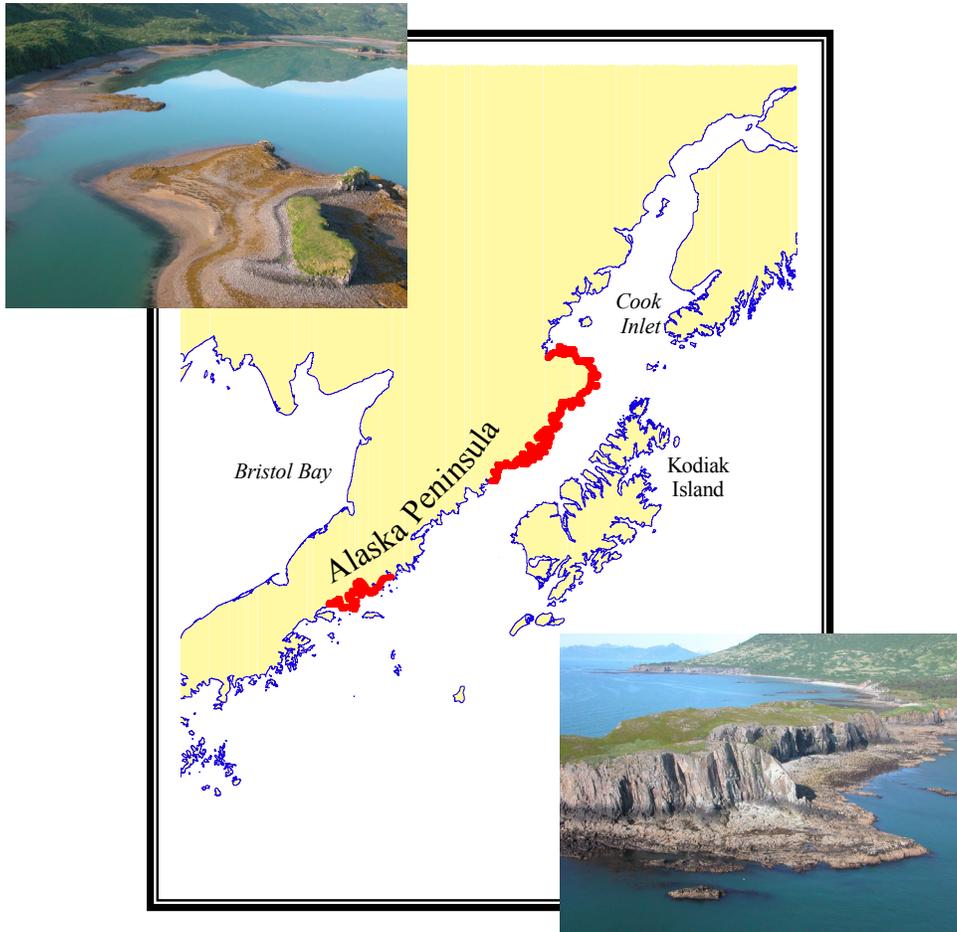


***2003 Aerial Video Imaging Survey,
Katmai National Park and Aniakchak National Preserve,
Alaska (12-16th, June 2003)***



Prepared for the National Park Service

COASTAL & OCEAN RESOURCES INC.
214-9865 W. Saanich Rd., Sidney, BC V8L 5Y8
www.coastalandoceans.com



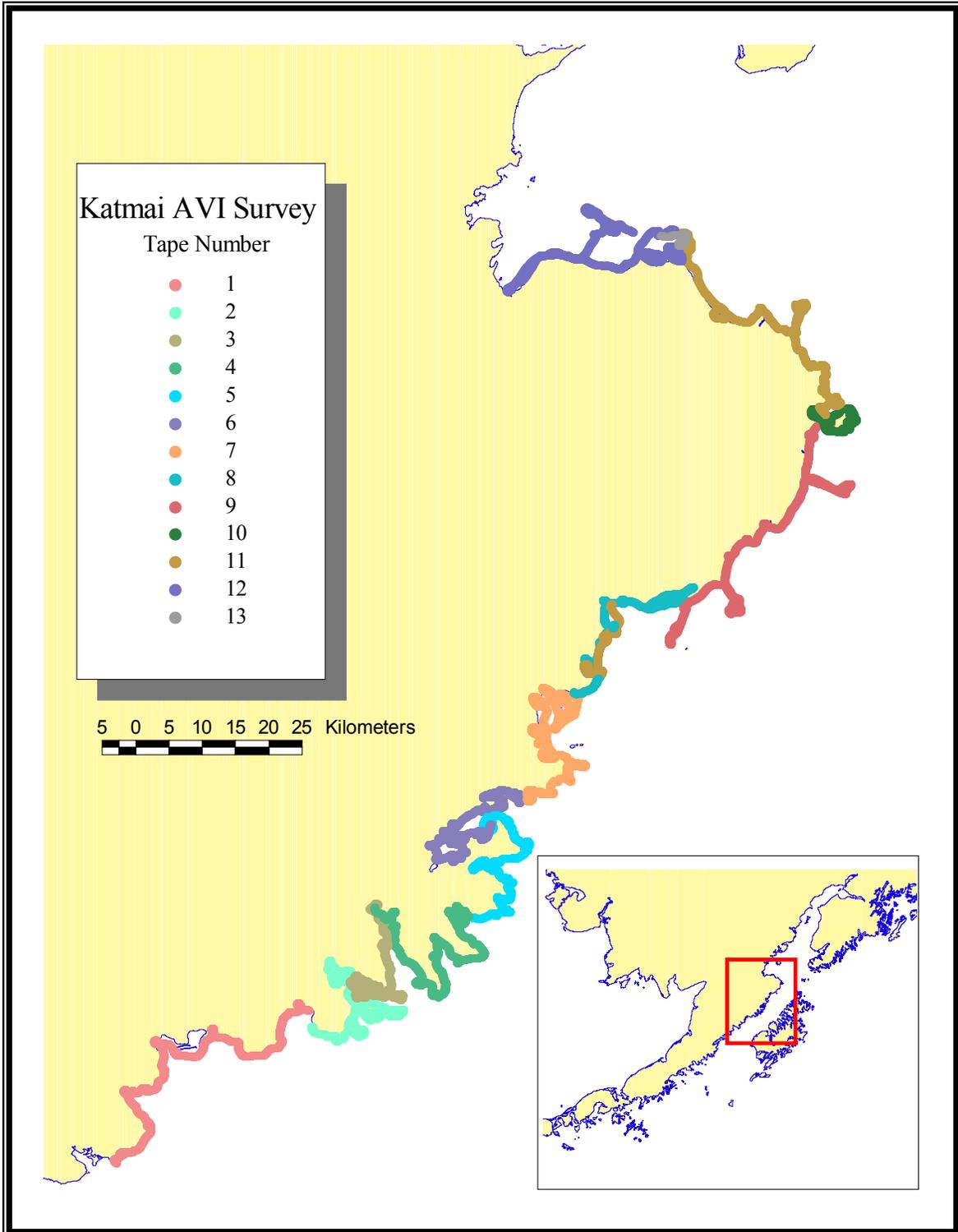


Figure 1. Location of individual tapes from the 2003 Katmai National Park AVI Survey.

INTRODUCTION

This survey combines the use of digital video camera technology with real-time GPS mapping to image the shoreline of both the Katmai National Park and Aniakchak National Preserve coast at low tide. The unusual features of the survey are: (a) the survey was conducted during the lowest tides of the year so the entire intertidal zone is imaged; (b) the technique is not weather dependent so imagery can be collected in any conditions under which aircraft can fly and; (c) both a coastal ecologist and coastal geomorphologist were in the aircraft providing real-time commentary on intertidal features that may not be visible on the imagery.

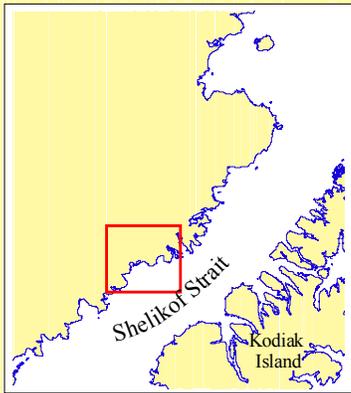
The survey was conducted by Coastal & Ocean Resources Inc.(CORI), of Sidney, BC under contract to the National Park Service, located in Anchorage Alaska and the Cook Inlet Regional Citizen's Advisory Council (CIRCAC), located in Kenai, Alaska.

Figure 1 shows the overall flight coverage by tape number. The flight crew names and responsibilities are summarized in Table 1.

Table 1 Katmai National Park AVI Flight Personnel and Responsibilities,

Function	Individual/ Affiliation	Responsibilities
<i>geomorphologist project leader</i>	John Harper CORI	co-ordination of survey, video imaging, geomorphology commentary, project reporting
<i>coastal ecologist</i>	Mary Morris, Archipelago Marine Resources	biology commentary, digital photographs
<i>navigator</i>	Neil Borecky CORI	in flight navigation & recording, post-flight track plotting
<i>pilot</i>	Tom Walters, Maritime Helicopter	

2003 Katmai National Park Aerial Video Imaging Survey Tape # 1



Legend

- Flightline (represented by a red dotted line)
- Digital Photo (represented by a blue dot)

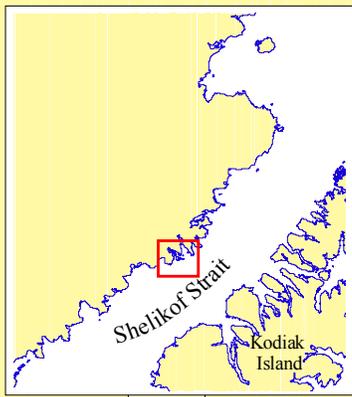


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-1
General Location: Kashvik Bay, Katmai Bay, Dakavak Bay
Date: June 12, 2003
Time Start: 14:00:50
Time Stop: 14:55:36
Tape Length: 55:14
Weather: High Overcast to clearing
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
14:09:50	Cape Kubugakli	Katmai_0009.jpg	16575	43,51
14:15:50	Head of Kashvik Bay	Katmai_0017.jpg	16575	43,51
14:31:00	Katmai River Delta	Katmai_0039.jpg	16575	43,51
14:35:00	Katmai Village Site (former)	Katmai_0045.jpg	16575	43,51
14:51:00	Head of Dakavak Bay	Katmai_0062.jpg	16575	43,51

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 2



Legend

- Flightline (represented by a red dotted line)
- Digital Photo (represented by a blue dot)

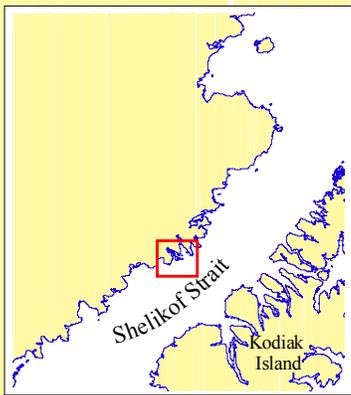


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-2
General Location: Cape Ilktugaitak, Amilik Bay, Geographic Harbor
Date: June 12, 2003
Time Start: 14:56:18
Time Stop: 15:53:42
Tape Length: 57:24
Weather: High Overcast to clearing
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

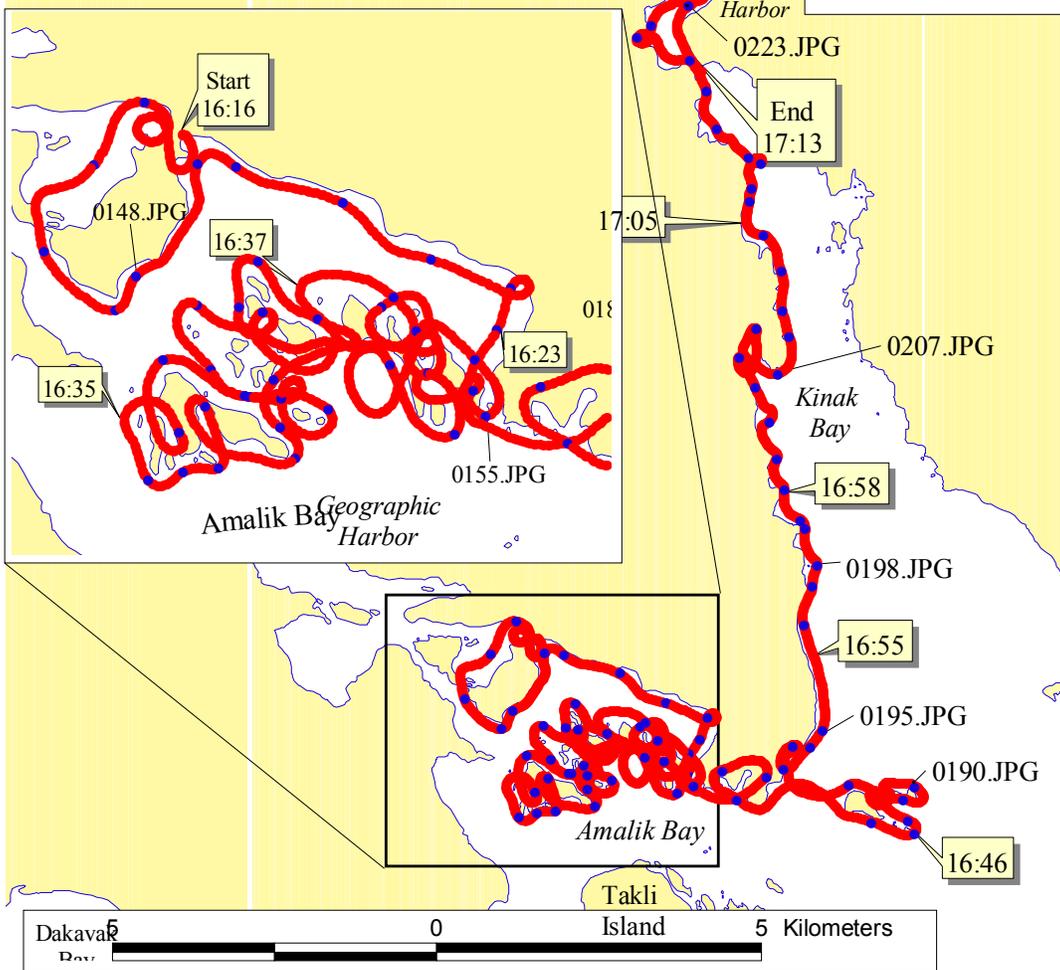
Time (UTC)	Location	Film Frame	Chart	Gazette Page
15:00:00	Cape Ilktugaitak	Katmai_0076.jpg	16576	51
15:10:00	Takli Island	Katmai_0089.jpg	16576	51
15:30:00	Head of Amalik Bay	Katmai_0112.jpg	16576	51
15:34:00	Mouth of Geographic Harbor (west side)	Katmai_0116.jpg	16576	51
15:49:00	east side Geographic Harbor	Katmai_0138.jpg	16576	51

2003 Katmai National Park Aerial Video Imaging Survey Tape # 3



Legend

- Flightline
- Digital Photo

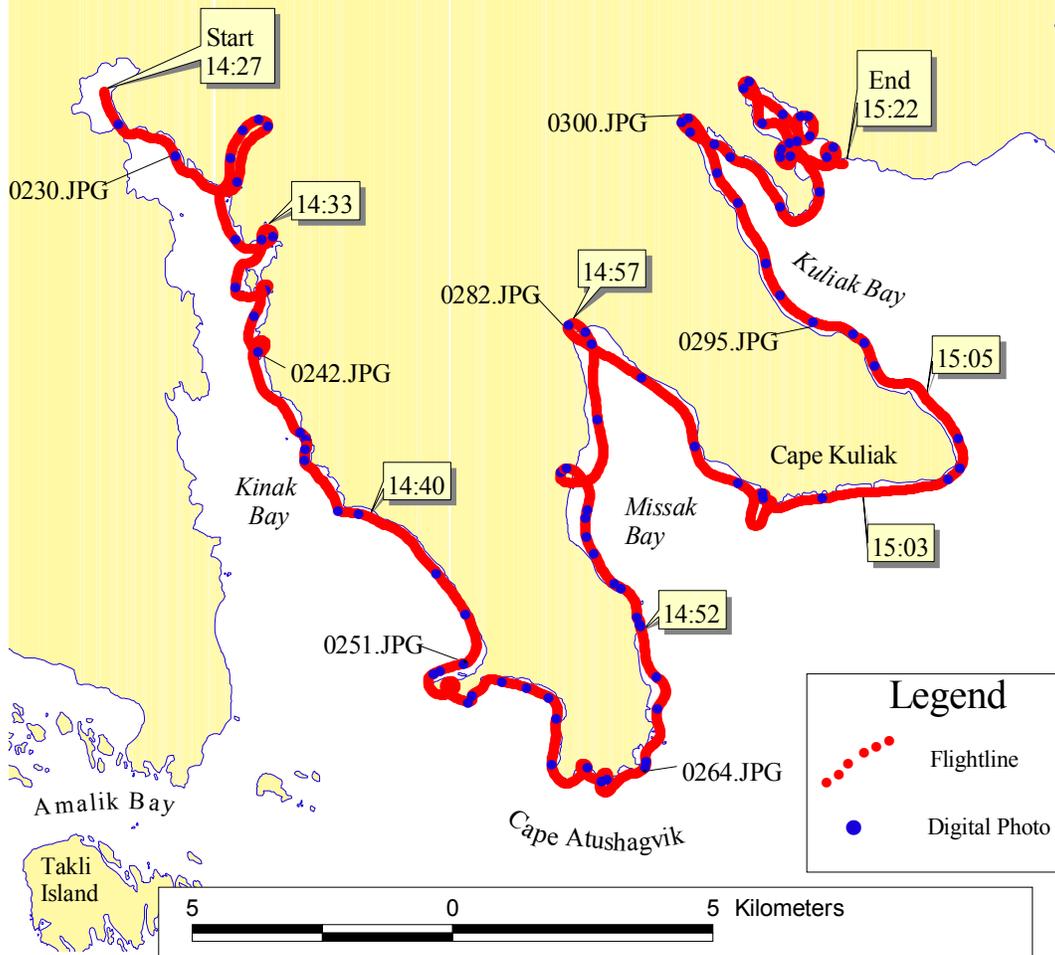
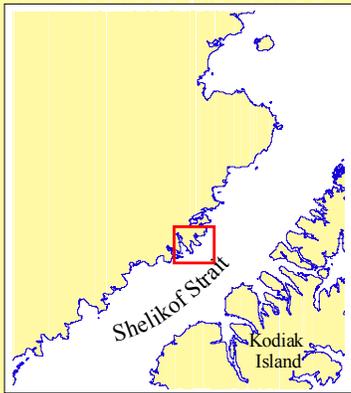


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-3
General Location: Geographic Harbor, Amilik Bay Islands, Kinak Bay, Hidden Harbor
Date: June 12, 2003
Time Start: 16:16:40
Time Stop: 17:13:58
Tape Length: 56:04 * Break in this tape.
Weather: Clear
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
16:16:40	Warden's Cabin, Geographic Harbor		16576	51
16:24:00	Start of cluster of islands in Amalik Bay	Katmai_0155.jpg	16576	51
16:42:00	End of islands in Amalik Bay	Katmai_0183.jpg	16576	51
16:54:00	Mouth of Kinak Bay	Katmai_0195.jpg	16576	51
17:02:00	Right side, mid-point Kinak Bay	Katmai_0207.jpg	16576	51
17:09:30	Mouth of Hidden Harbor (west side)	Katmai_0217.jpg	16576	51

2003 Katmai National Park Aerial Video Imaging Survey Tape # 4

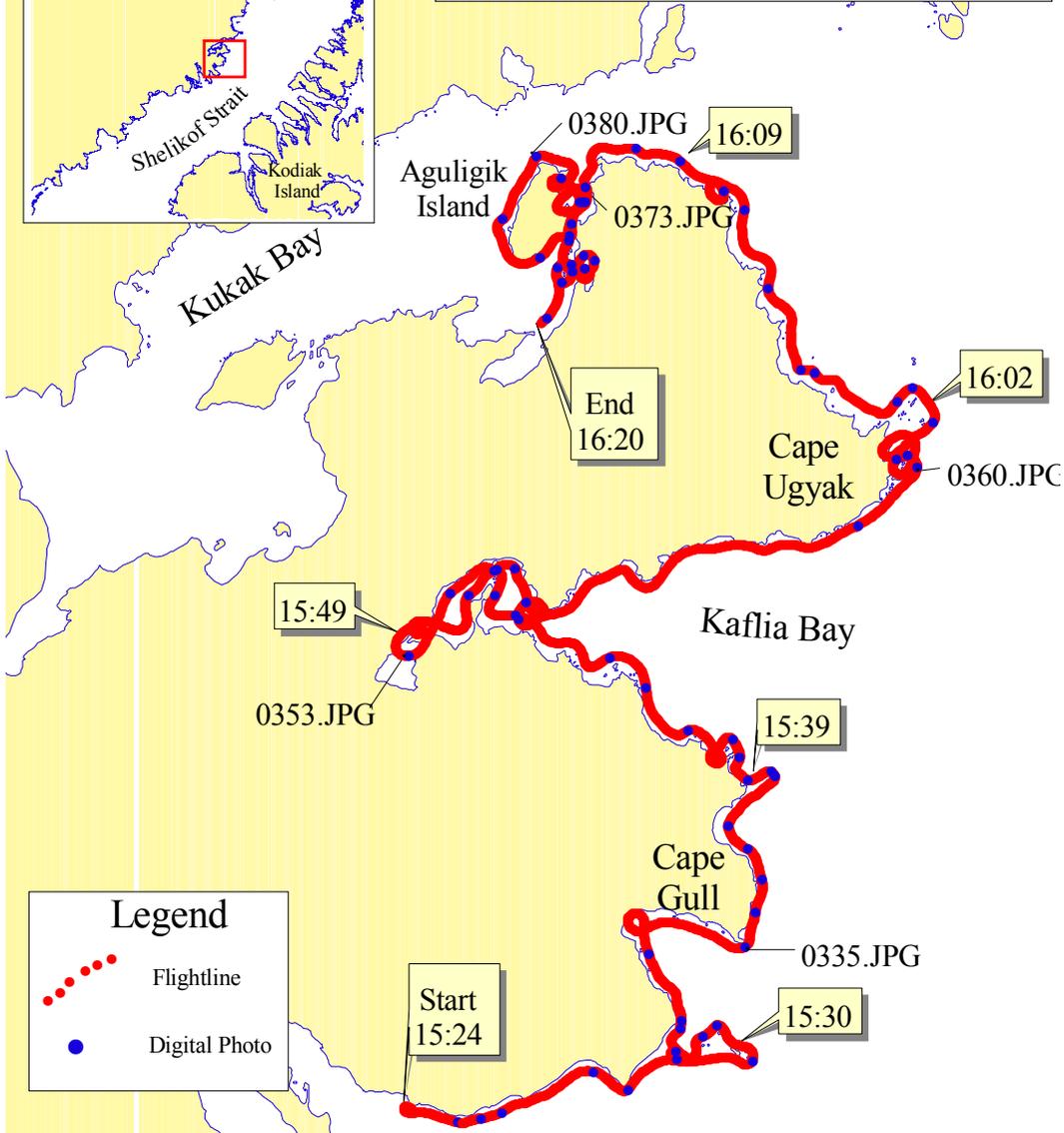
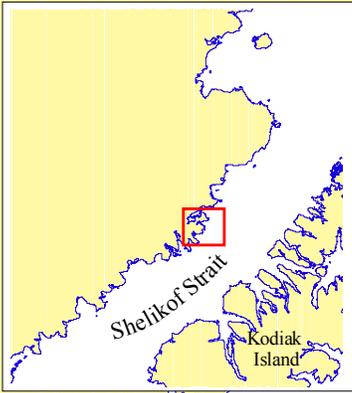


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-4
General Location: Kinak Bay, Missak Bay, Kuliak Bay
Date: June 13th, 2003
Time Start: 14:27:14
Time Stop: 15:22:58
Tape Length: 55:42
Weather: Clear sunny
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
14:28:00	Entrance to Hidden Harbor	Katmai_0230.jpg	16576	51
14:42:30	Russian Anchorage	Katmai_0251.jpg	16576	51
14:49:00	Cape Atushagvik	Katmai_0264.jpg	16576	52
14:57:30	Head of Missak Bay	Katmai_0282.jpg	16576	52
15:11:00	Head of Kuliak Bay	Katmai_0300.jpg	16576	52

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 5



Legend

- Flightline (represented by a red dotted line)
- Digital Photo (represented by a blue dot)

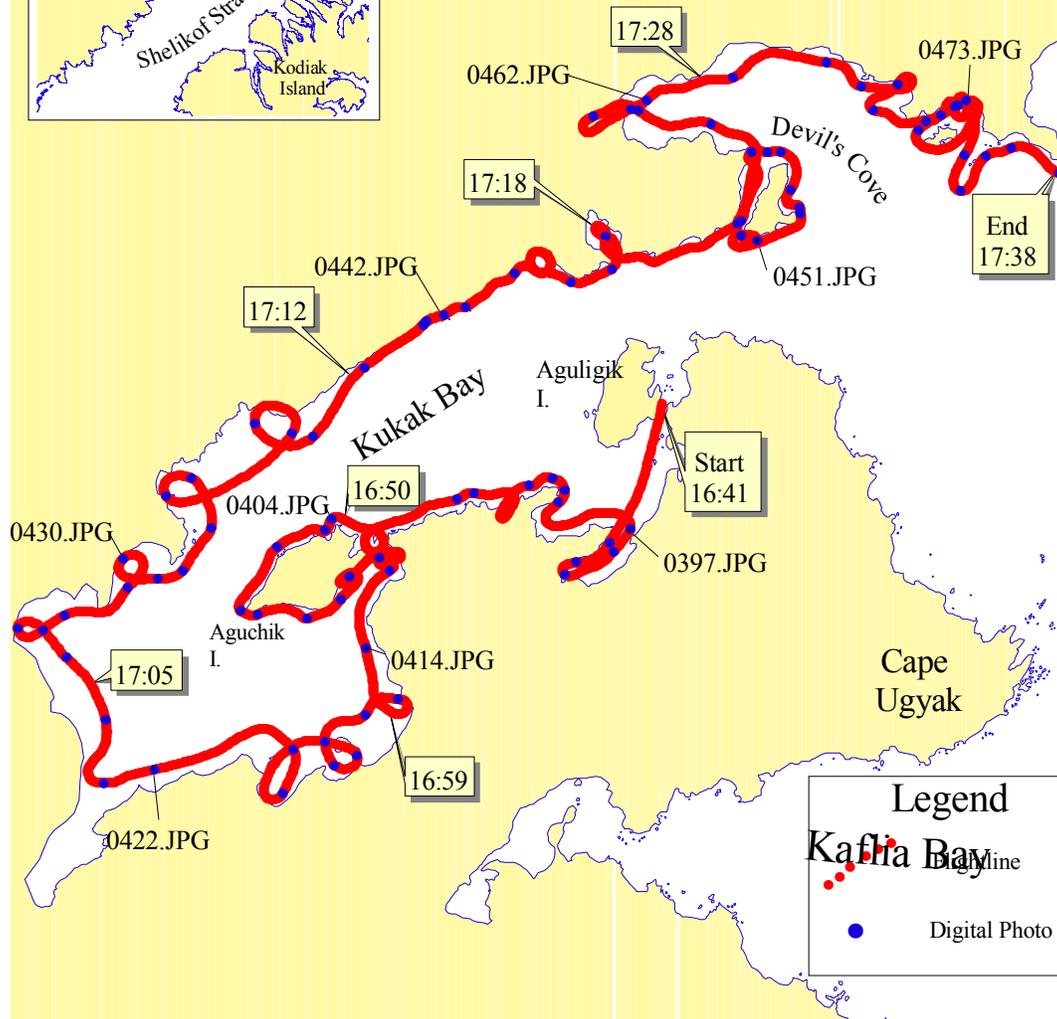
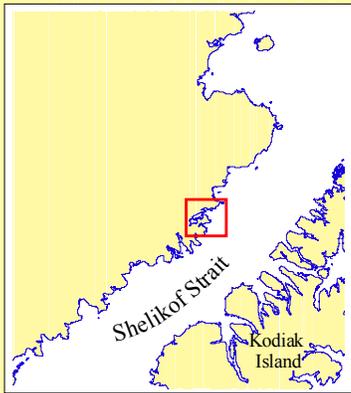


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-5
General Location: Kuliak Bay, KafLIA Bay, Kukak Bay
Date: June 13th, 2003
Time Start: 15:24:18
Time Stop: 16:20:56
Tape Length: 56:38
Weather: Clear sunny
Electronic File: Katmai_a.shp, Katmaipfoto_a.shp, Katmai.txt

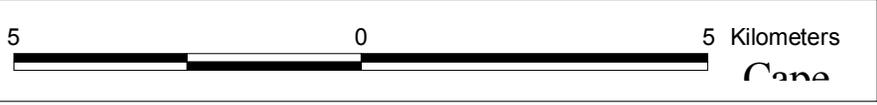
Time (UTC)	Location	Film Frame	Chart	Gazette Page
15:24:18	Kuliak Bay		16576	52
15:36:00	Bay at Cape Gull	Katmai_0335.jpg	16576	52
15:50:00	Head of KafLIA Bay	Katmai_0353.jpg	16576	52
16:00:00	Cape Ugyak	Katmai_0360.jpg	16576	52
16:10:00	S.side of Kukak Bay	Katmai_0373.jpg	16576	52
16:15:00	W.side of Aguligik Island	Katmai_0380.jpg	16576	52

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 6



Legend

- Kafia Bay
- Digital Photo

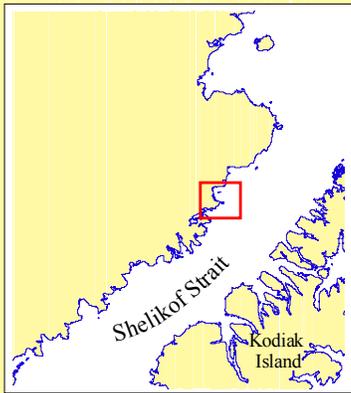


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-6
General Location: Kukak Bay
Date: June 13th, 2003
Time Start: 16:41:24
Time Stop: 17:38:06
Tape Length: 56:43
Weather: Clear sunny
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
16:44:30	S.side Aguligik Island	Katmai_0397.jpg	16576	52
16:50:00	N.side Aguchik Island	Katmai_0404.jpg	16576	52
17:03:00	S.side of tidal flats, head of Kukak Bay	Katmai_0422.jpg	16576	52
17:07:00	N.side of tidal flats, head of Kukak Bay	Katmai_0430.jpg	16576	52
17:22:00	S.side of Tiny Island	Katmai_0451.jpg	16576	52
17:28:00	N.side of Devil's Cove	Katmai_0462.jpg	16576	52
17:35:00	Katmai Wilderness Lodge	Katmai_0473.jpg	16576	52

2003 Katmai National Park Aerial Video Imaging Survey Tape # 7



Legend

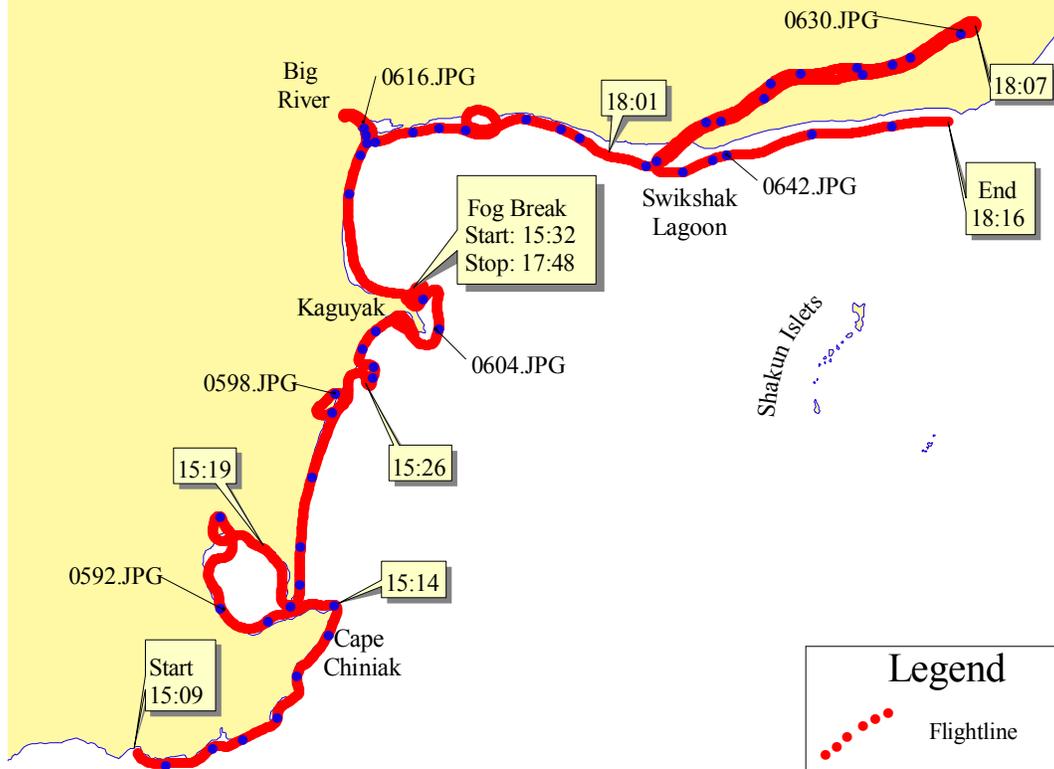
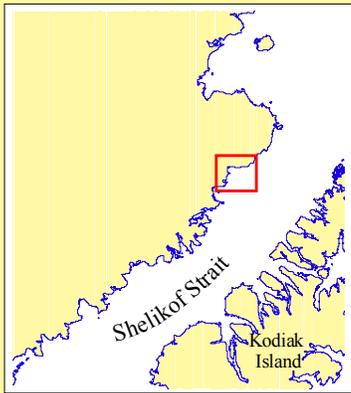
- Flightline (represented by a red dotted line)
- Digital Photo (represented by a blue dot)

Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-7
General Location: Kukak Bay, Hallo Bay
Date: June 13th, 2003
Time Start: 17:39:30
Time Stop: 18:37:22
Tape Length: 57:45
Weather: Clear sunny
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
17:40:00	Kukak Point	Katmai_0480.jpg	16576	52
17:56:00	Nukshak Cape	Katmai_0506.jpg	16576	52
18:06:00	Hallo Creek, Hallo Bay	Katmai_0521.jpg	16576	52
18:16:00	Ninagiak River	Katmai_0536.jpg	16576	52
18:25:00	North side Hallo Bay (Cape Chiniak)	Katmai_0545.jpg	16576	52
18:32:00	S. side Ninagiak Island	Katmai_0554.jpg	16576	52

2003 Katmai National Park Aerial Video Imaging Survey Tape # 8



Legend

- Flightline
- Digital Photo

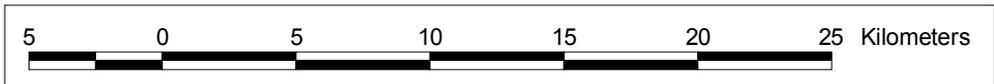
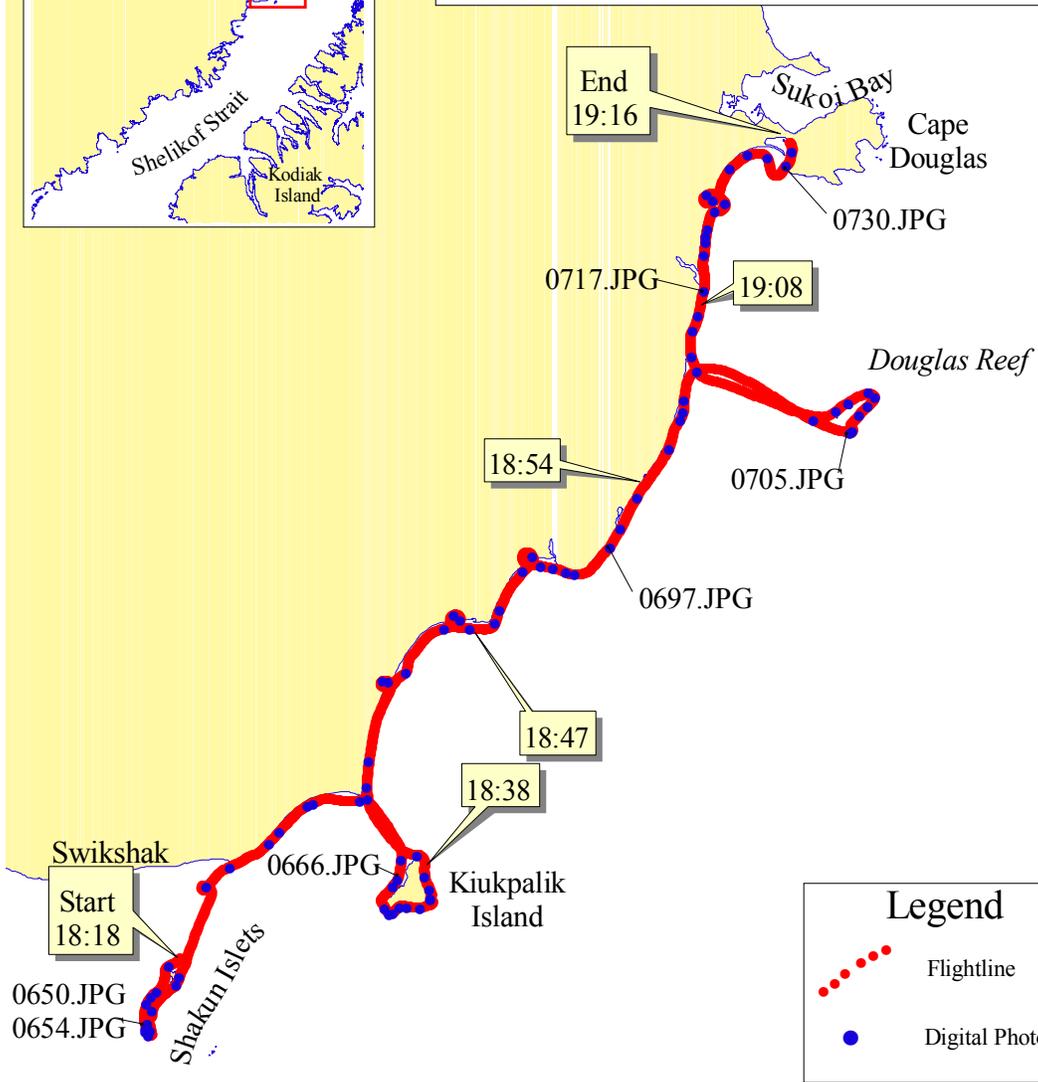
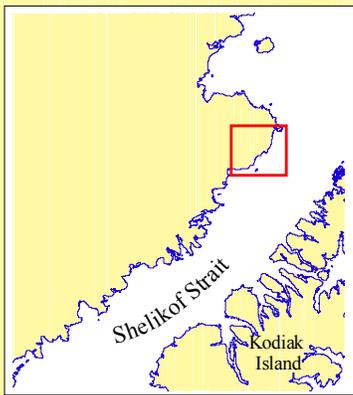


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-8
General Location: Cape Chiniak, Kaguyak, Swikshak
Date: June 14, 2003
Time Start: 15:09:56
Break start: 15:32:20
Break end: 17:48:22
Time Stop: 18:16:26
Tape Length: 50:32
Weather: Overcast, Fog, Light Winds
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
15:16:00	Lagoon at Cape Chiniak	Katmai_0592.jpg	16608_1	52
15:24:00	Kaguyak	Katmai_0598.jpg	16608_1	52
15:30:00	Rocky head at Swikshak (break)	Katmai_0604.jpg	16608_1	52
17:54:00	Big River at Swikshak	Katmai_0616.jpg	16608_1	52
18:06:00	Swikshak Lagoon	Katmai_0630.jpg	16608_1	52

2003 Katmai National Park Aerial Video Imaging Survey Tape # 9

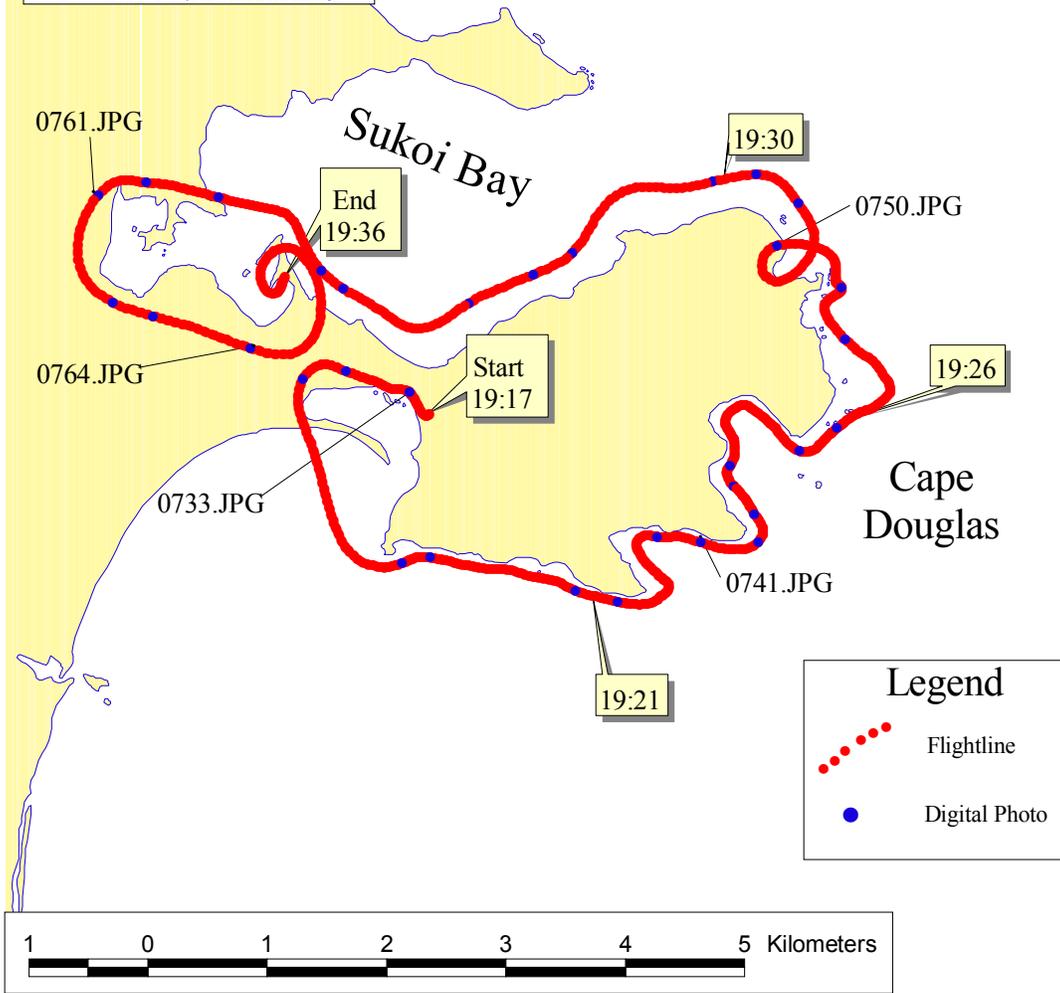
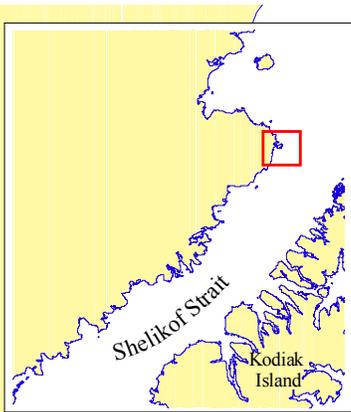


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-9
General Location: Swikshak Lagoon, Kuikpalik Island, Douglas Reef, Cape Douglas
Date: June 14, 2003
Time Start: 18:18:52
Time Stop: 19:16:20
Tape Length: 57:17
Weather: Overcast, Fog, Light Winds
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
18:21:00	Shakun Islets	Katmai_0650.jpg	16608_1	52
18:34:00	Kuikpalik Island	Katmai_0666.jpg	16608_1	52
19:01:00	Douglas Reef	Katmai_0705.jpg	16608_1	52
19:15:00	Lagoon at Cape Douglas	Katmai_0730.jpg	16608_1	52

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 10

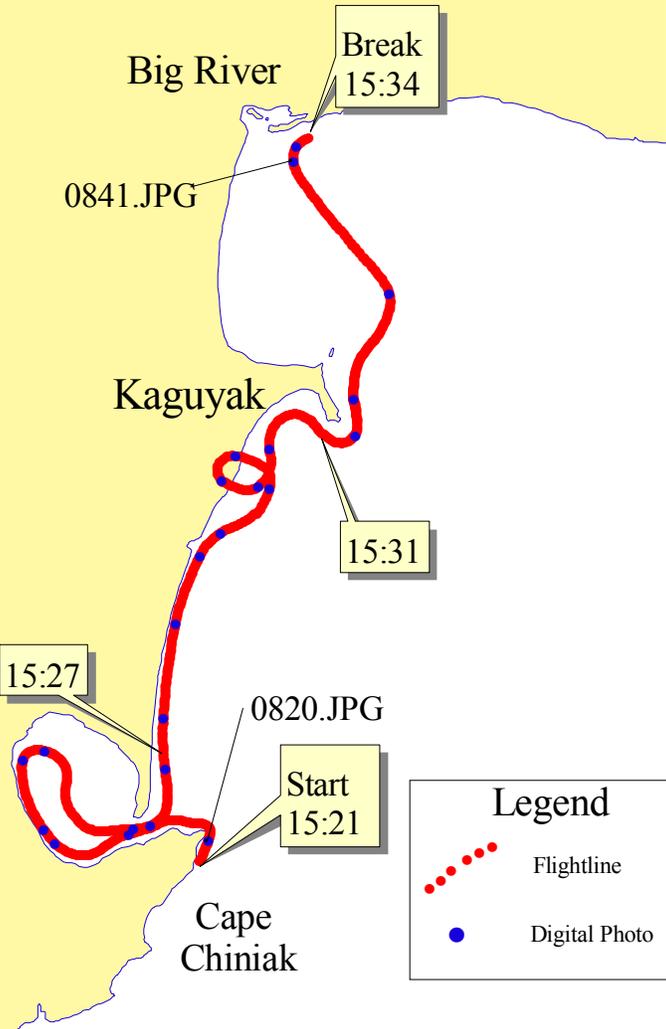
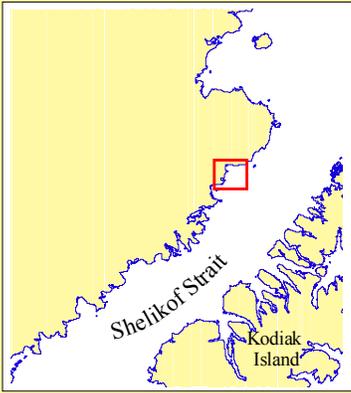


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-10
General Location: Cape Douglas, Sukoi Bay
Date: June 14, 2003
Time Start: 19:17:04
Time Stop: 19:36:54
Tape Length: 19:50
Weather: Overcast, Light Winds
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

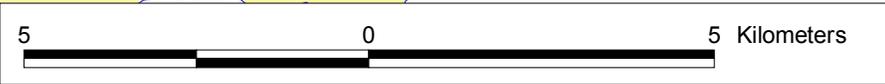
Time (UTC)	Location	Film Frame	Chart	Gazette Page
19:17:30	Lagoon at Cape Douglas	Katmai_0733.jpg	16608_1	52
19:28:00	Tip of Cape Douglas	Katmai_0750.jpg	16608_1	52
19:34:00	Lagoon in Sukoi Bay	Katmai_0761.jpg	16608_1	52
19:36:54	Fuel location in Sukoi Bay	Katmai_0764.jpg	16608_1	52

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 11a



Legend

- Flightline (represented by a red dotted line)
- Digital Photo (represented by a blue dot)

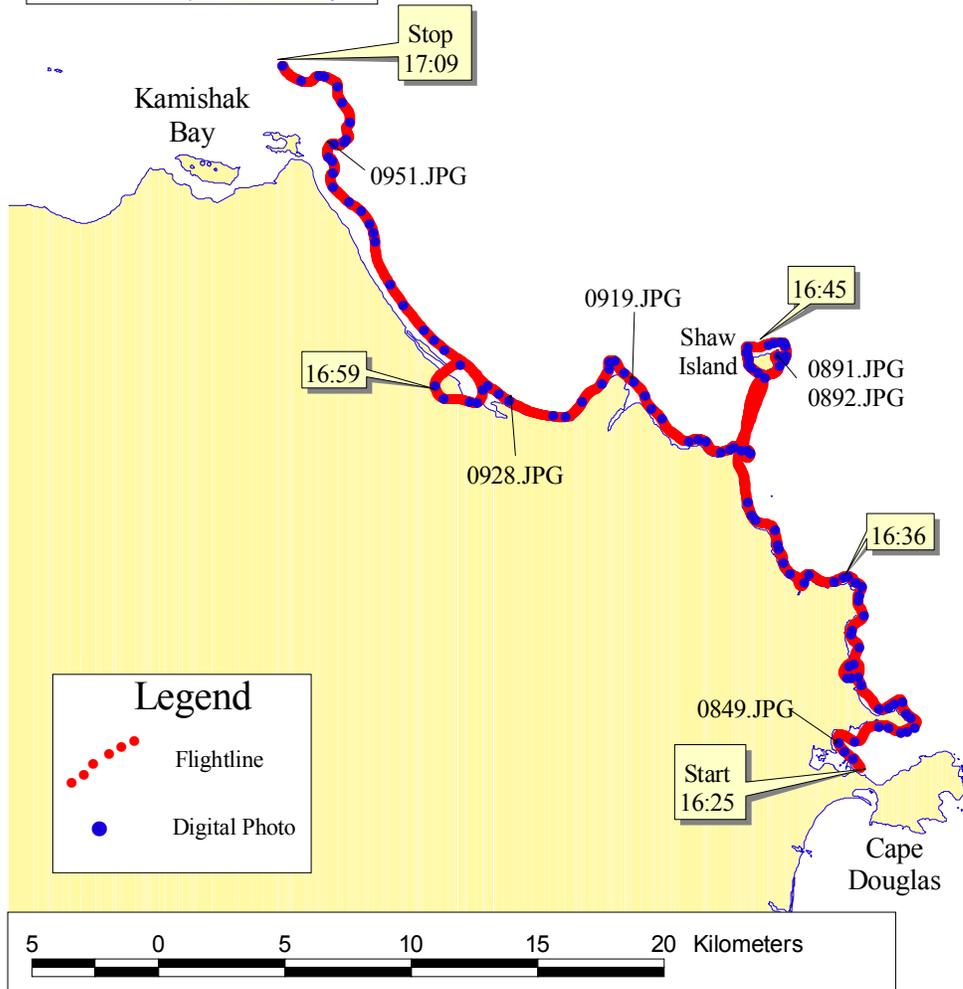
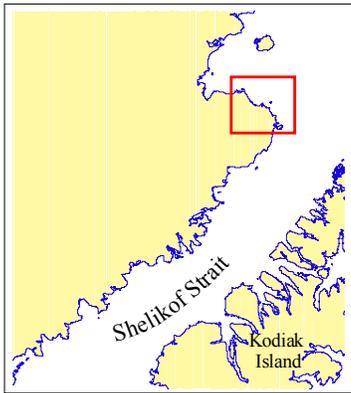


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-11a
General Location: Swikshak Bay, Cape Douglas, Shaw Island, Kamishak Bay
Date: June 15, 2003
Time Start: 15:21:54
Time Stop: 15:34:54 (15:00)
Tape Length: 36:55 (parts a & b)
Weather: Party cloudy, calm
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
15:22:00	Cape Chiniak	Katmai_0820.jpg	16608	52
15:34:00	Big River	Katmai_0841.jpg	16608	52

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 11b

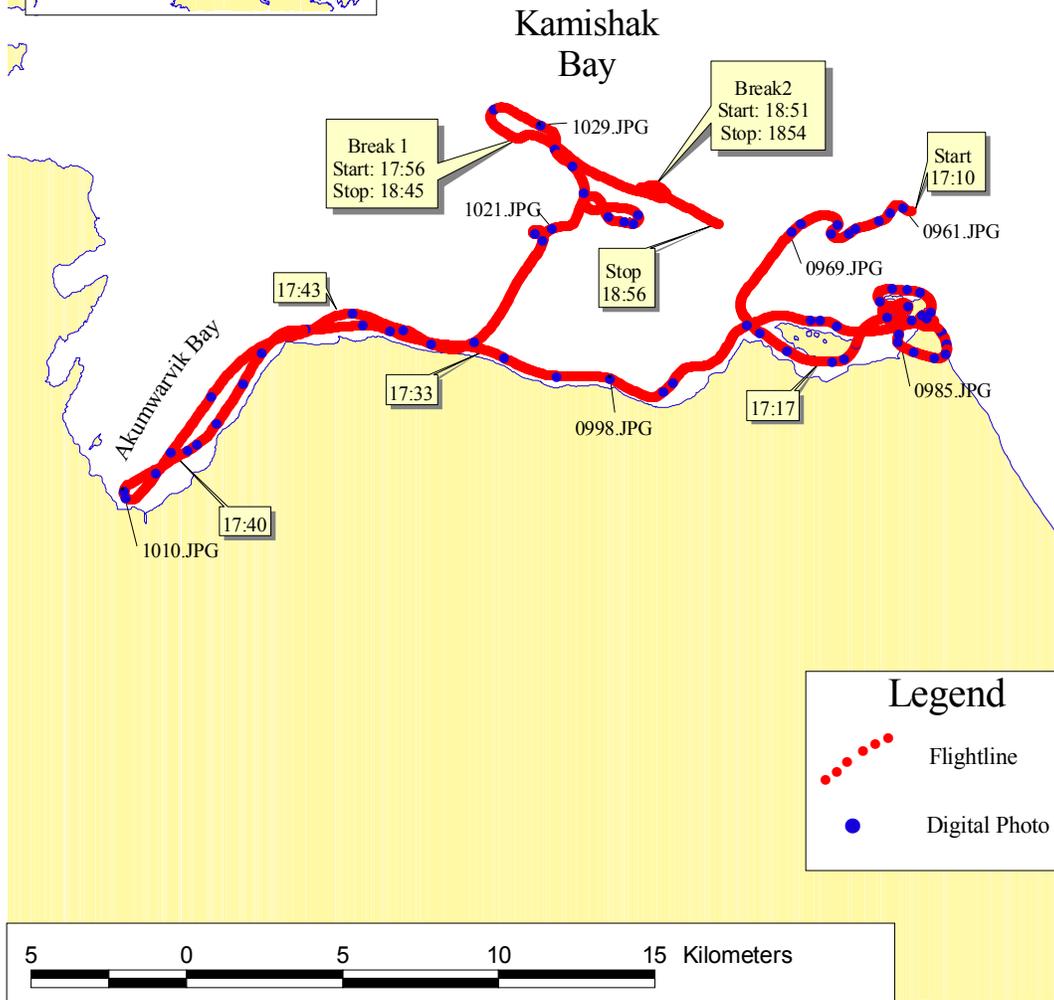
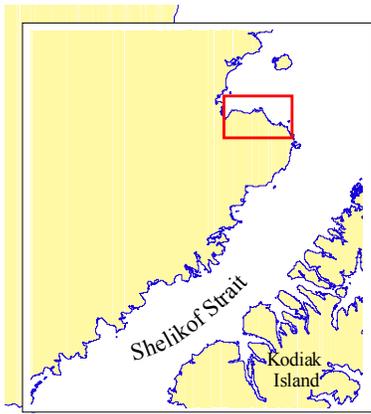


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-11b
General Location: Swikshak Bay, Cape Douglas, Shaw Island, Kamishak Bay
Date: June 15, 2003
Time Start: 16:25:12 (15:05)
Time Stop: 17:09:10
Tape Length: 36:55 (parts a&b)
Weather: Party cloudy, calm
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
15:22:00	Cape Chiniak	Katmai_0820.jpg	16608	52
15:34:00	Big River	Katmai_0841.jpg	16608	52
16:26:00	Sukoi Bay	Katmai_0849.jpg	16608	52
16:44:00	Shaw Island	Katmai_0892.jpg	16640	52,60
17:05:00	Reefs North of Douglas River	Katmai_0951.jpg	16640	60

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 12

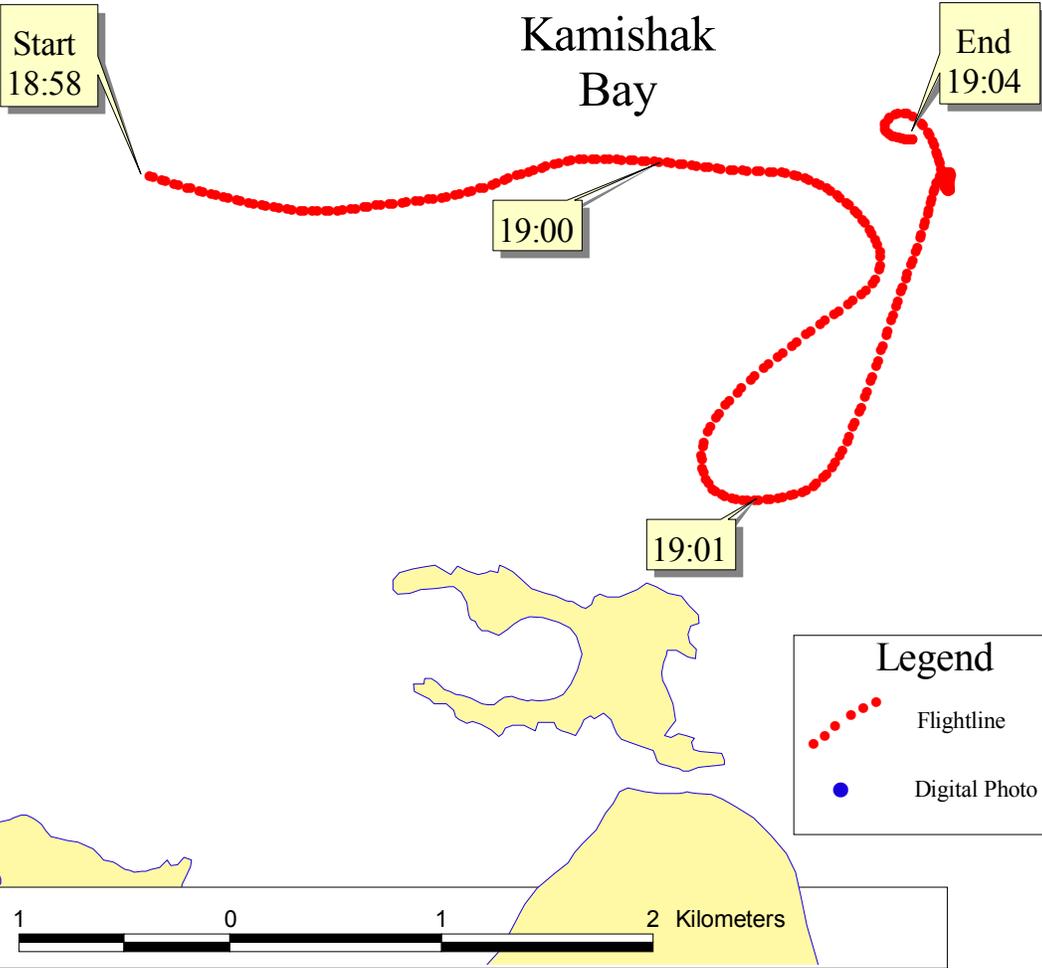
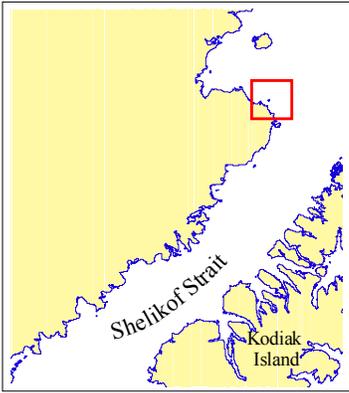


Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-12
General Location: Kamishak Bay, Akumwarvik Bay
Date: June 15, 2003
Time Start: 17:10:06
Break 1 Start: 17:56:10 (46:26)
Break 1 Stop: 18:45:54 (46:52)
Break 2 Start: 18:51:04 (52:02)
Break 2 Stop: 18:54:30 (55:19)
Time Stop: 18:56:08
Tape Length: 52:52
Weather: Party cloudy, calm
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
17:10:10	Reefs North of Douglas River	Katmai_0961.jpg	16640	60
17:24:00	Lagoon at Douglas River	Katmai_0985.jpg	16640	60
17:39:00	Head of Akumwarvik Bay	Katmai_1010.jpg	16640	60
17:49:00	Reefs in Kamishak Bay	Katmai_1021.jpg	16640	60

2003 Katmai National Park
Aerial Video Imaging Survey
Tape # 13



Katmai Coast 2003 Aerial Video Imaging Survey

Tape Number: Katmai-13
General Location: Reefs North of Douglas River
Date: June 15, 2003
Time Start: 18:58:34
Time Stop: 19:04:00
Tape Length: 5:27
Weather: Partly cloudy, calm
Electronic File: Katmai_a.shp, Katmaiphoto_a.shp, Katmai.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
19:05:00	Reefs North of Douglas River		16640	60

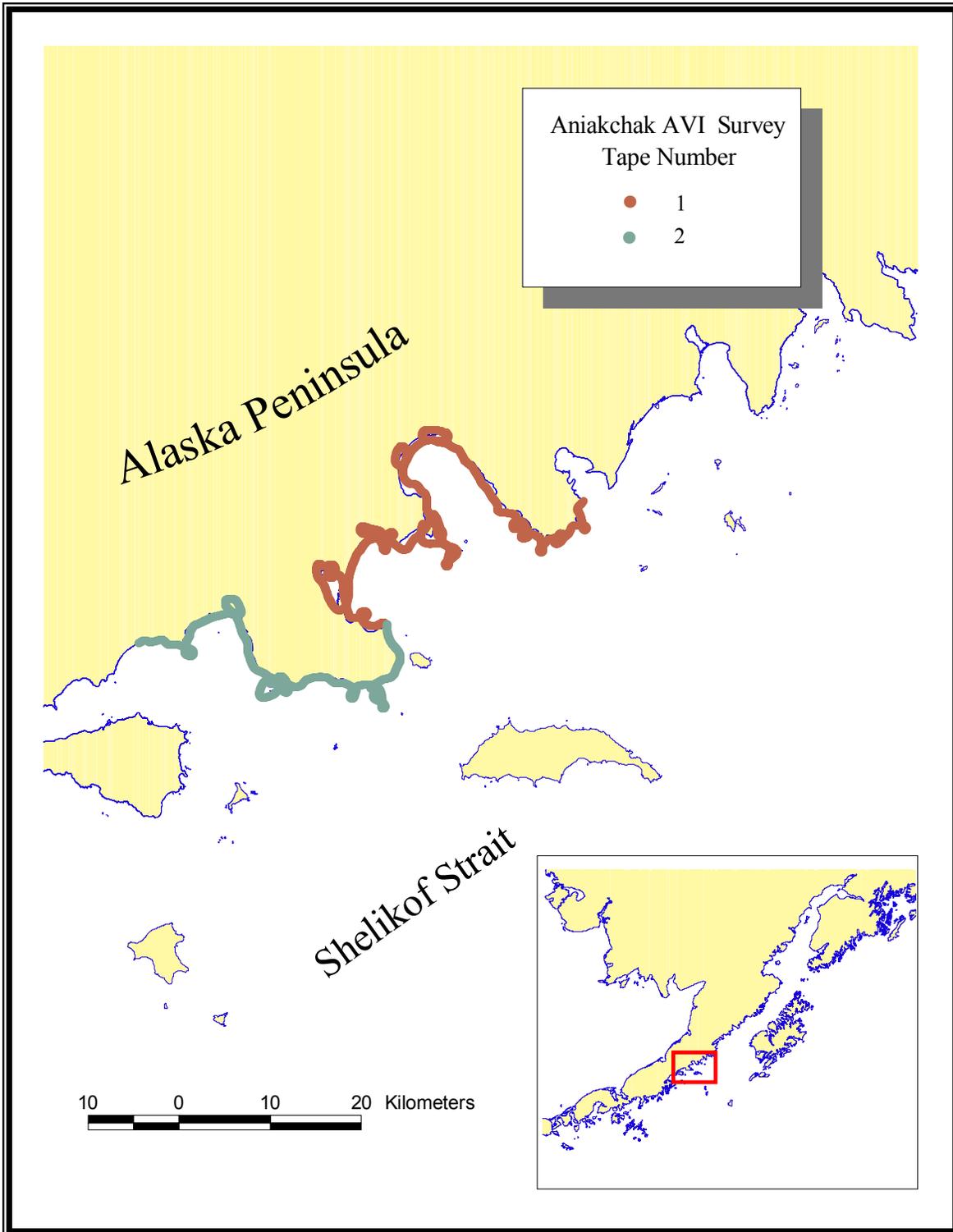


Figure 2. Location of individual tapes from the 2003 Aniakchak National Preserve AVI Survey.

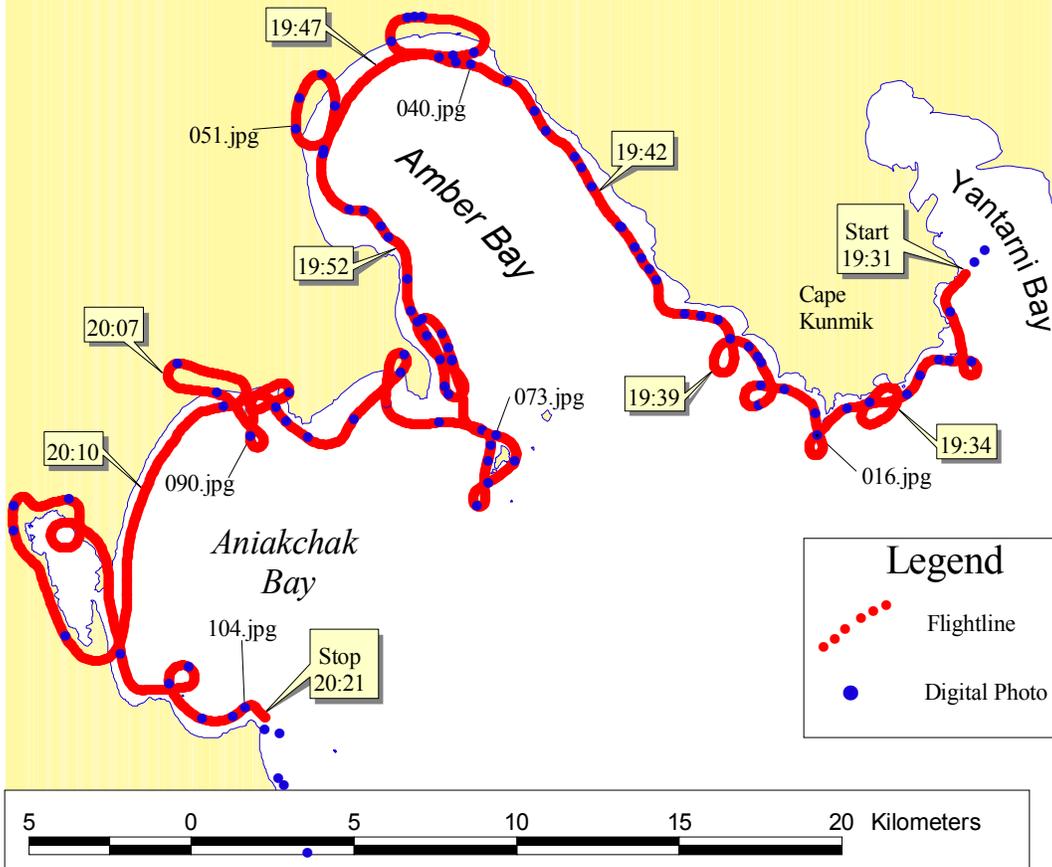
Aniakchak National Preserve

The aerial video survey for Aniakchak National Preserve took place on June 16th using an amphibious Cessna 185 as a filming platform.

Table 2. Aniakchak AVI Flight Personnel and Responsibilities,

Function	Individual/ Affiliation	Responsibilities
<i>Geomorphologist project leader</i>	John Harper CORI	co-ordination of survey, video imaging, geomorphology commentary, project reporting
<i>coastal ecologist</i>	Susan Saupe, CIRCAC	biology commentary, digital photographs
<i>Pilot</i>	Fred Ball, Andrew Airways Inc.	

2003 Aniakchak National Preserve
Aerial Video Imaging Survey
Tape # 1

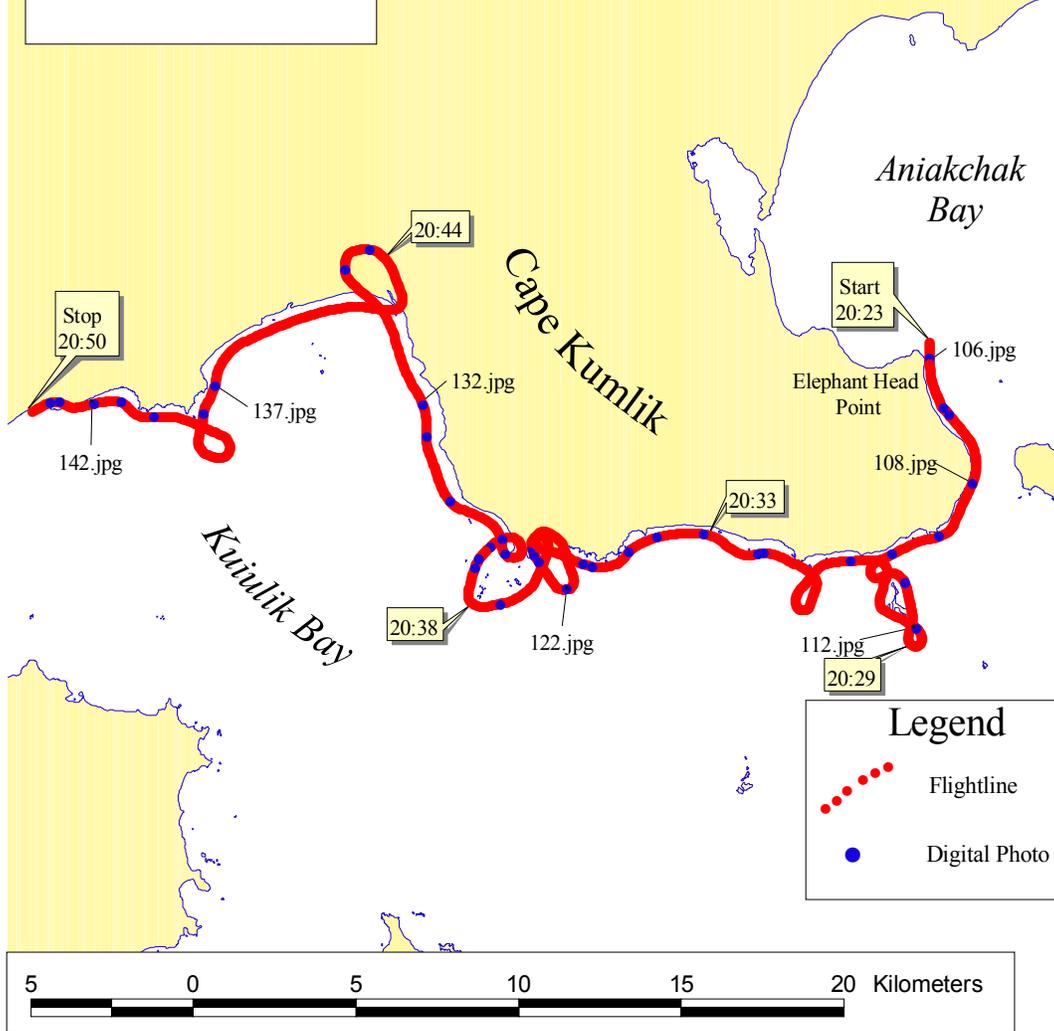


Aniakchak Aerial Video Imaging Survey

Tape Number: Aniakchak -1
General Location: Yantarni Bay Bay, Amber Bay, Aniakchak Bay
Date: June 16, 2003
Time Start: 19:31:12
Time Stop: 20:21:40
Tape Length: 58:34
Weather: High Overcast
Electronic File: Aniakchak_a.shp, Aniakchakphoto_a.shp, Aniakchak.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
19:36:46	Cape Kunmik	016.jpg	16568	139
19:43:54	head of Amber Bay	040.jpg	16568	139
19:48:10	Main Creek, Amber Bay	051.jpg	16568	139
19:57:40	Cape Ayutka & Garden Is	073.jpg	16568	139
20:06:40	Aniakchak River mouth	090.jpg	16568	139
20:21:40	Elephant Head Pt	104.jpg	16568	139

2003 Aniakchak National Preserve
Aerial Video Imaging Survey
Tape # 2



Aniakchak Aerial Video Imaging Survey

Tape Number: Aniakchak -2
General Location: Cape Kumlik, Kujulik Bay,
Date: June 16, 2003
Time Start: 20:23:52
Time Stop: 20:50:52
Tape Length: 29:32
Weather: High Overcast
Electronic File: Aniakchak_a.shp, Aniakchakphoto_a.shp, Aniakchak.txt

Time (UTC)	Location	Film Frame	Chart	Gazette Page
20:24:05	Elephant Head Pt	106.jpg	16566	139
20:25:54	W of Kumlik Is	108.jpg	16566	139
20:41:47	Middle of E. Side of Kujulik Bay	132.jpg	16566	139
20:47:11	headland, north-central Kujulik Bay	137.jpg	16566	139
20:50:10	W. boundary, Anaiakchak National Park	142.jpg	16566	139

