island)

Imagery collected: ~3.6 hours

Tapes: SE06_CH20 – CH23

Conditions:

Variable ceiling, overcast, light rain

Highlights and interesting features:

- rock wall fish traps, Dunbar Inlet
- Corlies Islands
- McFarland Islands
- south point Sukkwan Island


Island groups and inlets were the theme of the day today, mostly in low wave exposures. Numerous complexes of platforms, reefs and lagoons were seen on our circumnavigation of Sukkwan Island. Canopy kelps were relatively scarce and even at the highest wave exposures on the south end of Sukkwan, intertidal biota looked sparse. At similar semi-exposed shorelines west of Craig, the intertidal community assemblage was very lush. We also noticed that the ocean water was turquoise green and looked like glacial melt water; although there are no nearby tidewater glaciers.

No whales or sea otters were observed, although we about a dozen black bears, including one sow with triple cubs.

Many fish traps, fish ponds and complexes of cultural features were seen. Stone walls were in large V-shapes or as straight walls across the stream channel in small estuaries. Some upper intertidal ponds were shaped by curved stone walls, and sometimes several different shapes and sizes of features were linked together.

Like yesterday, today's survey logistics were supported by having two barrels of fuel waiting for us at the end of the road in Hydaburg.

**ShoreZone Craig AVI Survey
14 July 2006 – Photo Picks**

	
<p>Islands in Natzuhini Bay, Hydaburg in background SE06_MM_28086</p>	<p>Shallow rock platforms in low wave exposures, northwest Sukkwan Island SE06_MM_28201</p>
	
<p>Curved rockwall of possible fishtrap, northwest Sukkwan Island SE06_MM_28434</p>	<p>Complex of washover reefs and platforms, northwest Sukkwan Island SE06_MM_28480</p>
	
<p>Low wave exposure and islet, north entrance Dunbar Inlet, west Sukkwan Island SE06_MM_28603</p>	<p>Stone walls and cultural features, near entrance Dunbar Inlet SE06_MM_28615</p>

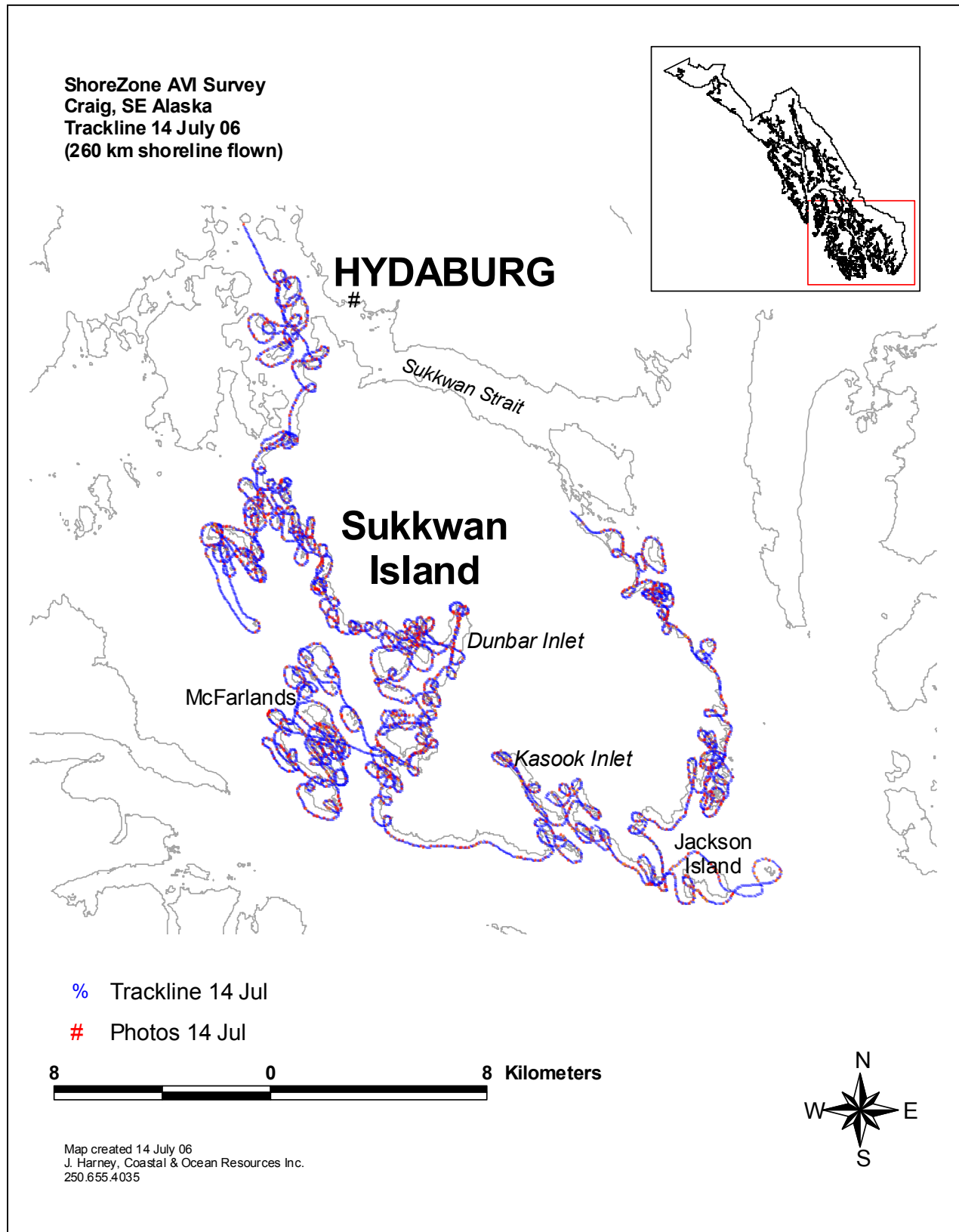


Many black bears were observed this day,
digging on the lower beaches.
SE06_MM_29648



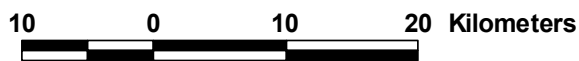
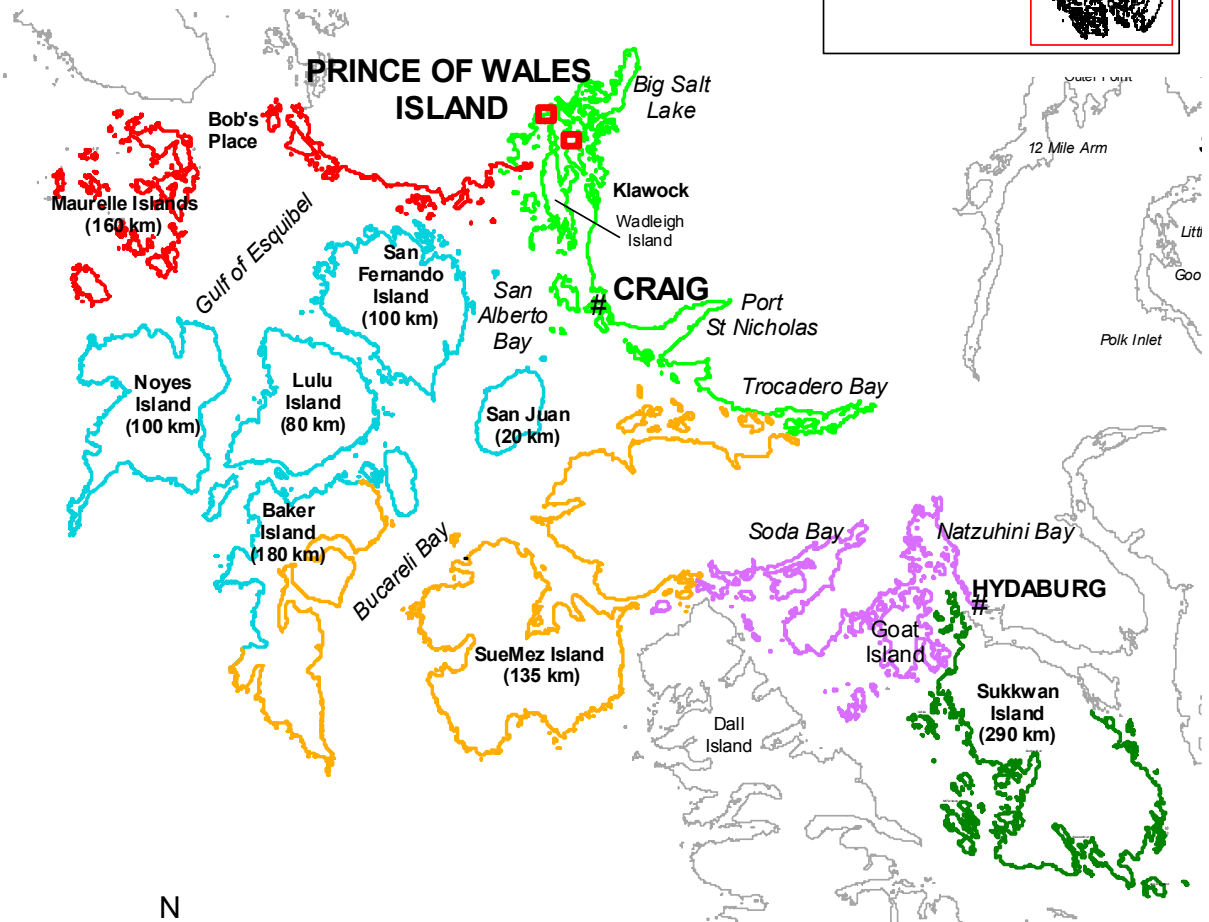
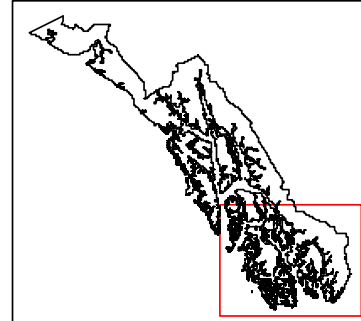
Islets, pools, lagoons and reefs on
southeast Sukkwan Island
SE06_MM_29658

**ShoreZone Craig AVI Survey
14 July 2006 Trackline Map**



**ShoreZone Craig AVI Survey
14 July 2006 Imaging Progress Map (final, end of survey)**

ShoreZone AVI Survey
Craig, SE Alaska
Imaging Progress
14 Jul 06
Final map of completed survey
1,805 km shoreline imagery collected



Map created 14 July 06
J. Harney, Coastal & Ocean Resources Inc.
250.655.4035

- ✓ Flown 14 Jul = 260 km
- ✓ Flown 13 Jul = 244 km
- ✓ Flown 12 Jul 06 = 346 km
- ✓ Flown 11 Jul 06 = 390 km
- ✓ Flown 10 Jul 06 = 315 km
- ✓ Flown 9 Jul = 250 km