

FLIGHT REPORT
ShoreZone Aerial Video Imaging (AVI) Survey
Team Chedabucto Bay (CD)
September 27th – October 2nd, 2023



Gut Rock, Framboise Cove (ns23_cd_16130)

Prepared for:
Department of Fisheries and Oceans

Prepared by:
Sea Change Marine Conservation Society



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This flight report summarizes the field activities of the ShoreZone aerial video imaging survey conducted out of Sydney, Nova Scotia on September 27th – October 2nd, 2023. The survey was conducted by SeaChange Marine Conservation Society (SC) for the Department of Fisheries and Oceans (DFO). A Bell 206 L4 helicopter was chartered from Breton Air based in Sydney, Nova Scotia for the aerial survey. Table 1 provides a summary of field crew affiliations and responsibilities.

Table 1. Flight Personnel and Responsibilities for Team Chedabucto Bay (CD).

Crew Member	Individual / Affiliation	Responsibilities
<i>Geomorphologists</i>	Kalen Morrow SC	Videography, geomorphological attribute commentary, survey planning & coordination, post-flight data processing
<i>Coastal Ecologists</i>	Cole Rader SC	Digital photography, biological attribute commentary, post-flight data processing
<i>In-Flight Navigators</i>	Sean Daley SC	In-flight navigation, survey planning, post-flight data processing
<i>Pilot</i>	Matt Wallace Breton Air	Operation of Bell 206 L4 aircraft

The tables and figures on the following pages summarize the extent and location of the 2,092 km of shoreline imagery collected in and around Bras d’Or Lake, Chedabucto Bay and Gabarus Bay.

All imagery was collected according to the latest ShoreZone protocol (Cook *et al.* 2017). Imagery was collected looking at the shoreline from the left side of the aircraft with the doors removed for better field of view. The helicopter maintained a speed of approximately 100km/hr at an altitude of 100m while at a distance of 100m from the low water line, allowing the imagery to be collected at an oblique angle to the intertidal. The imagery is linked to the 1-second positional fixes collected by the GPS in the helicopter by a date-time code (yyyymmddhhmmss). That flightline shapefile will be provided with the imagery.

A total of 18.5 hours of HD video and 18,442 high resolution photos were collected during the survey. This report contains summary tables and maps for the survey illustrating locations, lengths, and key geographic points. The final deliverables will be provided to DFO on a hard drive and will be posted on the [East Coast ShoreZone ArcGIS site](#) which can also be found at www.ShoreZone.org.

Table 2. List of video segments for the September 27th – October 2nd, 2023, Team Chedabucto Bay (CD) ShoreZone aerial imaging survey. Corresponds with Figure 1 on the following page.

Video Number	Location	Page No.
NS23_CD_01	Lennox Passage, Couteau Inlet	4
NS23_CD_02	Bourgeois Inlet, St. Peter's Bay, Michaud Cove	6
NS23_CD_03	Andrew Island, Canso, Chedabucto Bay	8
NS23_CD_04	Guysborough Harbour, Chedabucto Bay	10
NS23_CD_05	Grand Narrows, Patricks Channel, Bras d'Or Lake	12
NS23_CD_06	Nyanza Bay, Baddeck Bay, Bras d'Or Lake	14
NS23_CD_07	Strait of Canso, Chedabucto Bay	16
NS23_CD_08	River Inhabitants, The Big Basin, The Little Basin	18
NS23_CD_09	Wycocomagh Bay, Bras d'Or Lake	20
NS23_CD_10	Lennox Passage, Haddock Harbour, Isle Madame	22
NS23_CD_11	Janvrin Island, Arichat Harbour, Isle Madame	24
NS23_CD_12	Pete-de-Grat Island, Bay of Rocks, Isle Madame	26
NS23_CD_13	North Basin, Barra Strait, Bras d'Or Lake	28
NS23_CD_14	Grand River, St. Esprit Lake, St. Esprit Island	30
NS23_CD_15	Capelin Cove, Mary Anns Brook, Fullers Gut	32
NS23_CD_16	Fourchu Harbour, Belfy Lake, Fourchu Bay	34
NS23_CD_17	Gabarus Bay, Louisbourg Harbour, Cape Breton	36

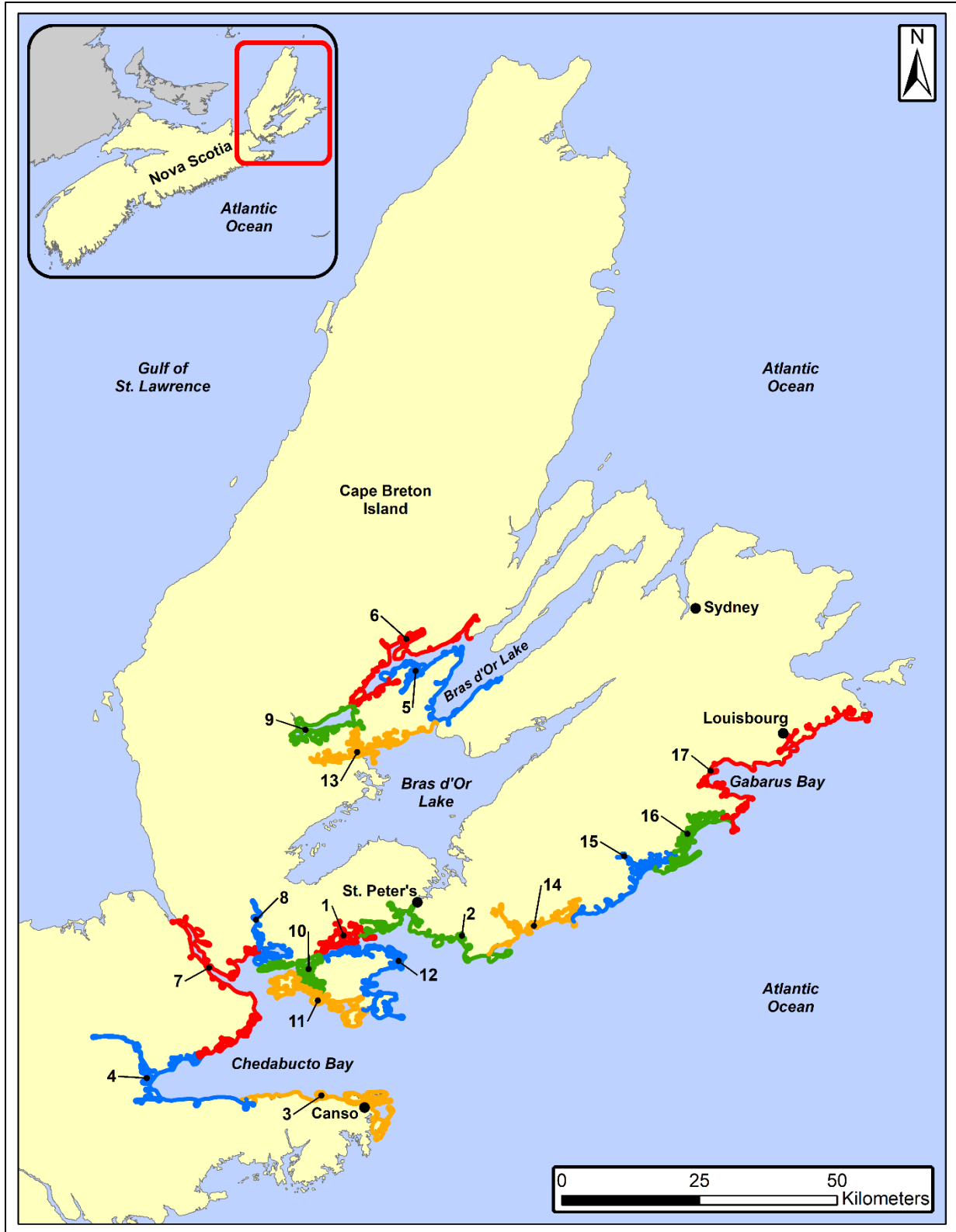


Figure 1. Video location map for the September 27th – October 2nd, 2023, Team Chedabucto Bay (CD) ShoreZone aerial imaging survey conducted out of Sydney, Nova Scotia.

2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_01

Date: 27 September 2023

General Location: Lennox Passage, Couteau Inlet

Time Start (UTC): 15:16:08

Geo: Morrow

Time End (UTC): 16:05:56

Bio: Rader

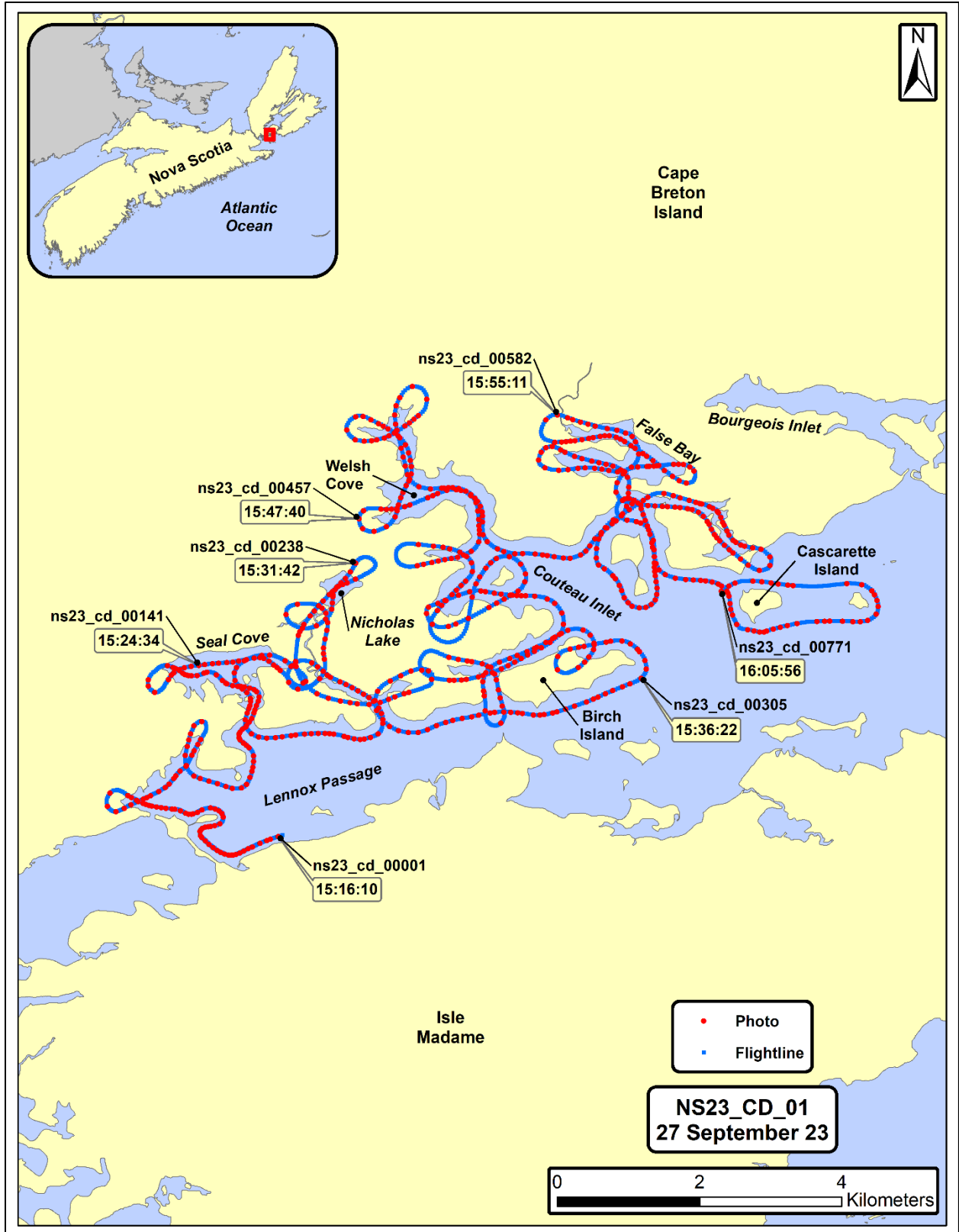
Video Length: 49 min 49 sec

Nav: Daley

Weather: High overcast with sun

Pilot: Wallace

Time (UTC)	Location	Photo
15:16:10	Lennox Passage, Isle Madame	ns23_cd_00001
15:24:34	Seal Cove	ns23_cd_00141
15:31:42	Nicholas Lake	ns23_cd_00238
15:36:22	Birch Island	ns23_cd_00305
15:47:40	Welsh Cove	ns23_cd_00457
15:55:11	False Bay	ns23_cd_00582
16:05:56	Cascarette Island	ns23_cd_00771



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_02

Date: 27 September 2023

General Location: Bourgeois Inlet, St. Peter's Bay, Michaud Cove

Time Start (UTC): 16:06:30

Geo: Morrow

Time End (UTC): 17:07:20

Bio: Rader

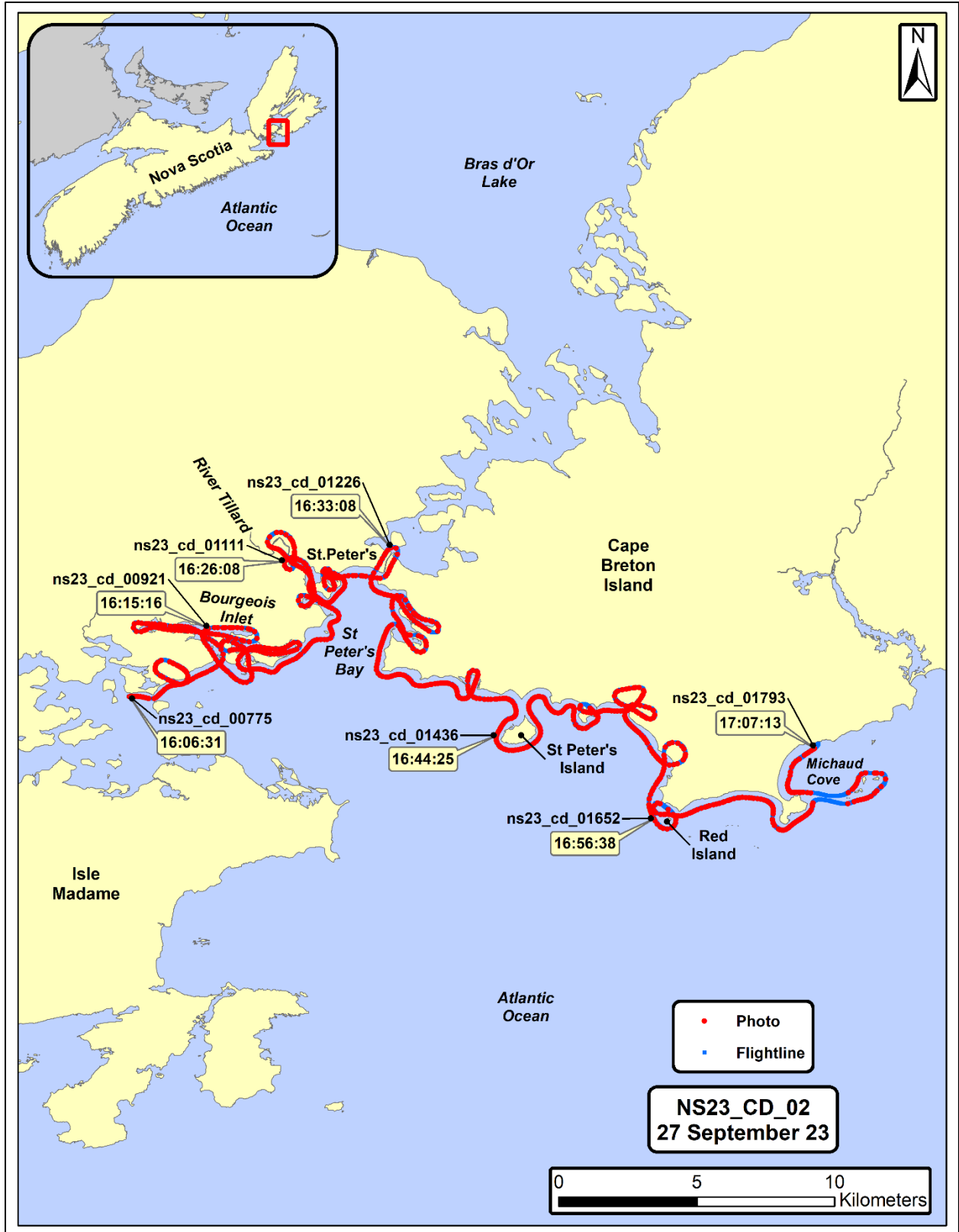
Video Length: 60 min 51 sec

Nav: Daley

Weather: High overcast with sun

Pilot: Wallace

Time (UTC)	Location	Photo
16:06:31	Savage Pt., Lennox Passage	ns23_cd_00775
16:15:16	Bourgeois Inlet	ns23_cd_00921
16:26:08	River Tillard	ns23_cd_01111
16:33:08	St. Peter's Canal	ns23_cd_01226
16:44:25	St. Peter's Island	ns23_cd_01436
16:56:38	Red Island	ns23_cd_01652
17:07:13	Michaud Cove	ns23_cd_01793



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_03

Date: 28 September 2023

General Location: Andrew Island, Canso, Chedabucto Bay

Time Start (UTC): 15:37:20

Geo: Morrow

Time End (UTC): 16:39:52

Bio: Rader

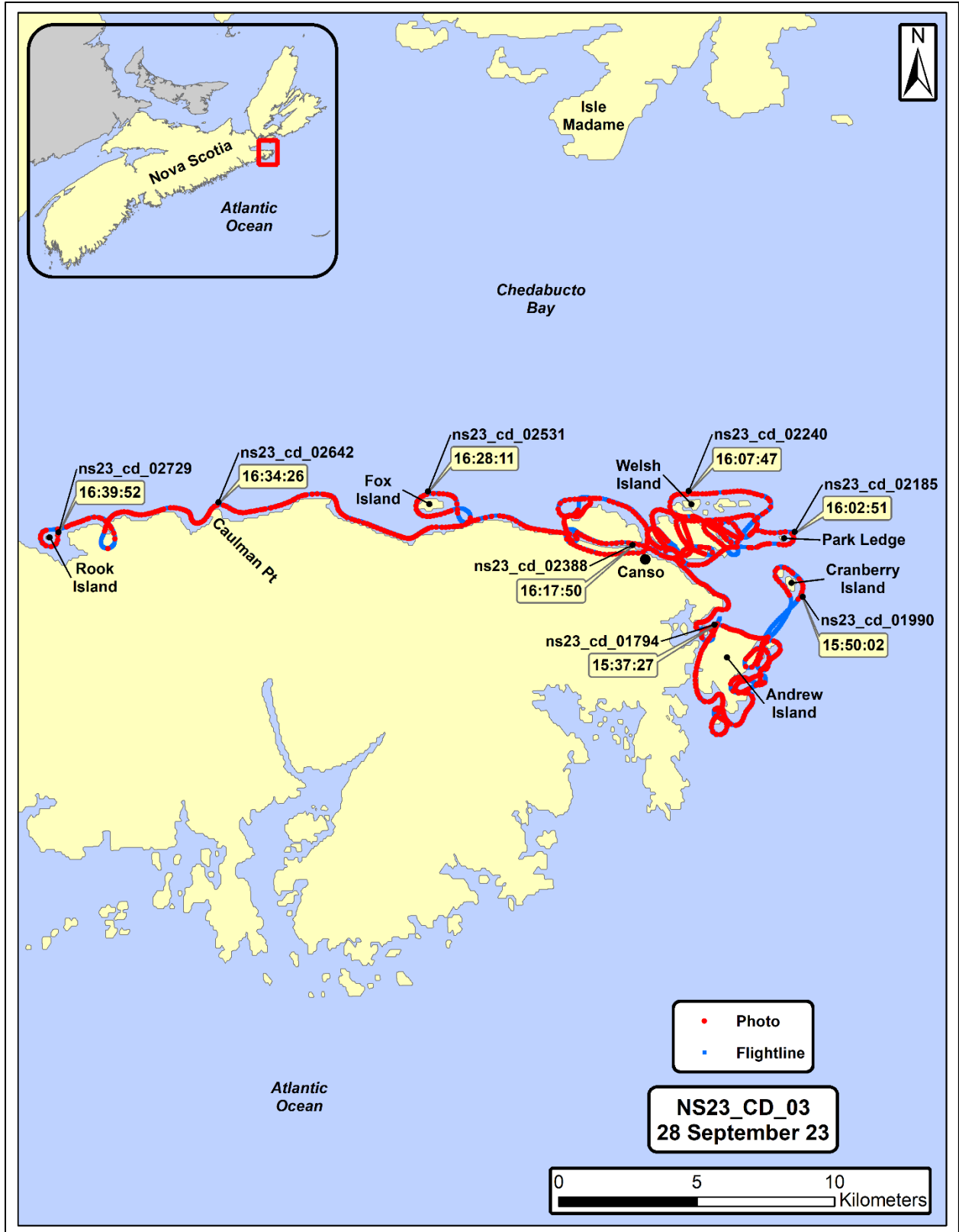
Video Length: 1 hr 2 min 33 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
15:37:27	Barse Pt., Andrew Island	ns23_cd_01794
15:50:02	Cranberry Island	ns23_cd_01990
16:02:51	Park Ledge	ns23_cd_02185
16:07:47	Welsh Island	ns23_cd_02240
16:17:50	Canso	ns23_cd_02388
16:28:11	Fox Island	ns23_cd_02531
16:34:26	Caulman Pt.	ns23_cd_02642
16:39:52	Rook Island	ns23_cd_02729



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_04

Date: 28 September 2023

General Location: Guysborough Harbour, Chedabucto Bay

Time Start (UTC): 16:40:08

Geo: Morrow

Time End (UTC): 17:50:30

Bio: Rader

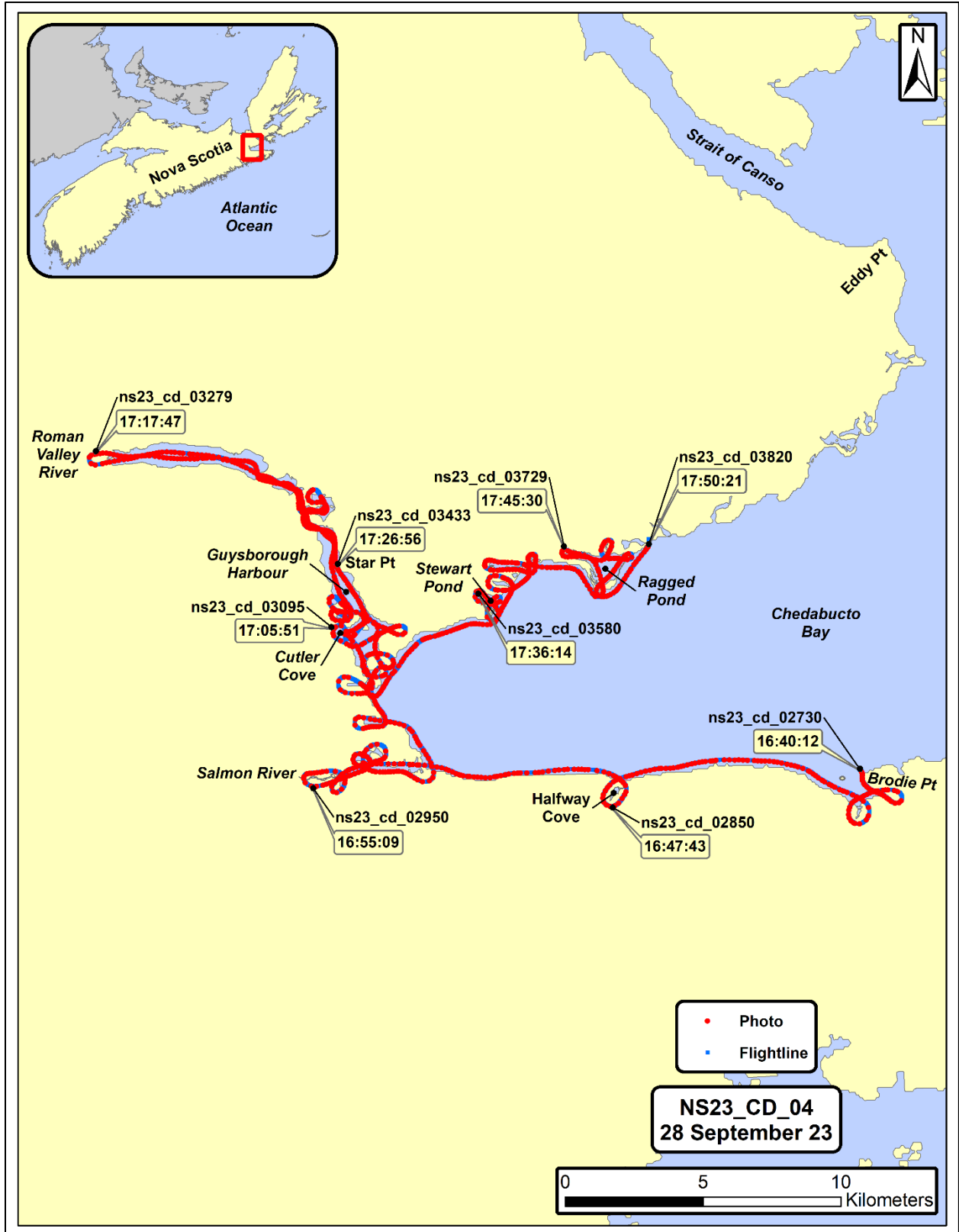
Video Length: 1 hr 10 min 23 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
16:40:12	Brodie Pt.	ns23_cd_02730
16:47:23	Halfway Cove	ns23_cd_02850
16:55:09	Salmon River	ns23_cd_02950
17:05:51	Cutler Cove	ns23_cd_03095
17:17:47	Roman Valley River	ns23_cd_03279
17:26:56	Star Pt., Guysborough Harbour	ns23_cd_03433
17:36:14	Stewart Pond	ns23_cd_03580
17:45:30	Ragged Pond	ns23_cd_03729
17:50:21	East of Ragged Pt., Chedabucto Bay	ns23_cd_03820



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_05

Date: 28 September 2023

General Location: Grand Narrows, Patricks Channel, Bras d'Or Lake

Time Start (UTC): 18:50:54

Geo: Morrow

Time End (UTC): 19:55:08

Bio: Rader

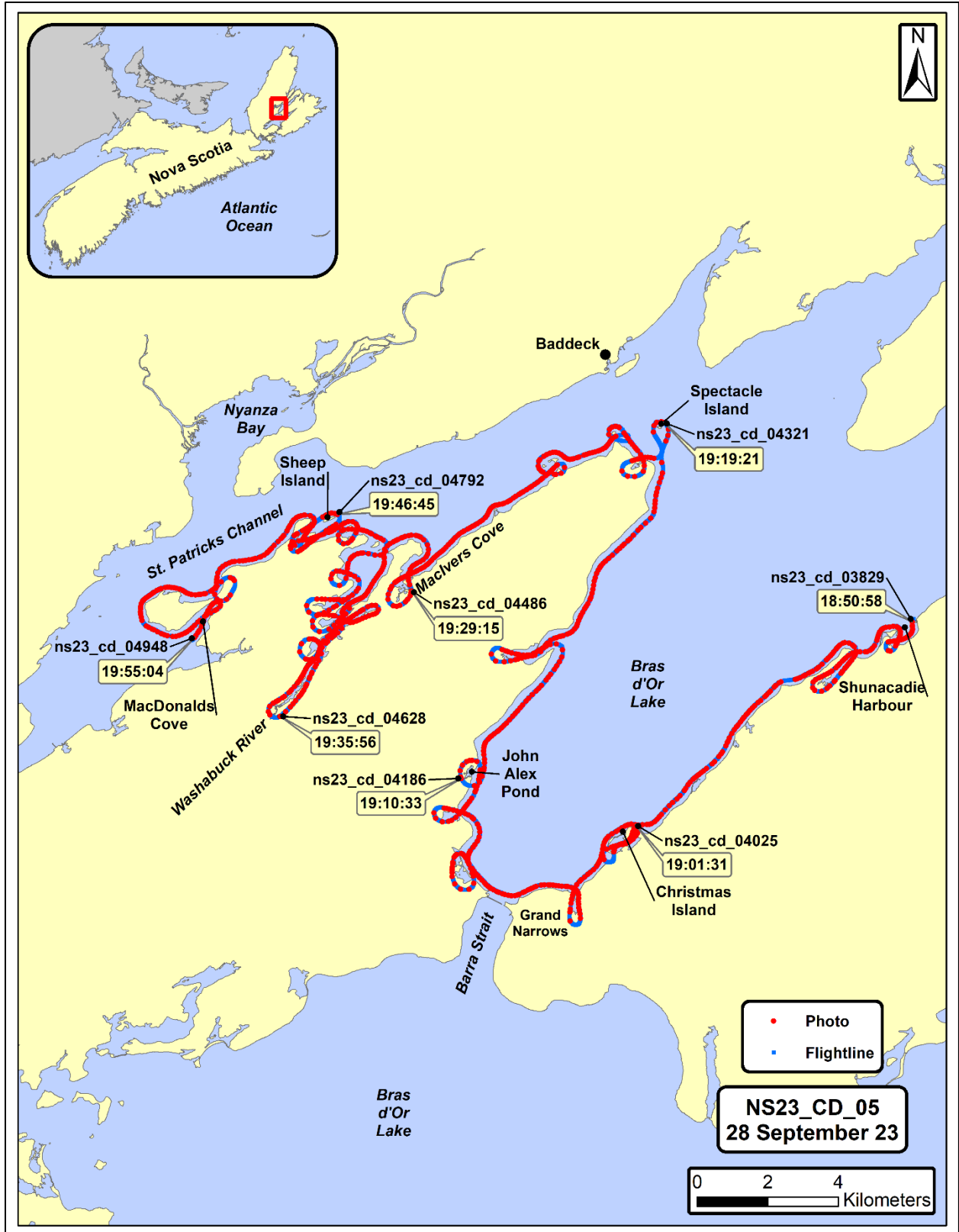
Video Length: 1 hr 4 min 15 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
18:50:58	Shunacadie Harbour	ns23_cd_03829
19:01:31	Christmas Island	ns23_cd_04025
19:10:33	John Alex Pond	ns23_cd_04186
19:19:21	Spectacle Island	ns23_cd_04321
19:29:15	Maclvers Cove	ns23_cd_04486
19:35:56	Washabuck River	ns23_cd_04628
19:46:45	Sheep Island, St. Patricks Channel	ns23_cd_04792
19:55:04	MacDonalds Cove	ns23_cd_04948



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_06

Date: 28 September 2023

General Location: Nyanza Bay, Baddeck Bay, Bras d'Or Lake

Time Start (UTC): 19:55:48

Geo: Morrow

Time End (UTC): 21:01:59

Bio: Rader

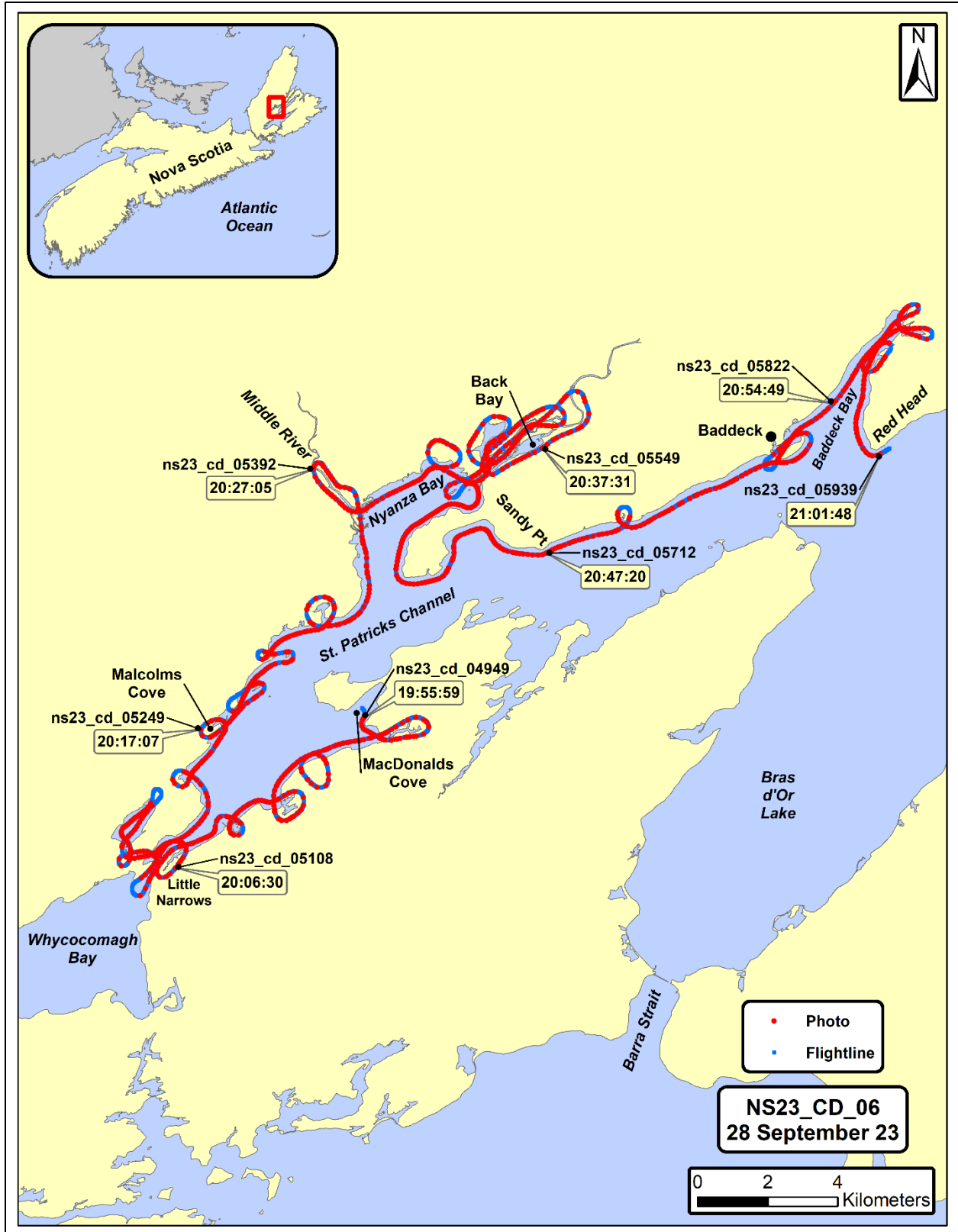
Video Length: 1 hr 6 min 12 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
19:55:59	MacDonalds Cove	ns23_cd_04949
20:06:30	Little Narrows	ns23_cd_05108
20:17:07	Malcolms Cove	ns23_cd_05249
20:27:05	Middle River	ns23_cd_05392
20:37:31	Back Bay	ns23_cd_05549
20:47:20	Sandy Pt., St. Patricks Channel	ns23_cd_05712
20:54:49	Baddeck Bay	ns23_cd_05822
21:01:48	Red Head	ns23_cd_05939



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_07

Date: 29 September 2023

General Location: Strait of Canso, Chedabucto Bay

Time Start (UTC): 16:31:50

Time End (UTC): 17:43:16

Video Length: 1 hr 11 min 27 sec

Weather: Sun

Geo: Morrow

Bio: Rader

Nav: Daley

Pilot: Wallace

Time (UTC)	Location	Photo
16:31:55	Ragged Pond	ns23_cd_05940
16:42:17	St. Francis Harbour	ns23_cd_06086
16:50:54	Oyster Ponds	ns23_cd_06203
16:59:39	Eddy Pt.	ns23_cd_06334
17:08:12	Pirate Harbour	ns23_cd_06464
17:13:55	Canso Causeway, Strait of Canso	ns23_cd_06542
17:21:10	Ship Harbour	ns23_cd_06635
17:32:13	Bear Cove	ns23_cd_06810
17:43:11	River Pt.	ns23_cd_06966



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_08

Date: 29 September 2023

General Location: River Inhabitants, The Big Basin, The Little Basin

Time Start (UTC): 17:43:54

Geo: Morrow

Time End (UTC): 18:30:30

Bio: Rader

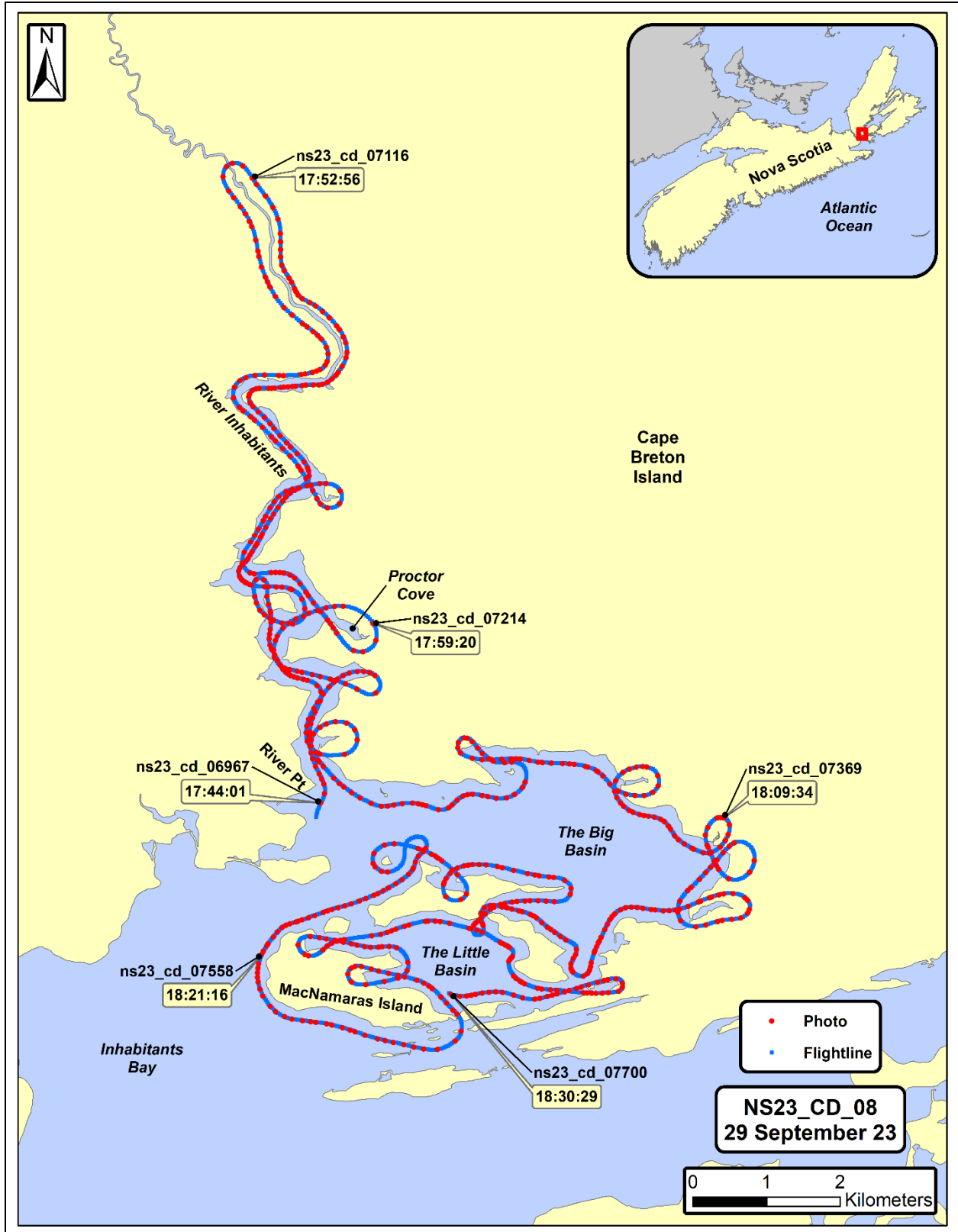
Video Length: 46 min 37 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
17:44:01	River Pt.	ns23_cd_06967
17:52:56	River Inhabitants	ns23_cd_07116
17:59:20	Proctor Cove, River Inhabitants	ns23_cd_07214
18:09:34	The Big Basin	ns23_cd_07369
18:21:16	MacNamaras Island, Inhabitants Bay	ns23_cd_07558
18:30:29	The Little Basin	ns23_cd_07700



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_09

Date: 29 September 2023

General Location: Wycocomagh Bay, Bras d'Or Lake

Time Start (UTC): 19:20:30

Geo: Morrow

Time End (UTC): 20:09:04

Bio: Rader

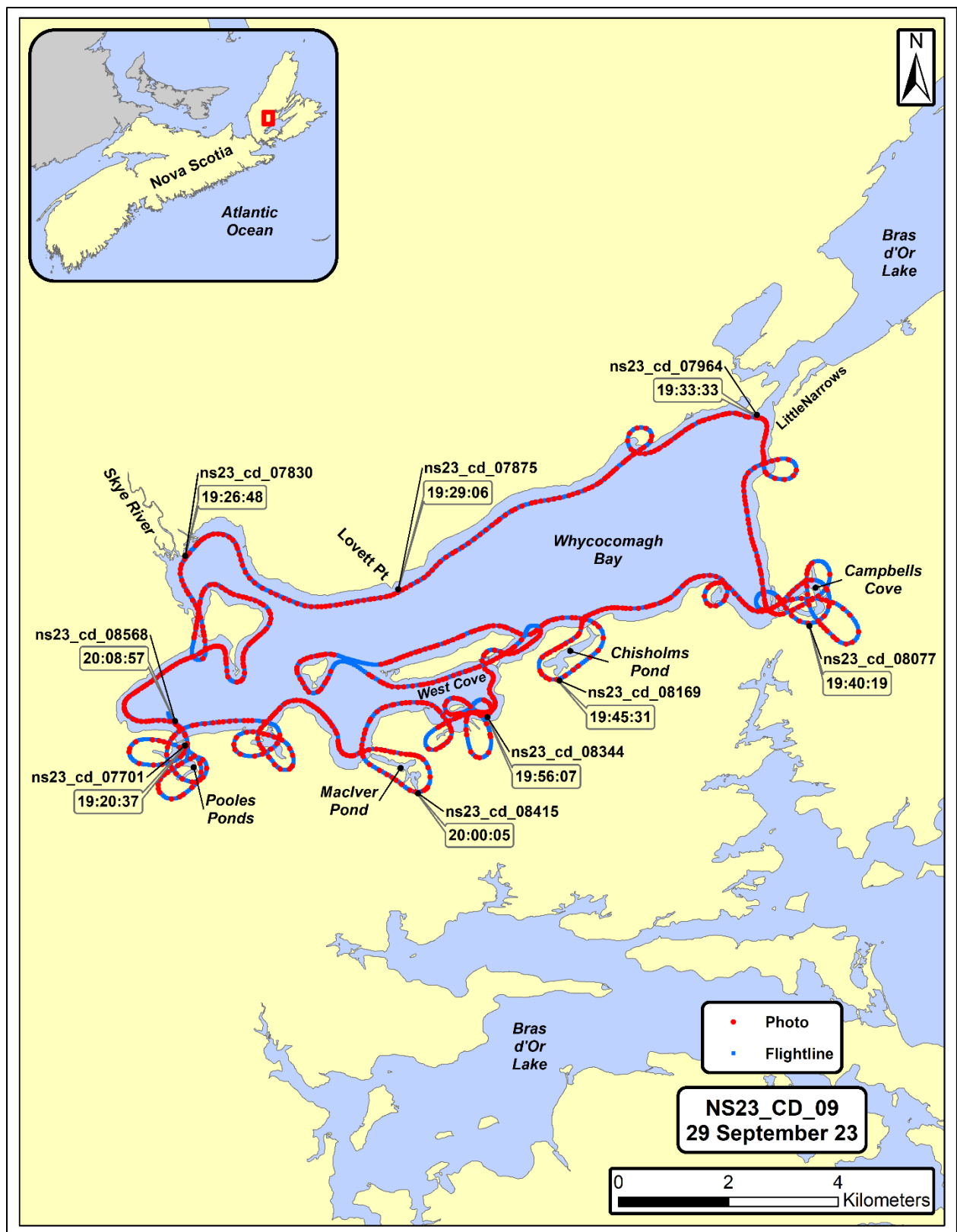
Video Length: 48 min 35 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
19:20:37	Pooles Ponds	ns23_cd_07701
19:26:48	Skye River	ns23_cd_07830
19:29:06	Lovett Pt.	ns23_cd_07875
19:33:33	Little Narrows	ns23_cd_07964
19:40:19	Campbells Cove	ns23_cd_08077
19:45:31	Chrisholms Pond	ns23_cd_08169
19:56:07	West Cove	ns23_cd_08344
20:00:05	Maclver Pond	ns23_cd_08415
20:08:57	Pooles Pond	ns23_cd_08568



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_10

Date: 30 September 2023

General Location: Lennox Passage, Haddock Harbour, Isle Madame

Time Start (UTC): 16:43:40

Geo: Morrow

Time End (UTC): 17:44:10

Bio: Rader

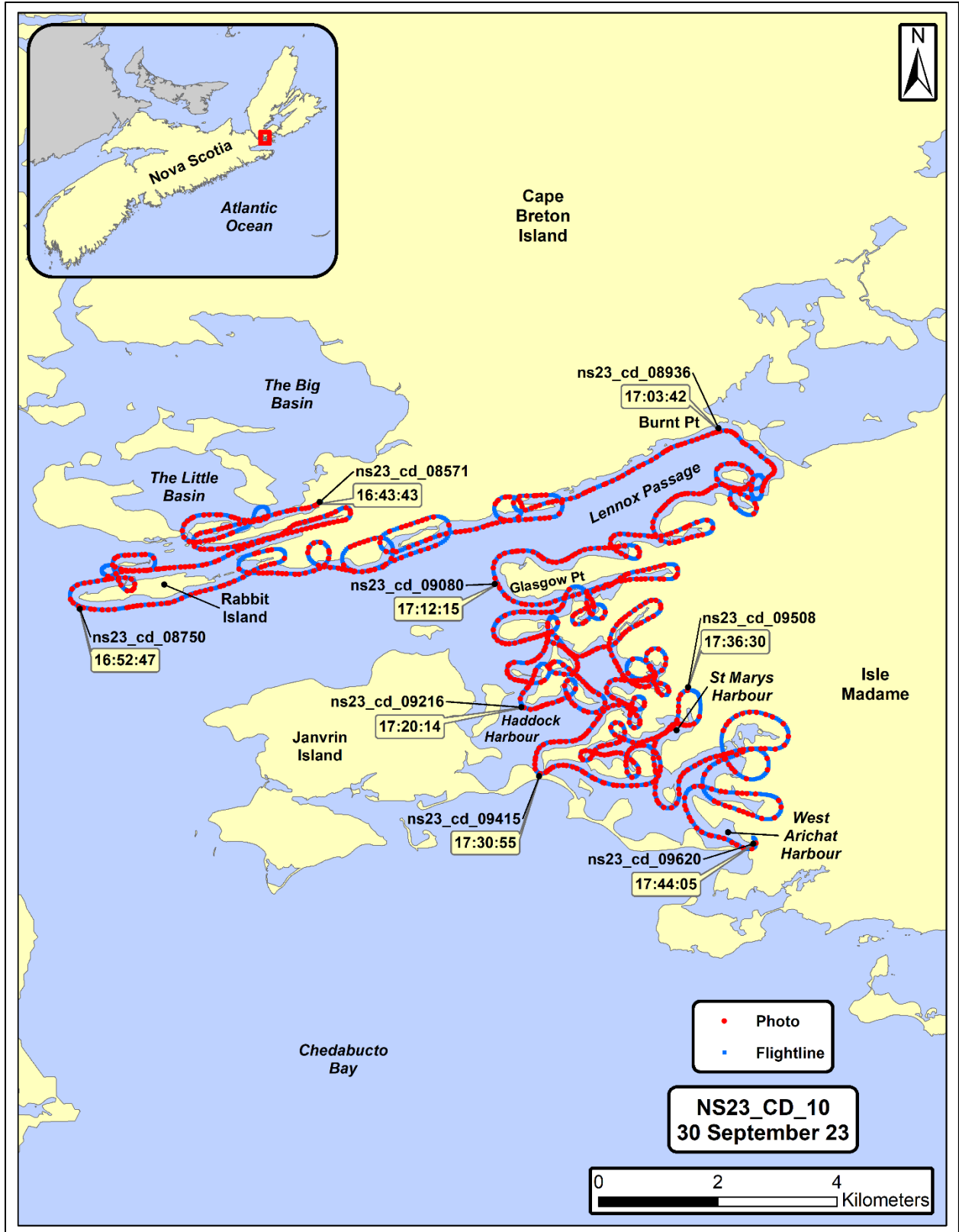
Video Length: 60 min 31 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
16:43:43	The Little Basin	ns23_cd_08571
16:52:47	Rabbit Island	ns23_cd_08750
17:03:42	Burnt Pt., Lennox Passage	ns23_cd_08936
17:12:15	Glasgow Pt., Isle Madame	ns23_cd_09080
17:20:14	Haddock Harbour	ns23_cd_09216
17:30:55	Haddock Harbour	ns23_cd_09415
17:36:30	St. Marys Harbour	ns23_cd_09508
17:44:05	West Arichat Harbour	ns23_cd_09620



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_11

Date: 30 September 2023

General Location: Janvrin Island, Arichat Harbour, Isle Madame

Time Start (UTC): 17:44:14

Geo: Morrow

Time End (UTC): 18:50:48

Bio: Rader

Video Length: 1 hr 6 min 35 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
17:44:22	Delorier Island, West Arichat Harbour	ns23_cd_09621
17:56:28	Campbell Island	ns23_cd_09821
18:06:44	Janvrin Pt., Janvrin Island	ns23_cd_09997
18:16:53	Delorier Island	ns23_cd_10177
18:26:14	Jerseyman Island	ns23_cd_10337
18:35:09	Arichat Harbour	ns23_cd_10484
18:44:11	Moyac Pt., Isle Madame	ns23_cd_10619
18:50:37	Spider Island, Petit-de-Grat Inlet	ns23_cd_10729



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_12

Date: 30 September 2023

General Location: Pete-de-Grat Island, Bay of Rocks, Isle Madame

Time Start (UTC): 19:31:32

Geo: Morrow

Time End (UTC): 20:50:12

Bio: Rader

Video Length: 1 hr 18 min 41 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
19:31:36	Great Barachois	ns23_cd_10730
19:38:15	Green Island	ns23_cd_10848
19:44:09	Flat Pt., Petit-de-Grat Island	ns23_cd_10945
19:54:45	Rocky Islets, Bay of Rocks	ns23_cd_11148
20:05:26	Maughers Pond	ns23_cd_11321
20:14:57	Little Barachois	ns23_cd_11472
20:26:20	Bernard Island	ns23_cd_11656
20:39:07	Poulamon Bay	ns23_cd_11864
20:50:11	Benoit Island, Lennox Passage	ns23_cd_12035



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_13

Date: 1 October 2023

General Location: North Basin, Barra Strait, Bras d'Or Lake

Time Start (UTC): 15:37:04

Geo: Morrow

Time End (UTC): 17:04:04

Bio: Rader

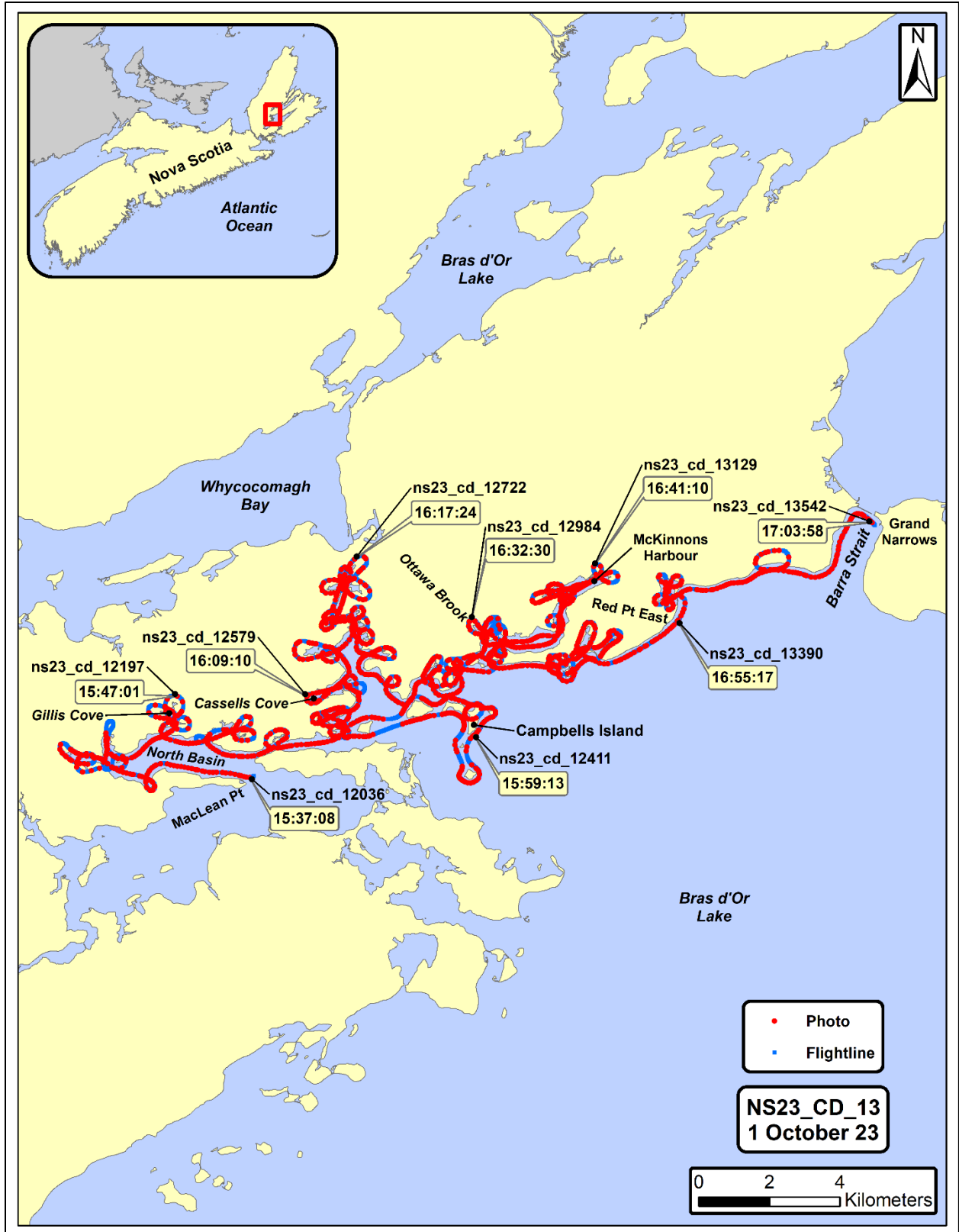
Video Length: 1 hr 27 min 1 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
15:37:08	MacLean Pt.	ns23_cd_12036
15:47:01	Gillis Cove	ns23_cd_12197
15:59:13	Campbells Island	ns23_cd_12411
16:09:10	Cassells Cove	ns23_cd_12579
16:17:24	Whycocomagh Portage	ns23_cd_12722
16:32:30	Ottawa Brook	ns23_cd_12984
16:41:10	McKinnons Harbour	ns23_cd_13129
16:55:17	Red Point East	ns23_cd_13390
17:03:58	Grand Narrows, Barra Strait	ns23_cd_13542



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_14

Date: 1 October 2023

General Location: Grand River, St. Esprit Lake, St. Esprit Island

Time Start (UTC): 18:05:20

Geo: Morrow

Time End (UTC): 19:10:13

Bio: Rader

Video Length: 1 hr 4 min 54 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
18:05:29	Michaud Cove	ns23_cd_13543
18:14:00	Grand River	ns23_cd_13678
18:26:14	Grand River	ns23_cd_13880
18:35:33	L'Archeveque Lake	ns23_cd_14019
18:46:37	Little St. Esprit Lake	ns23_cd_14218
18:58:55	St. Esprit Lake	ns23_cd_14452
19:10:10	St. Esprit Island	ns23_cd_14665



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_15

Date: 1 October 2023

General Location: Capelin Cove, Mary Anns Brook, Fullers Gut

Time Start (UTC): 19:10:16

Geo: Morrow

Time End (UTC): 20:28:01

Bio: Rader

Video Length: 1 hr 17 min 46 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
19:10:28	Urquharts Pt.	ns23_cd_14666
19:19:43	Capelin Cove	ns23_cd_14834
19:31:09	Red Cape	ns23_cd_15050
19:41:59	Mary Anns Brook	ns23_cd_15256
19:48:34	Mary Anns Brook	ns23_cd_15381
20:01:55	Fullers Gut Lagoon	ns23_cd_15622
20:11:19	McLeods Cove	ns23_cd_15817
20:19:18	Breeches Lake	ns23_cd_15967
20:27:51	Gut Rock, Framboise Cove	ns23_cd_16124



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_16

Date: 2 October 2023

General Location: Fourchu Harbour, Belfy Lake, Fourchu Bay

Time Start (UTC): 18:39:53

Geo: Morrow

Time End (UTC): 19:47:02

Bio: Rader

Video Length: 1 hr 7 min 13 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
18:39:53	Gut Rock, Framboise Cove	ns23_cd_16125
18:50:59	Fourchu Harbour	ns23_cd_16273
19:06:22	Mulcuiche Lake	ns23_cd_16549
19:14:38	Fergusons Island	ns23_cd_16689
19:25:27	Belfry Lake	ns23_cd_16865
19:36:45	Fourchu Bay	ns23_cd_17076
19:41:55	Little Harbour Lake	ns23_cd_17186
19:47:02	Winging Pt.	ns23_cd_17296



2023 Nova Scotia Aerial Video Imaging Survey

Team Chedabucto Bay (CD)

Video: NS23_CD_17

Date: 2 October 2023

General Location: Gabarus Bay, Louisbourg Harbour, Cape Breton

Time Start (UTC): 19:47:22

Geo: Morrow

Time End (UTC): 20:57:12

Bio: Rader

Video Length: 1 hr 9 min 51 sec

Nav: Daley

Weather: Sun

Pilot: Wallace

Time (UTC)	Location	Photo
19:47:26	Guyon Island	ns23_cd_17297
19:59:44	Cape Gabarus	ns23_cd_17508
20:10:16	Gabarus Cove	ns23_cd_17704
20:20:52	Eagle Head	ns23_cd_17873
20:31:18	Louisbourg Harbour	ns23_cd_18042
20:40:32	Big Lorraine Harbour	ns23_cd_18192
20:47:33	Little Lorraine Harbour	ns23_cd_18316
20:56:58	Portnova Island	ns23_cd_18442



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References

Cook, S.E., Daley, S., Morrow, K. and Ward, S. 2017. ShoreZone Coastal Imaging and Habitat Mapping Protocol. Prepared for NOAA Fisheries, Alaska Regional Office, Juneau, Alaska. 78p.

Acknowledgments

The ShoreZone program is a partnership of scientists, GIS specialists, web specialists, First Nations, non-profit organizations, and governmental agencies. We gratefully acknowledge the support of organizations working in partnership for the ShoreZone effort, including: Department of Fisheries and Oceans (OPP Coastal Environmental Baseline Program, PIER Program, and DFO Science), BC Ministry of Environment & Climate Change Strategy, Prince Rupert Port Authority, Pacific Northwest LNG, Metlakatla First Nation, Nisga'a Lisims Government, Gitxaala Nation, Tsleil-Waututh Nation and Musqueam Indian Band.

Access and Use Constraints

Any hardcopies or published data sets utilizing ShoreZone products shall clearly indicate their source. If the user has modified the data in any way, the user is obligated to describe the types of modifications performed. The user specifically agrees not to misrepresent ShoreZone data, nor to imply that changes made were approved by the ShoreZone program or its partners.

To ensure distribution of the most current public information or for correct interpretation, contact the ShoreZone project manager at Sea Change Marine Conservation Society (www.seachangesociety.com). At the time of publication, that person is Kalen Morrow (kalen@seachangesociety.com).

To effectively and appropriately use ShoreZone data, the user shall refer to the current ShoreZone Coastal Imaging and Habitat Mapping Protocol (Cook *et al.* 2017).



Walkers Bay, Andrew Island (ns23_cd_01902)

