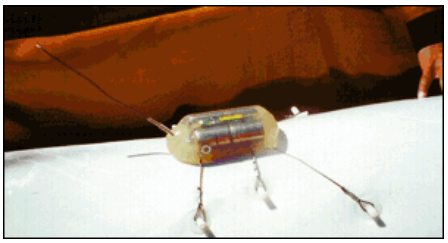
National Marine Mammal Laboratory 2002-2003 Beluga Tagging Study

A tagging project was conducted from July 29 through August 4, 2002, as part of a multi-year study of fall, winter, and spring movements of beluga whales in Cook Inlet. This project, a cooperative effort among the National Marine Mammal Laboratory and the Alaska Regional Office (both of NMFS) and the Cook Inlet Marine Mammal Council, an organization of native hunters , attached satellite tags to eight beluga whales in 2002. The capture involved a 1000-ft. net used to encircle and entangle a beluga whale. The captured whale was then removed from the net and placed in a sling between two rigid-hull inflatable boats. With the whale secure, a tag was surgically attached to the beluga's back. While holding the whale, its length was measured, tissue and blood samples were collected, and sex was determined (see Table 1, below). The whale was then released, usually within an hour and twenty minutes of capture.

Beluga ID	Tag Date	Tag Size	Sex	Length	Capture Location
DL02-01	29-Jul	Large	M	13'6"	Little Susitina R.
DL02-02	30-Jul	Large	F	11'2"	Little Susitina R.
DL02-03	31-Jul	Small	F	12'0"	Knik Arm
DL02-04	1-Aug	Large	F	12'5"	Little Susitina R.
DL02-05	2-Aug	Small	M	12'8"	Knik Arm
DL02-06	3-Aug	Small	M	11'7"	Knik Arm
DL02-07	3-Aug	Large	F	12'3"	Knik Arm
DL02-08	4-Aug	Small	M	12'4"	Knik Arm

Table 1. Beluga whales tagged in Cook Inlet, Alaska, in August 2002.



"Spider" tag is attached by 6 cables to 3 pins. Antenna sends signals to satellite when the whale surfaces.

Whale swims off with newly attached tag.

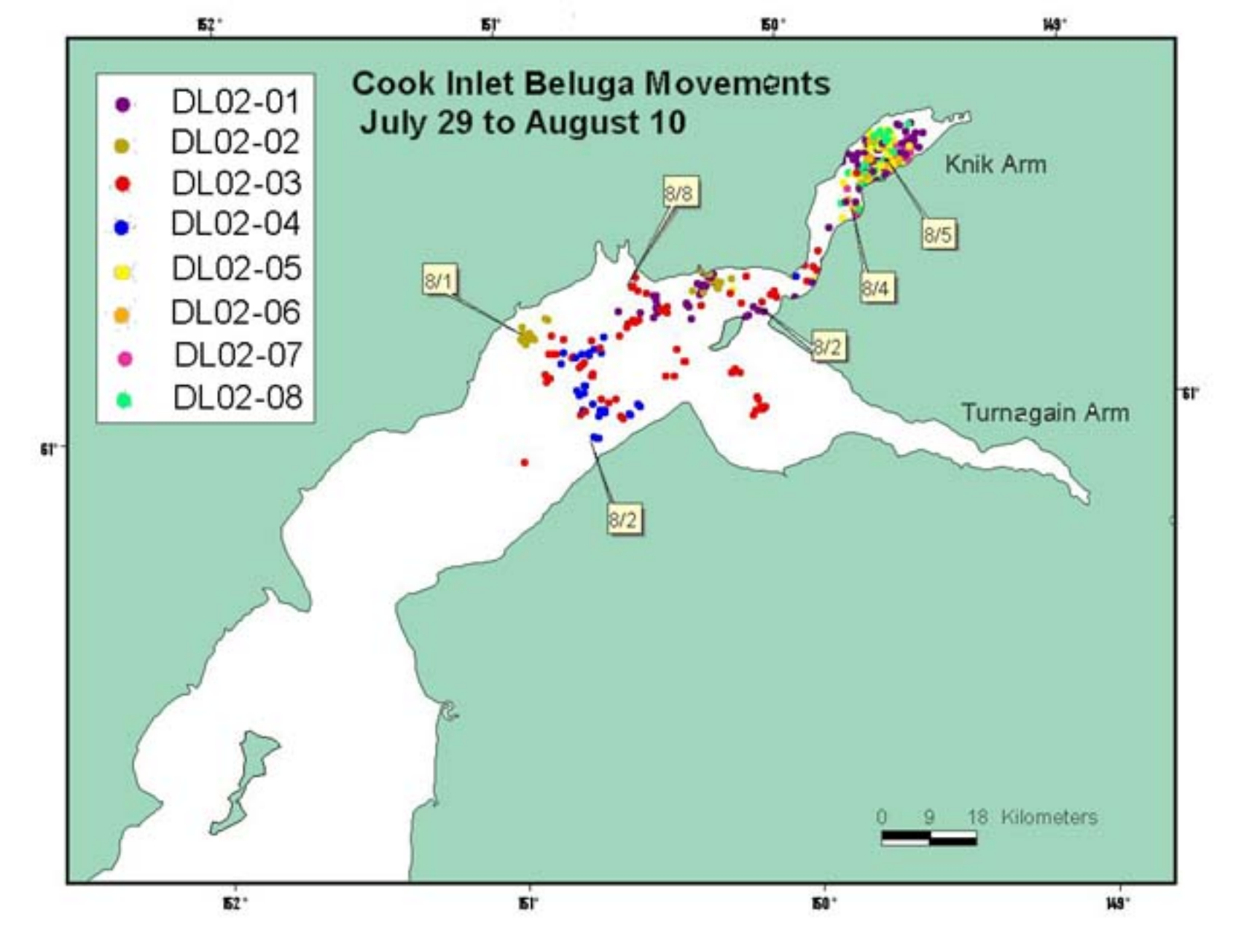
Each beluga was tagged with a satellite-linked time and depth recorder which records average dive depths, dive intervals, and time at depth. These data are reported to a System ARGOS receiver on a NOAA earth observation satellite

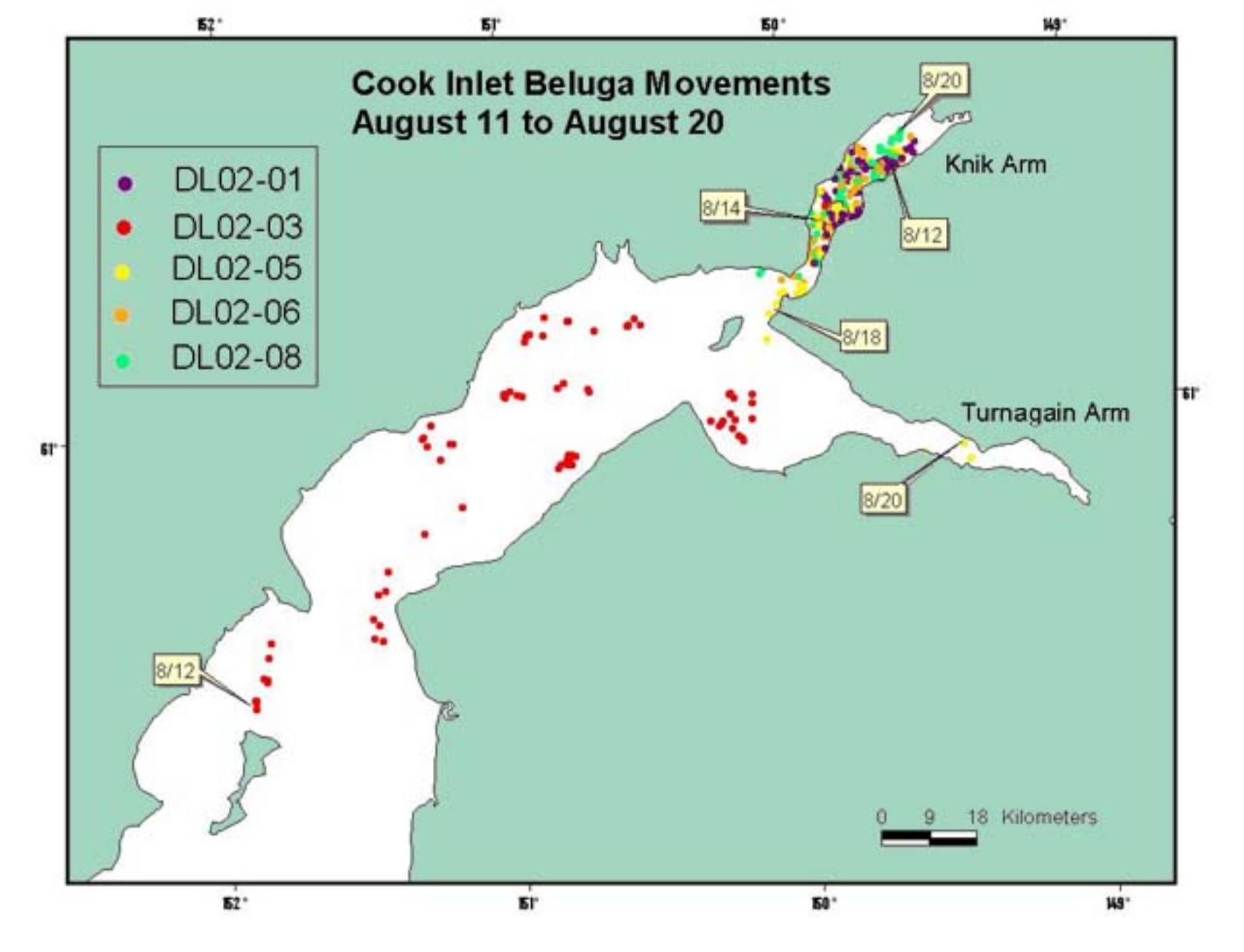
passing overhead several times a day. Two tag sizes were tried as a comparison experiment. Four whales were tagged with a standard 4-battery tag and the other 4 were tagged with a smaller, more streamlined 2-battery tag. The smaller tag will give fewer uplinks and locations but may stay on longer due to its smaller size. Each tag is programmed to transmit data for 13 months and will uplink information up to 120,000 times for the large tags and half that for the small tags. Location of the whale is calculated from the Doppler shift in the uplink signal. The detailed position information from this study will allow biologists to follow the movements of tagged whales through the late summer, fall, winter, spring, and possibly into next summer, completing their annual cycle. The dive data will be used to determine foraging behavior in different locations and times of year, energetic requirements of the whales, and their patterns of habitat use.

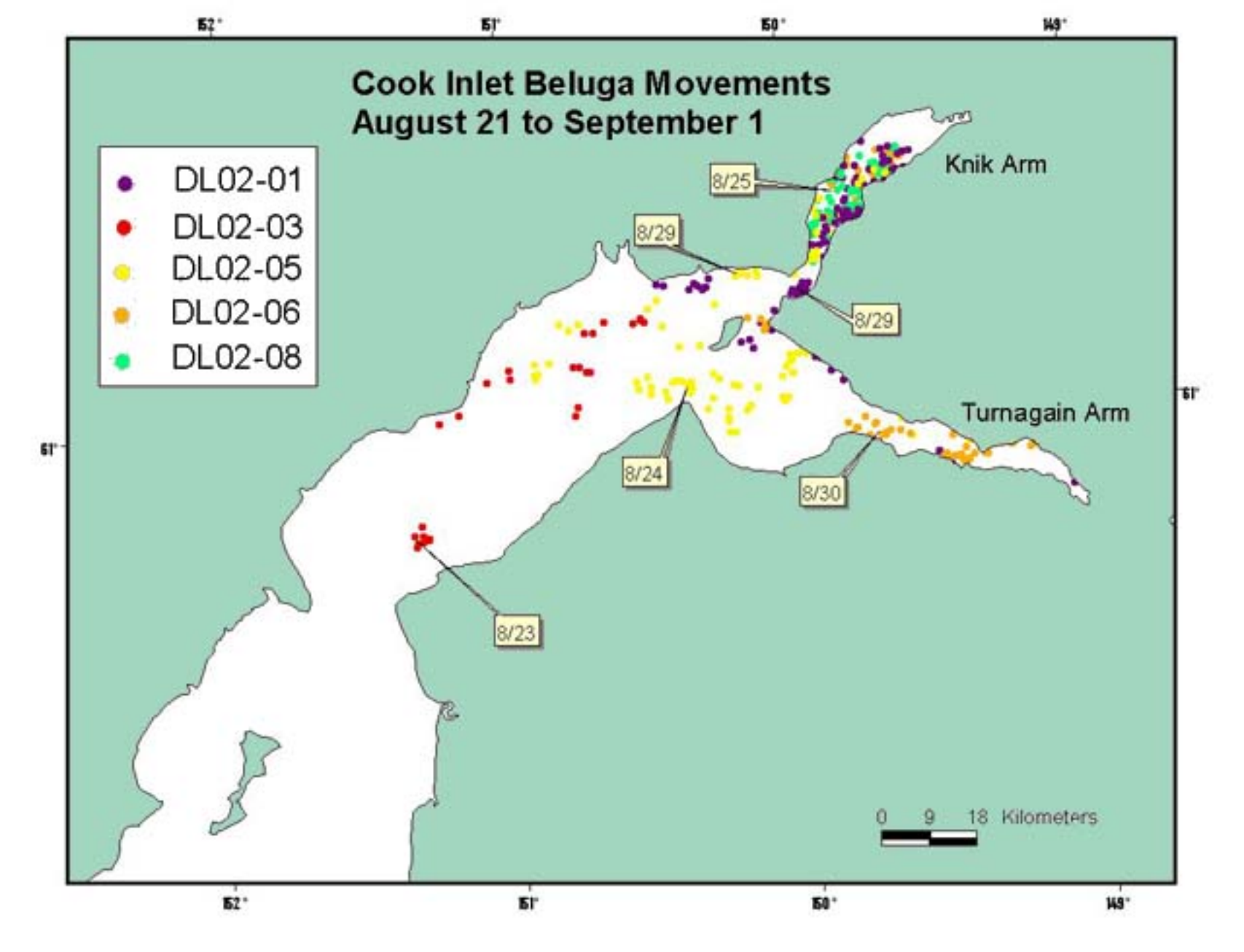
Biopsy samples and life history data are used for various studies. Skin samples will provide genetic information and can be used to identify individual whales and the stock that they came from. The blubber is analyzed to determine the whale's diet and contaminant loads. The blood yields information on the general health and condition of the whale, as well as specific information on pathogens, parasite loads, and hormone levels.

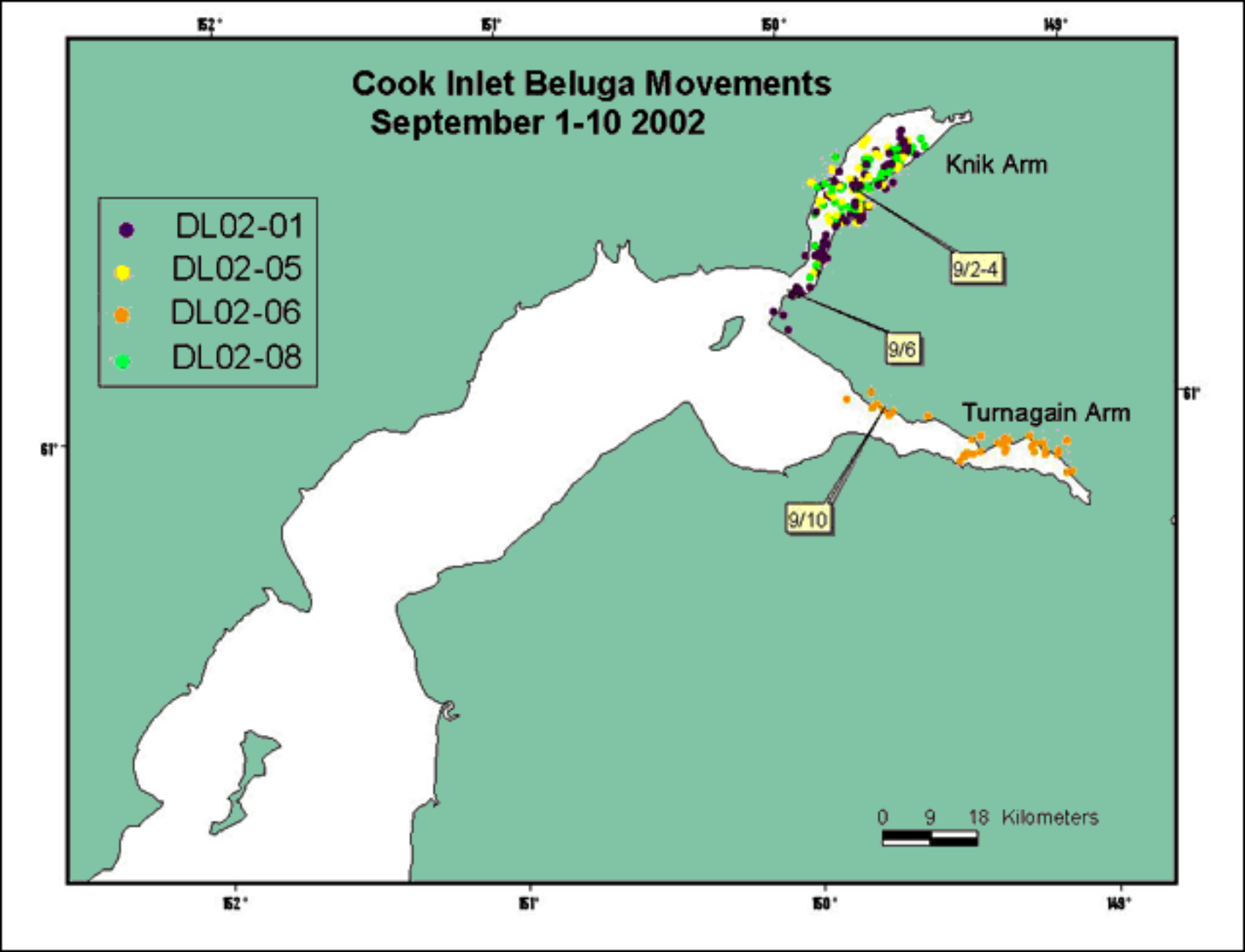
Tagging: NOAA researchers and Native subsistence hunters work together to attach tags. Here 3/8" pins are inserted into the skin and blubber of the whale to hold the tag.

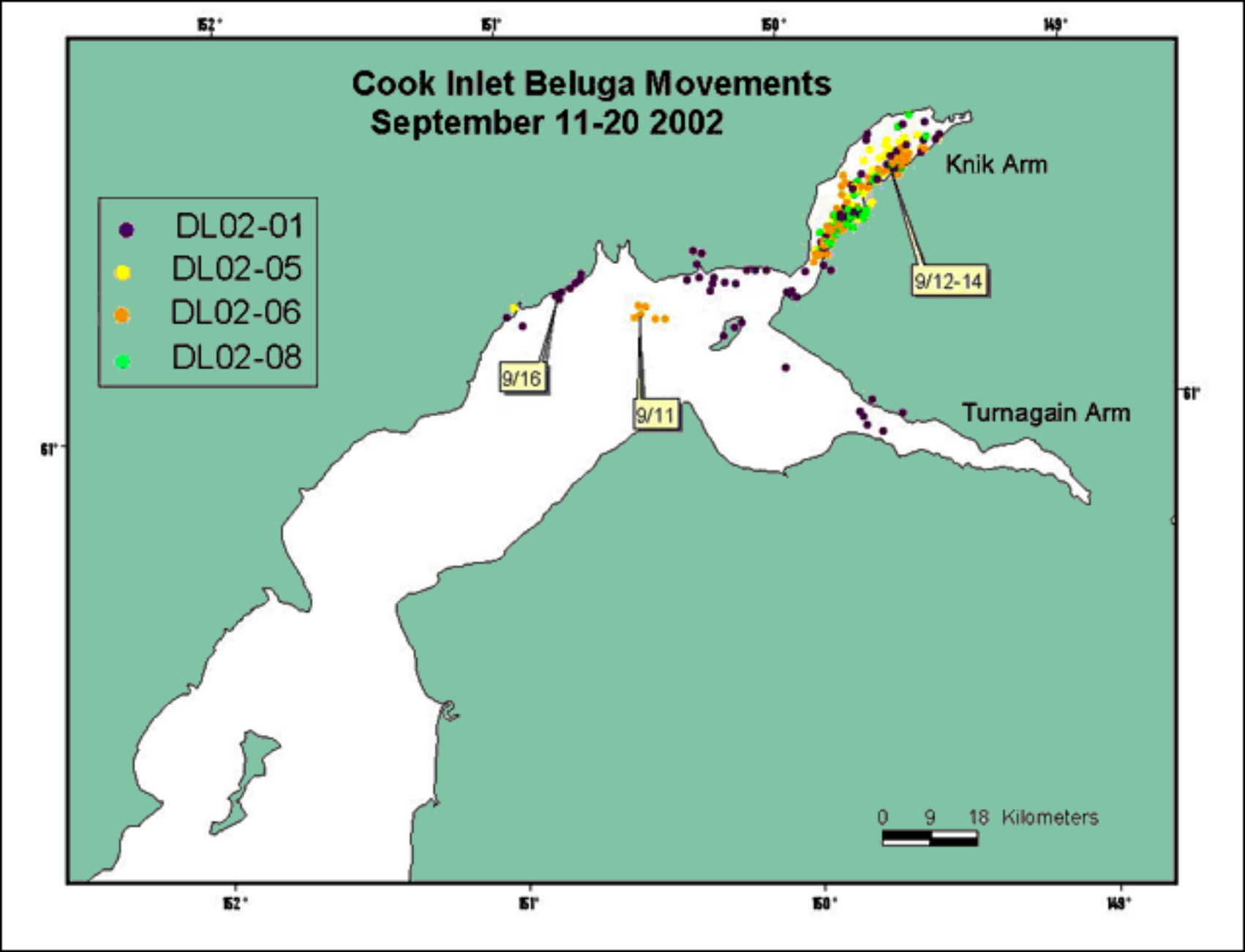
The following links show the satellite-determined positions of the tagged whales.


Cook Inlet Beluga Movements
July 29 to August 10
DL02-01
DL02-02
DL02-03
DL02-04
DL02-05
DL02-06
DL02-07
DL02-08
Knik Arm
Turnagain Arm
8/1
8/2
8/2
8/4
8/5
8/8
0 9 18 Kilometers
152°
151°
150°
149°
61°


Cook Inlet Beluga Movements
August 11 to August 20
DL02-01
DL02-03
DL02-05
DL02-06
DL02-08
8/20
Knik Arm
8/14
8/12
8/18
Turnagain Arm
8/20
8/12
0 9 18 Kilometers
152°
151°
150°
149°
61°


Cook Inlet Beluga Movements
August 21 to September 1
DL02-01
DL02-03
DL02-05
DL02-06
DL02-08
8/25
8/29
8/29
8/24
8/30
8/23
Knik Arm
Turnagain Arm
0 9 18 Kilometers
152°
151°
150°
149°
61°


Cook Inlet Beluga Movements
September 1-10 2002
DL02-01
DL02-05
DL02-06
DL02-08
Knik Arm
Turnagain Arm
9/2-4
9/6
9/10
0 9 18 Kilometers
152°
151°
150°
149°
61°


Cook Inlet Beluga Movements
September 11-20 2002
DL02-01
DL02-05
DL02-06
DL02-08
Knik Arm
Turnagain Arm
9/12-14
9/16
9/11
0 9 18 Kilometers
152°
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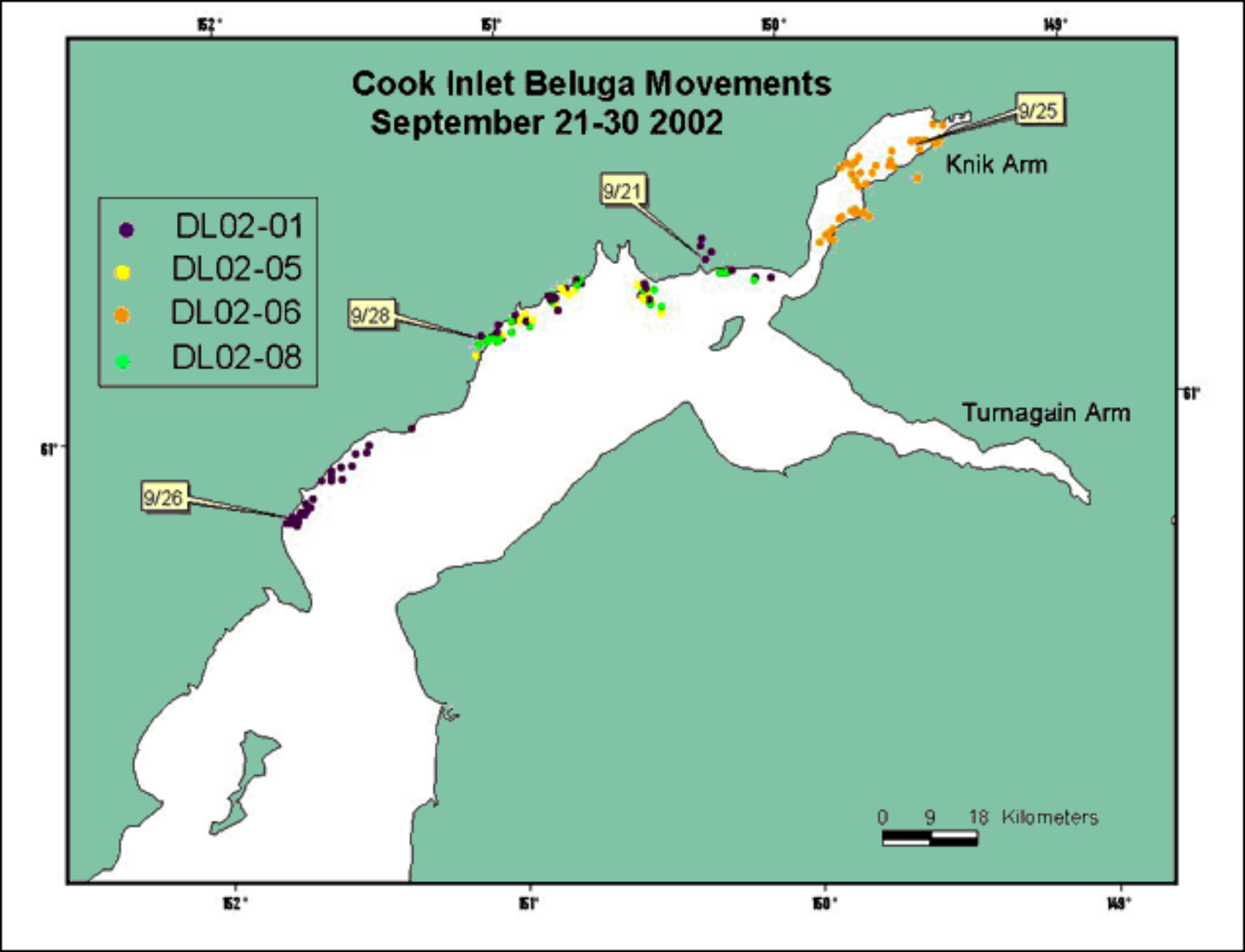
Cook Inlet Beluga Movements
September 21-30 2002
DL02-01
DL02-05
DL02-06
DL02-08
9/25
Knik Arm
9/21
9/28
9/26
Turnagain Arm
0 9 18 Kilometers
152°
151°
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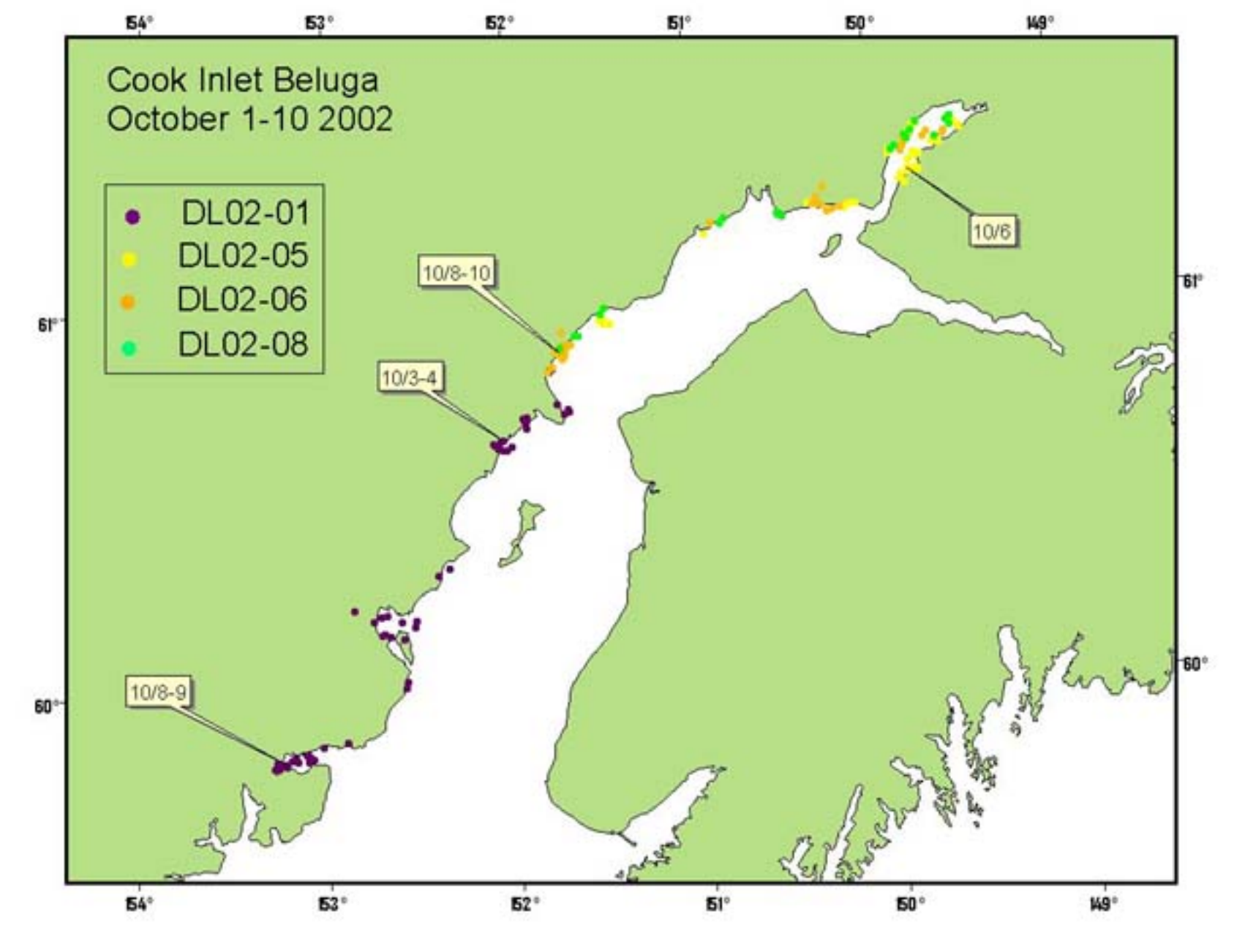
Cook Inlet Beluga
October 1-10 2002
DL02-01
DL02-05
DL02-06
DL02-08
10/6
10/8-10
10/3-4
10/8-9
154°
153°
152°
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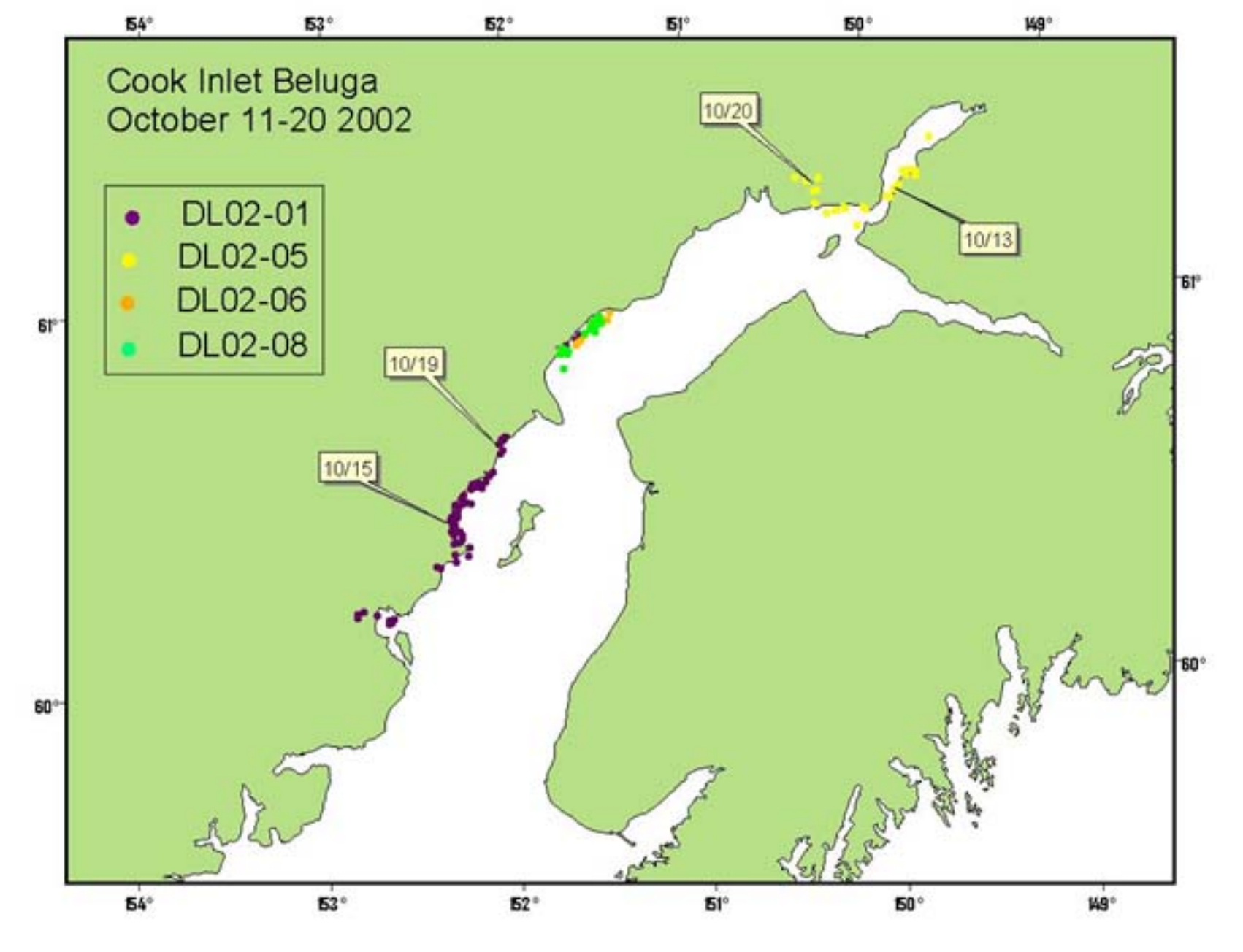
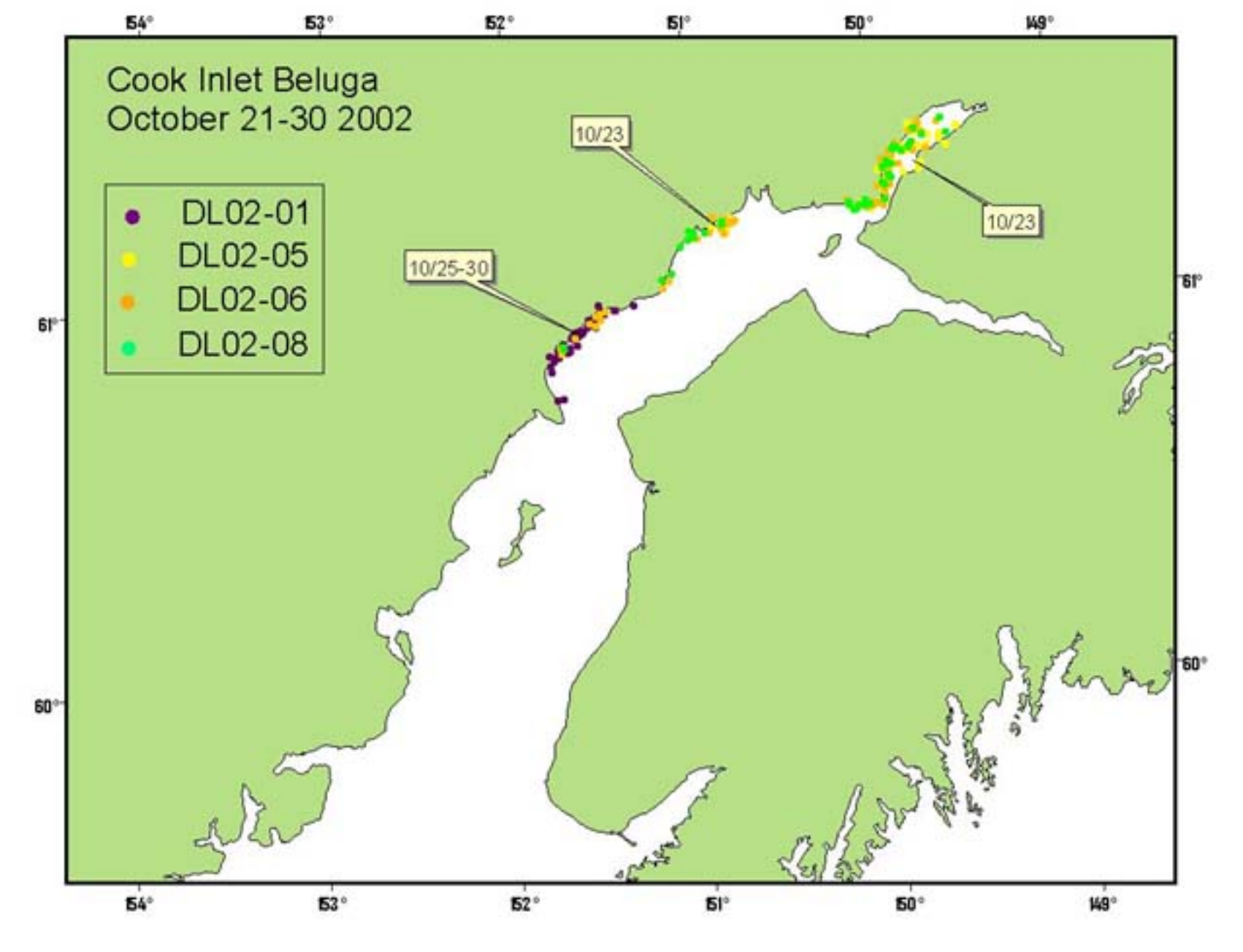

Cook Inlet Beluga
October 11-20 2002
DL02-01
DL02-05
DL02-06
DL02-08
10/20
10/13
10/19
10/15
154°
153°
152°
151°
150°
149°
61°
60°


Cook Inlet Beluga
October 21-30 2002
DL02-01
DL02-05
DL02-06
DL02-08
10/23
10/23
10/25-30
154°
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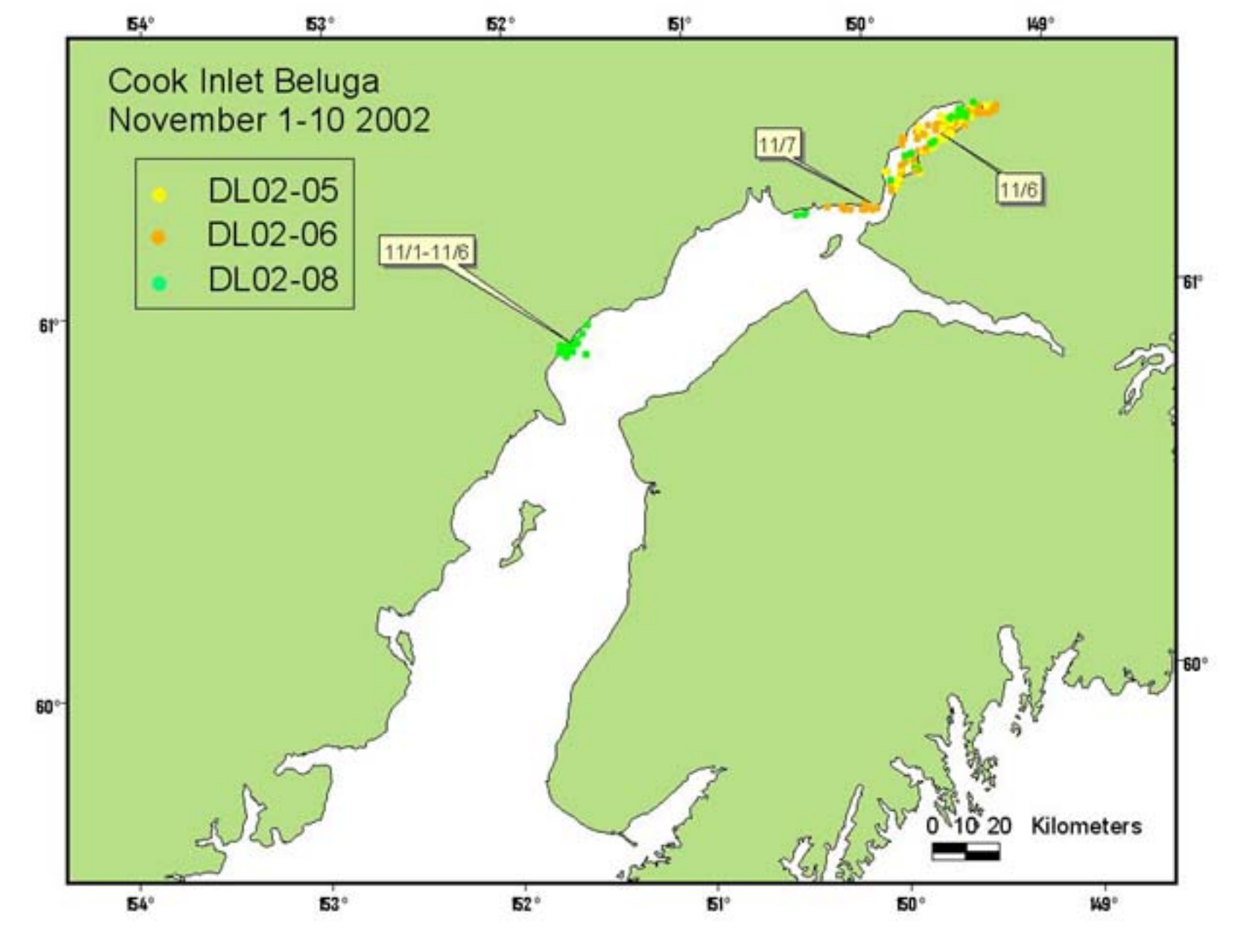
Cook Inlet Beluga
November 1-10 2002
DL02-05
DL02-06
DL02-08
11/1-11/6
11/7
11/6
154°
153°
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150°
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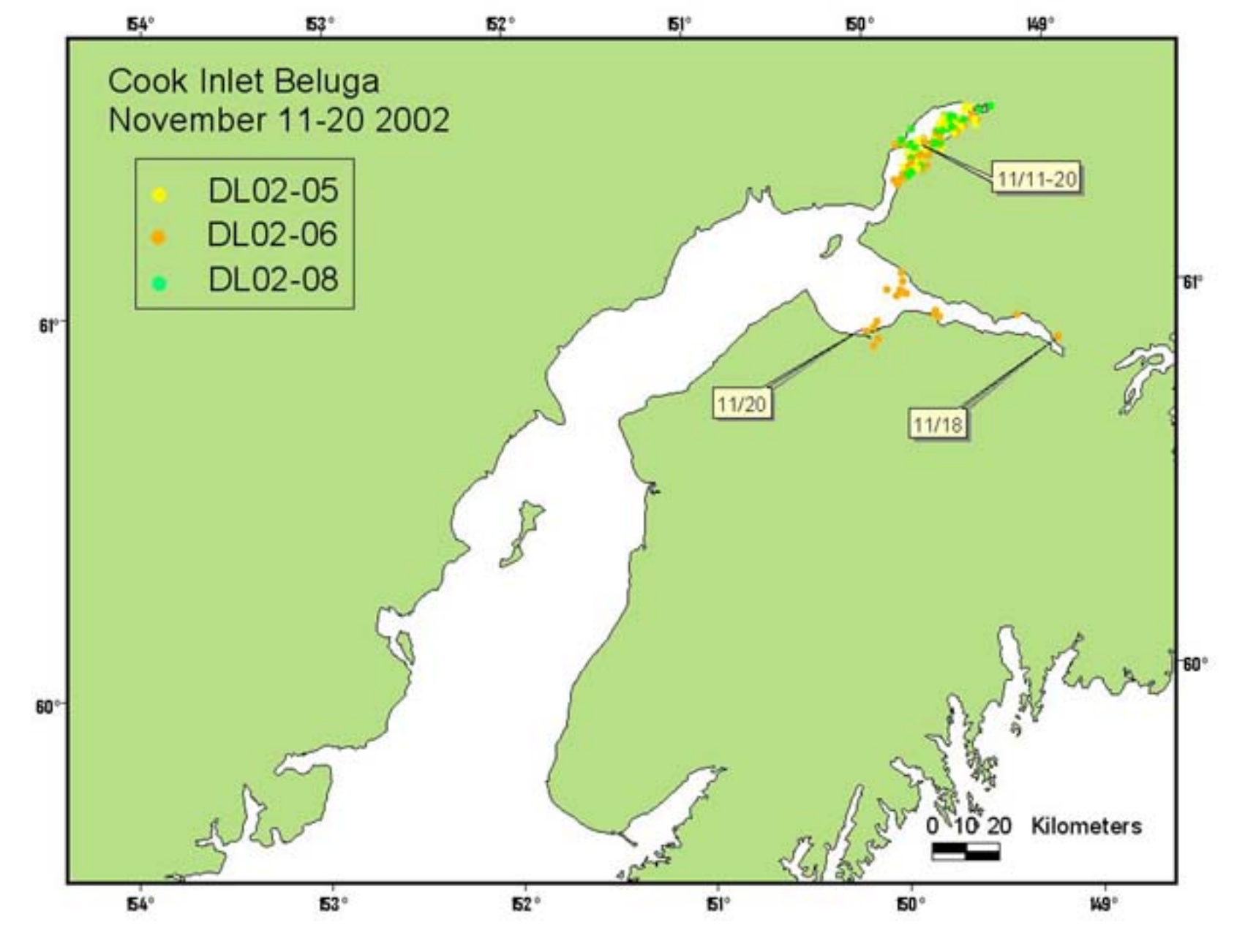
Cook Inlet Beluga
November 11-20 2002
DL02-05
DL02-06
DL02-08
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0 10 20 Kilometers
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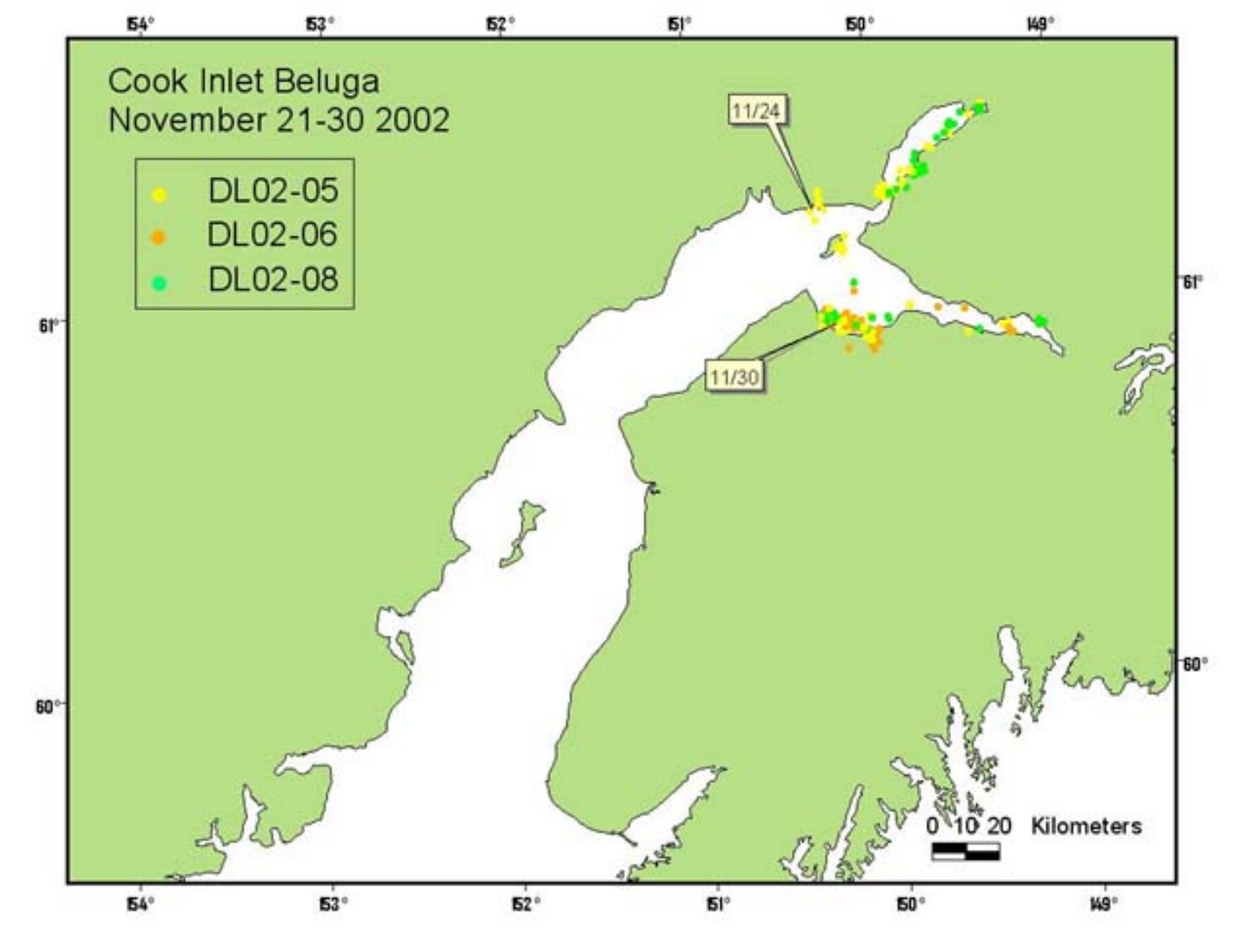
Cook Inlet Beluga
November 21-30 2002
DL02-05
DL02-06
DL02-08
11/24
11/30
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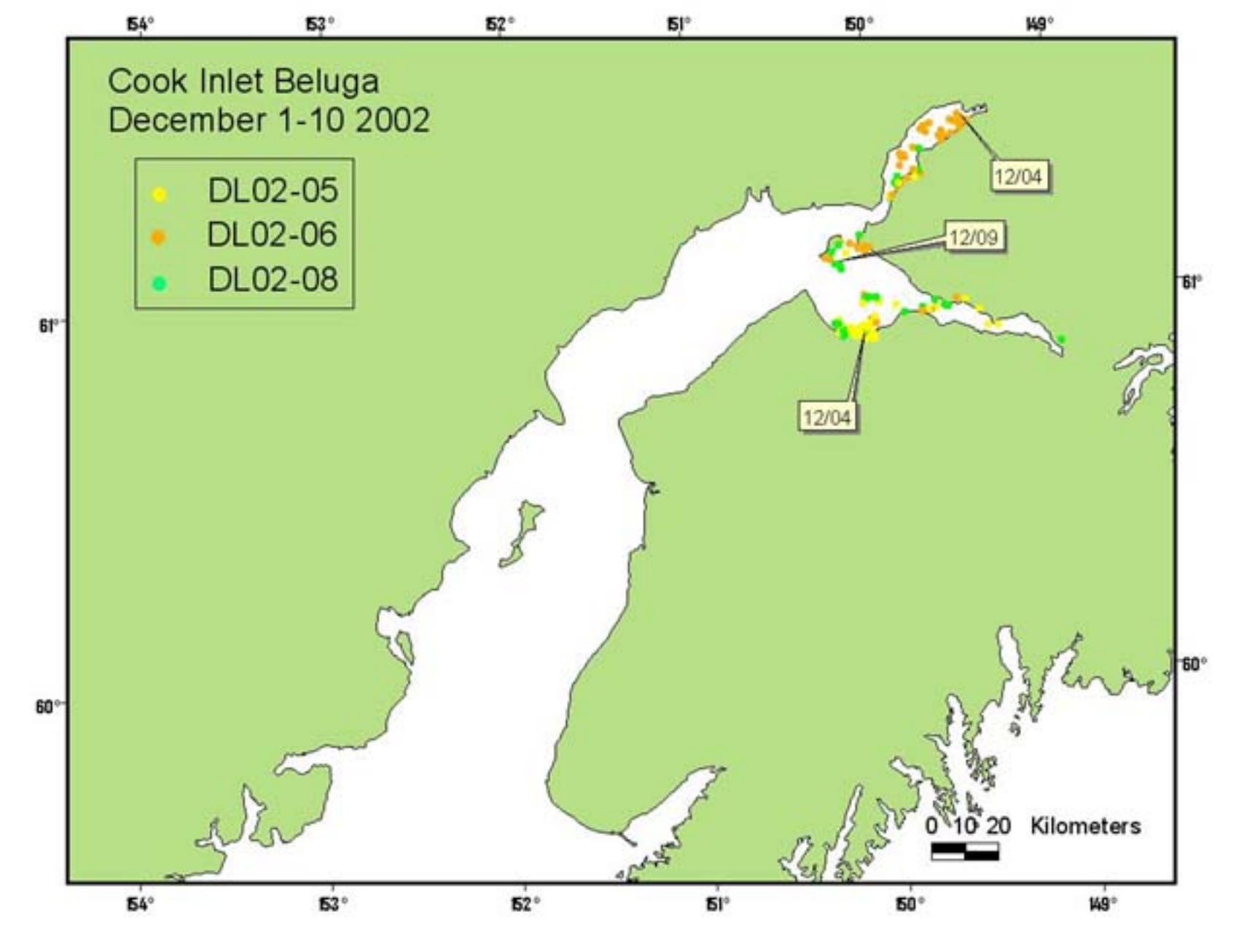
Cook Inlet Beluga
December 1-10 2002
DL02-05
DL02-06
DL02-08
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0 10 20 Kilometers
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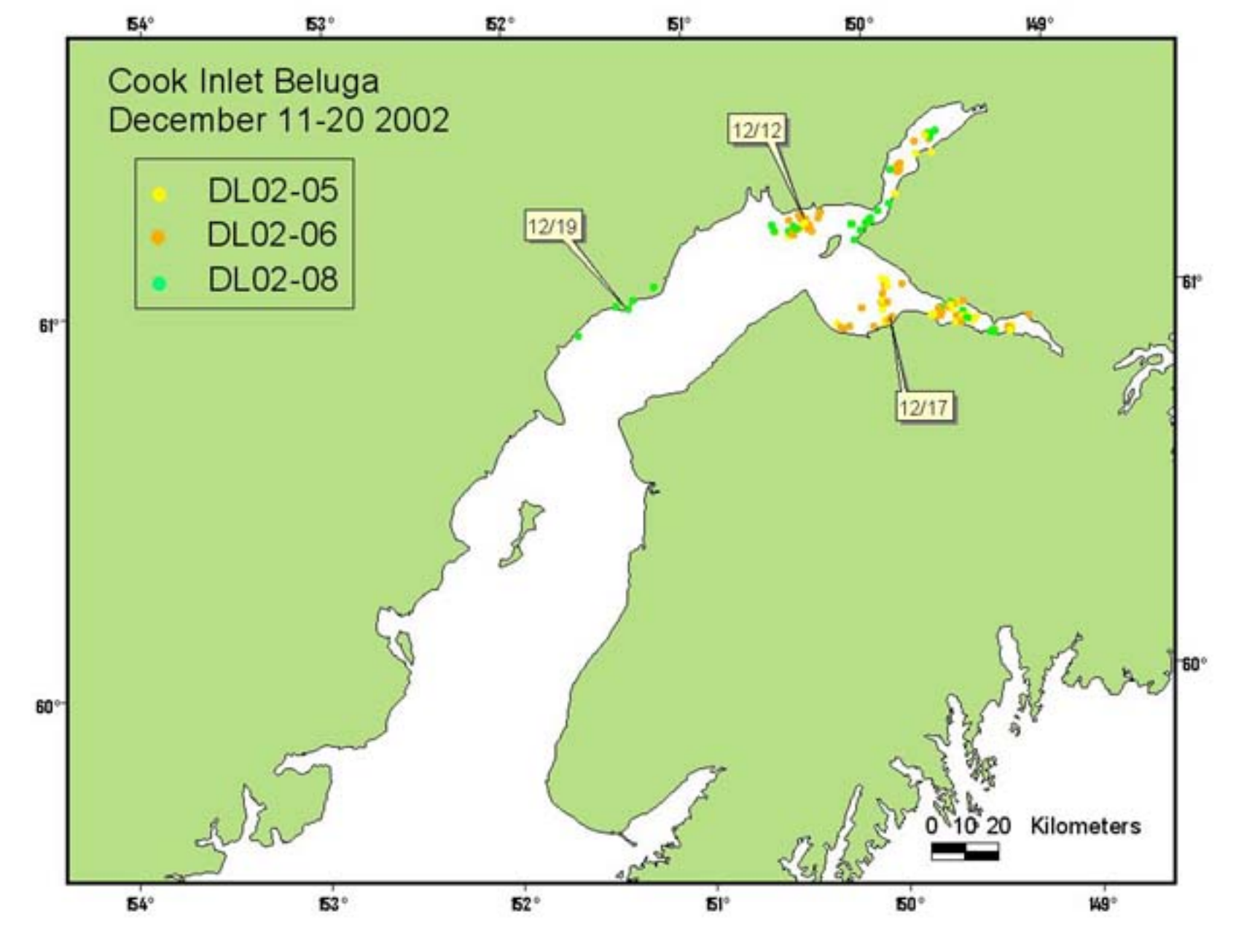
Cook Inlet Beluga
December 11-20 2002
DL02-05
DL02-06
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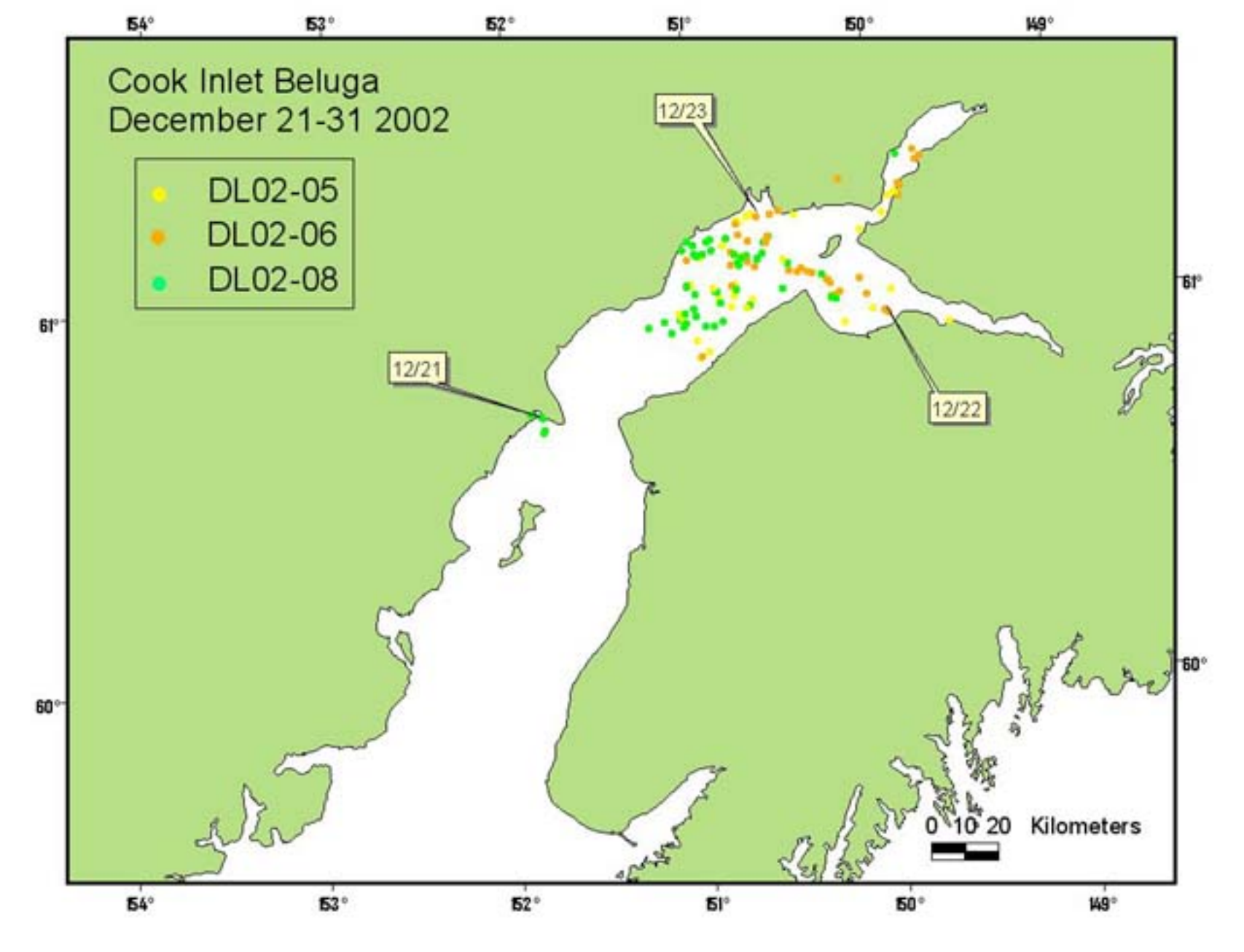
Cook Inlet Beluga
December 21-31 2002
DL02-05
DL02-06
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154°
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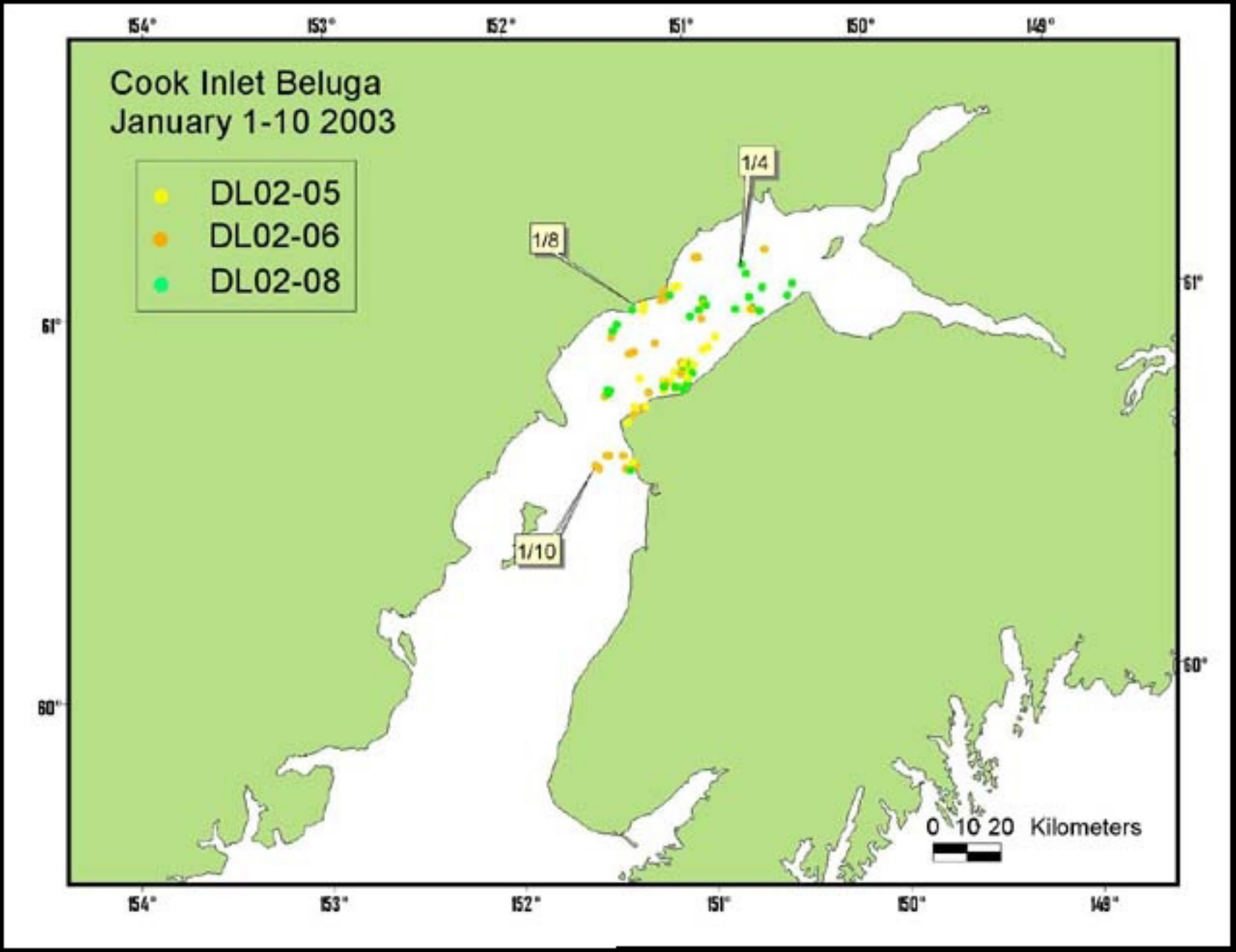
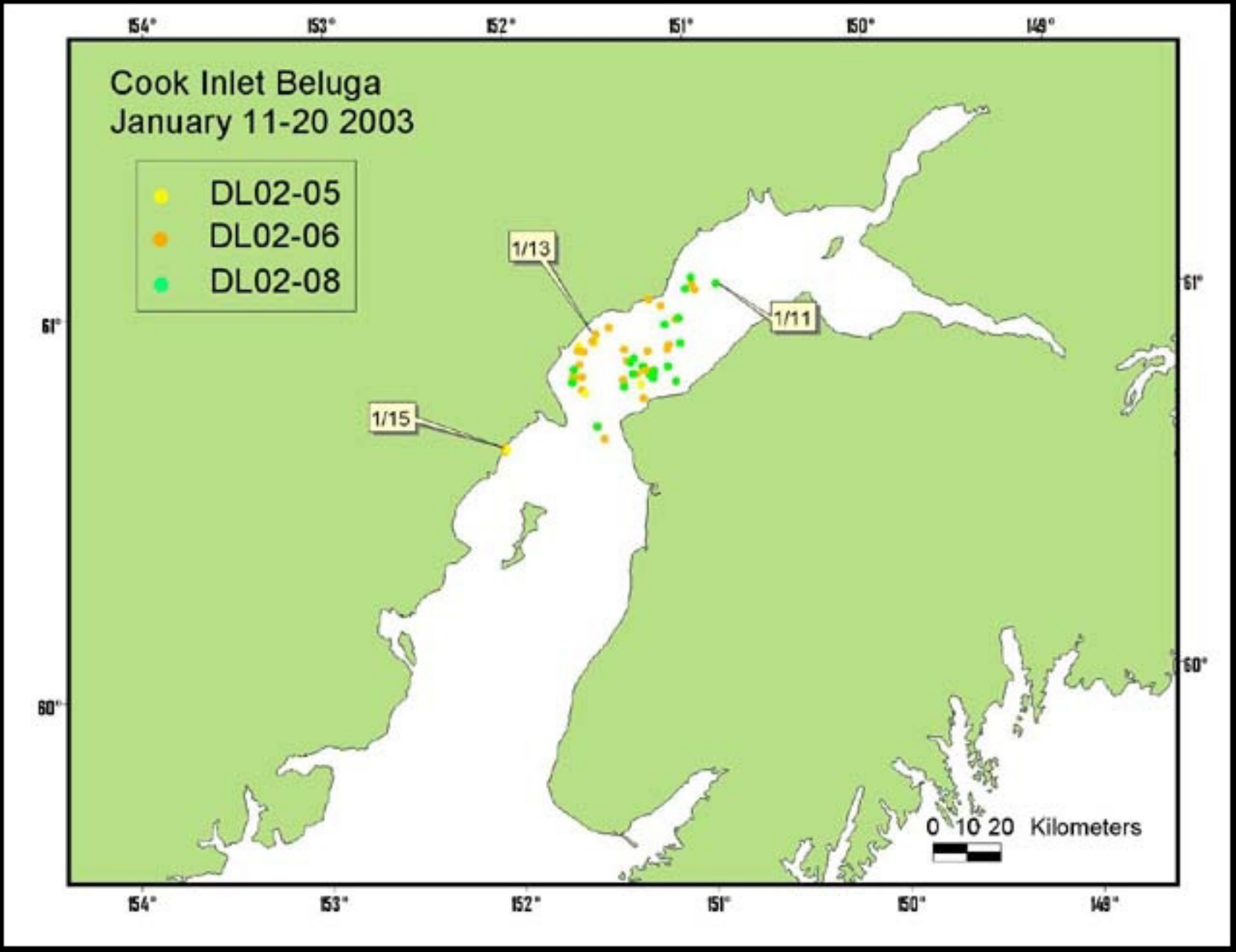

Cook Inlet Beluga
January 1-10 2003
DL02-05
DL02-06
DL02-08
1/4
1/8
1/10
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
January 11-20 2003
DL02-05
DL02-06
DL02-08
1/13
1/11
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154°
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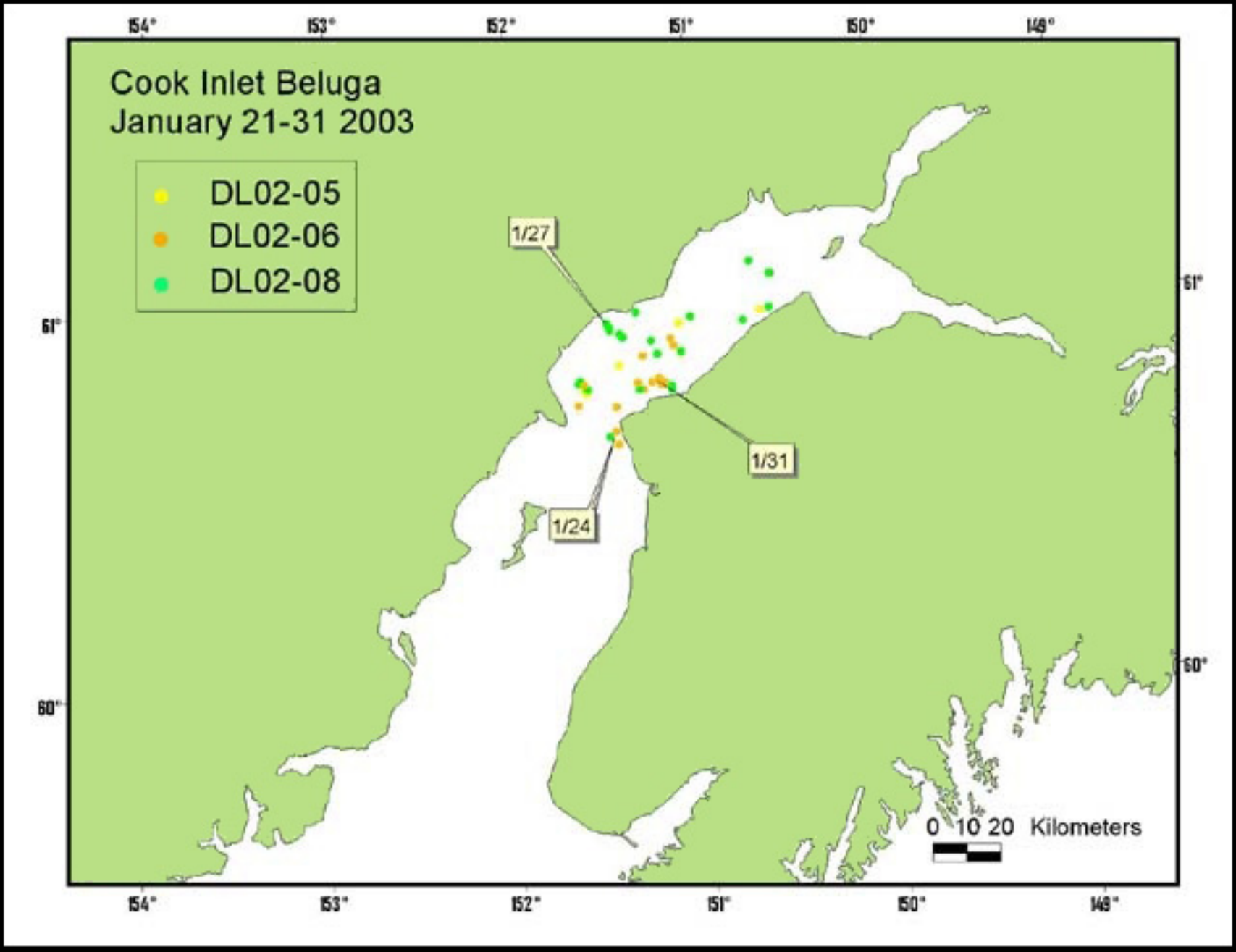
Cook Inlet Beluga
January 21-31 2003
DL02-05
DL02-06
DL02-08
1/27
1/31
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154°
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150°
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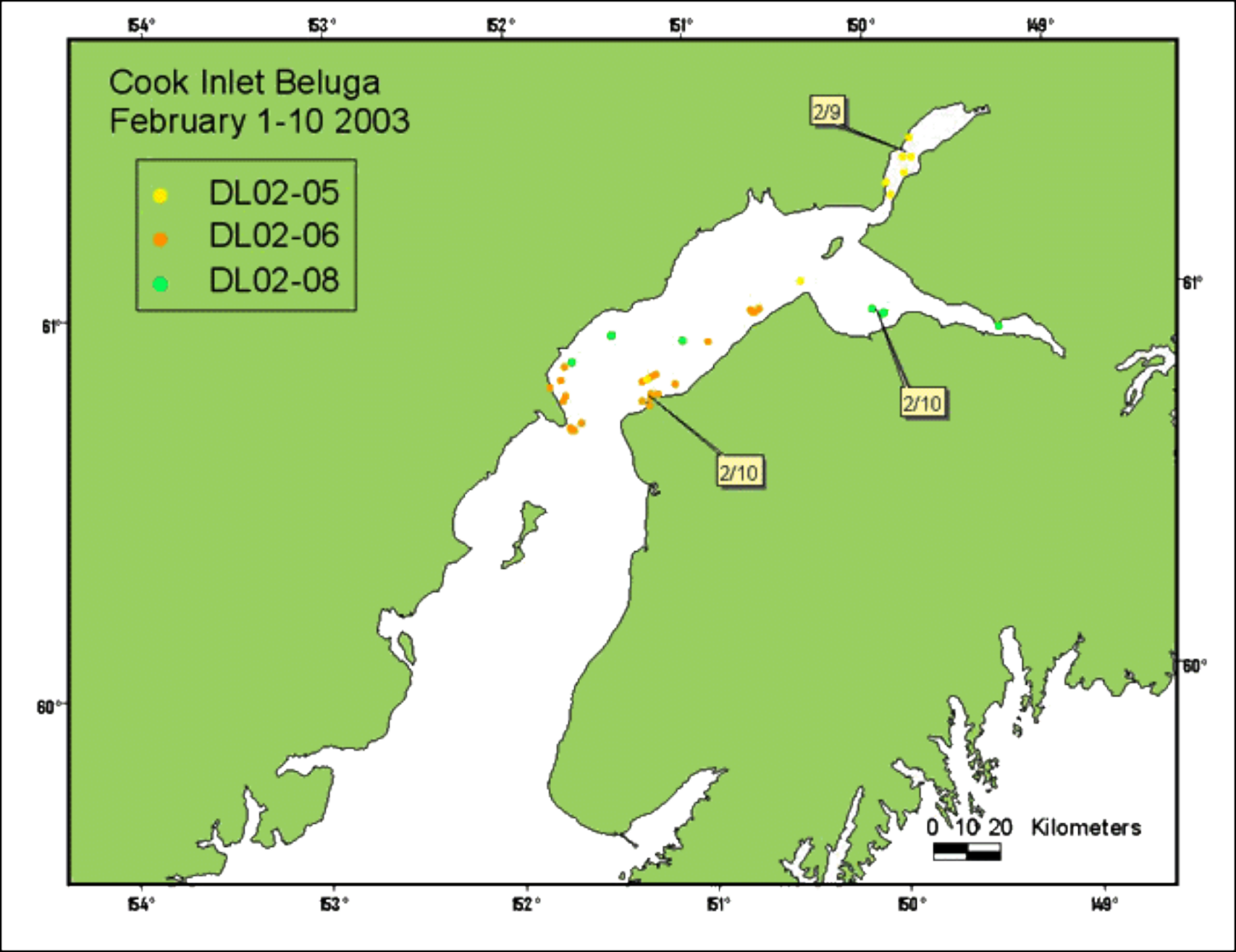
Cook Inlet Beluga
February 1-10 2003
DL02-05
DL02-06
DL02-08
2/9
2/10
2/10
0 10 20 Kilometers
154°
153°
152°
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150°
149°
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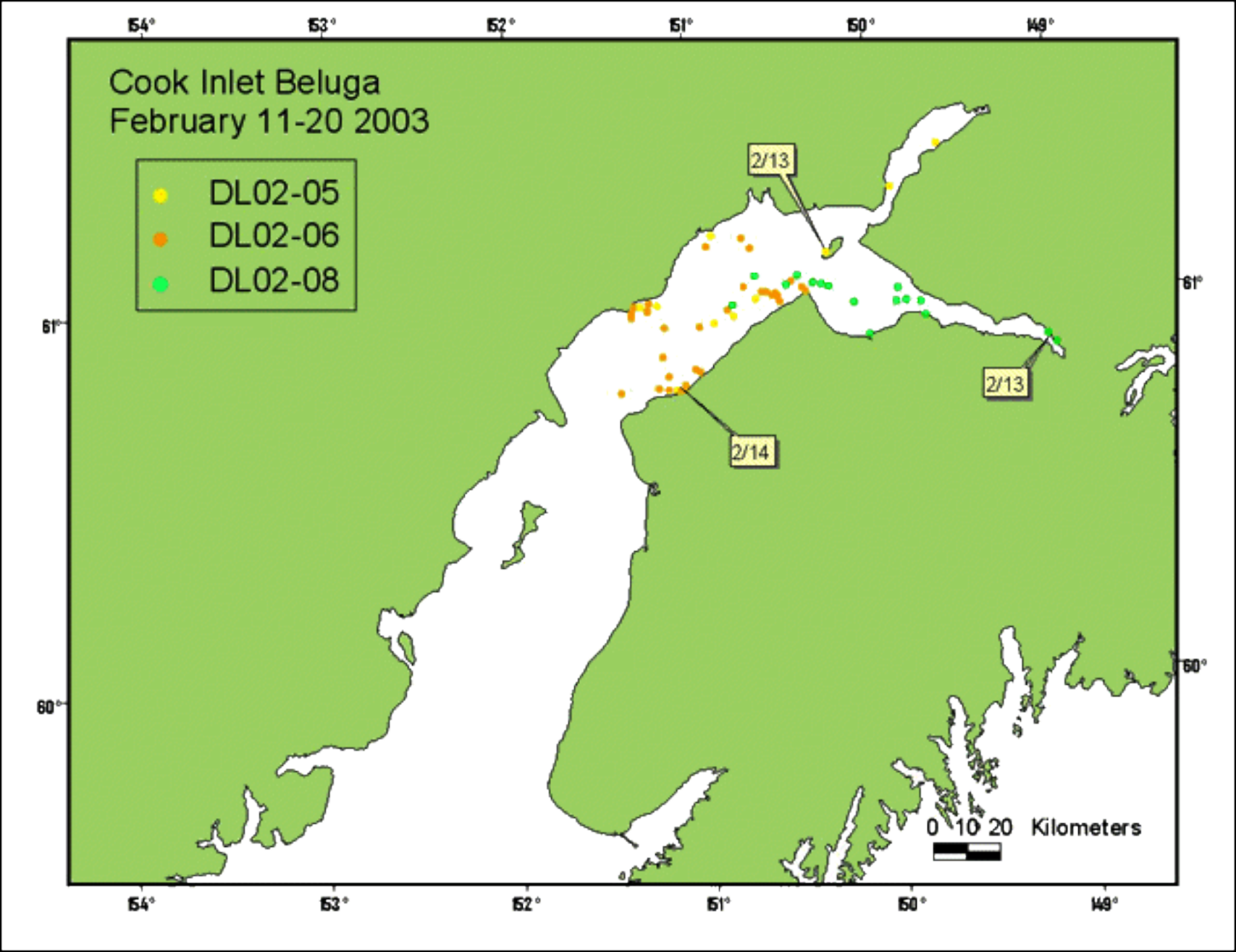
Cook Inlet Beluga
February 11-20 2003
DL02-05
DL02-06
DL02-08
2/13
2/13
2/14
154°
153°
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61°
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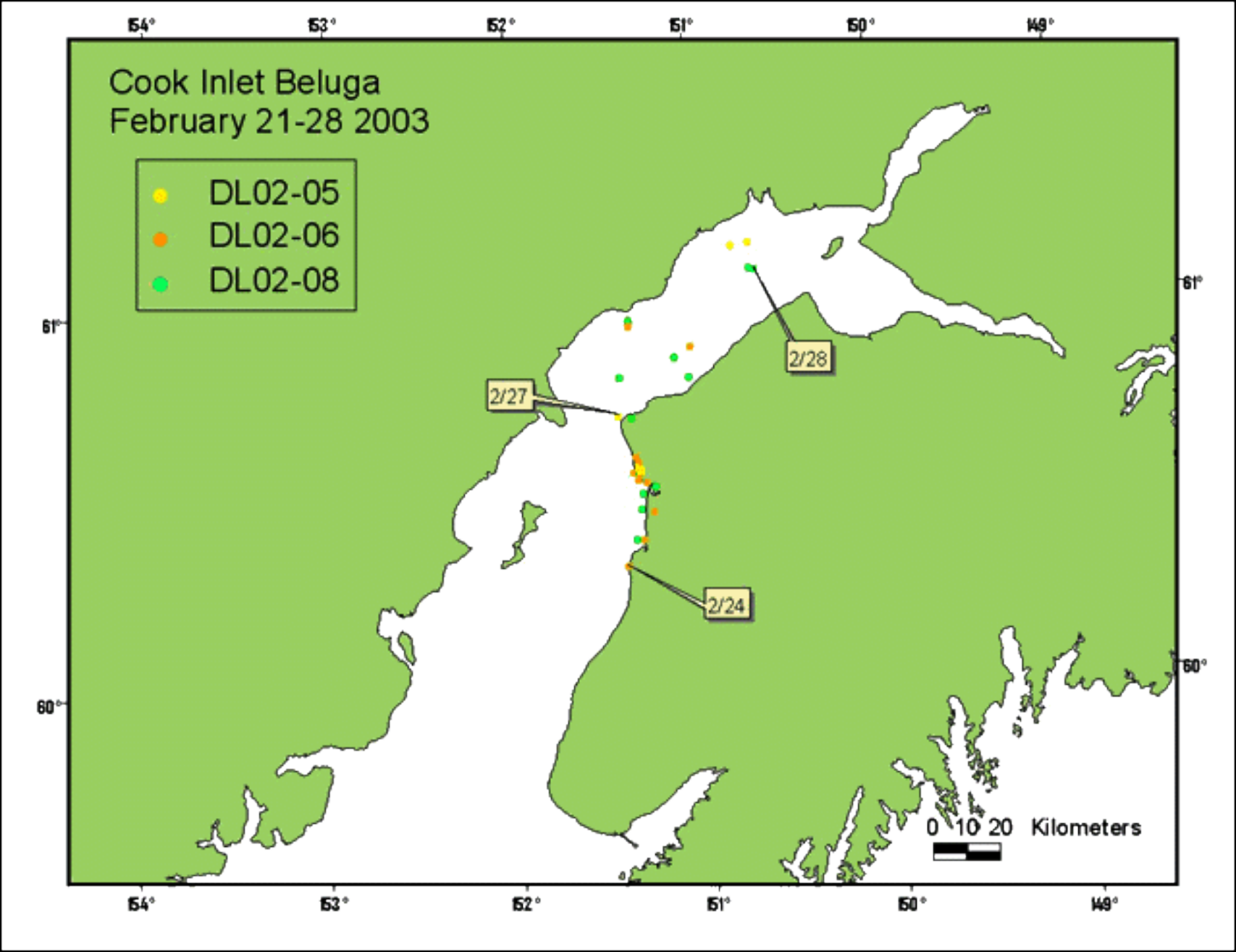
0 10 20 Kilometers


Cook Inlet Beluga
February 21-28 2003
DL02-05
DL02-06
DL02-08
2/28
2/27
2/24
0 10 20 Kilometers
154°
153°
152°
151°
150°
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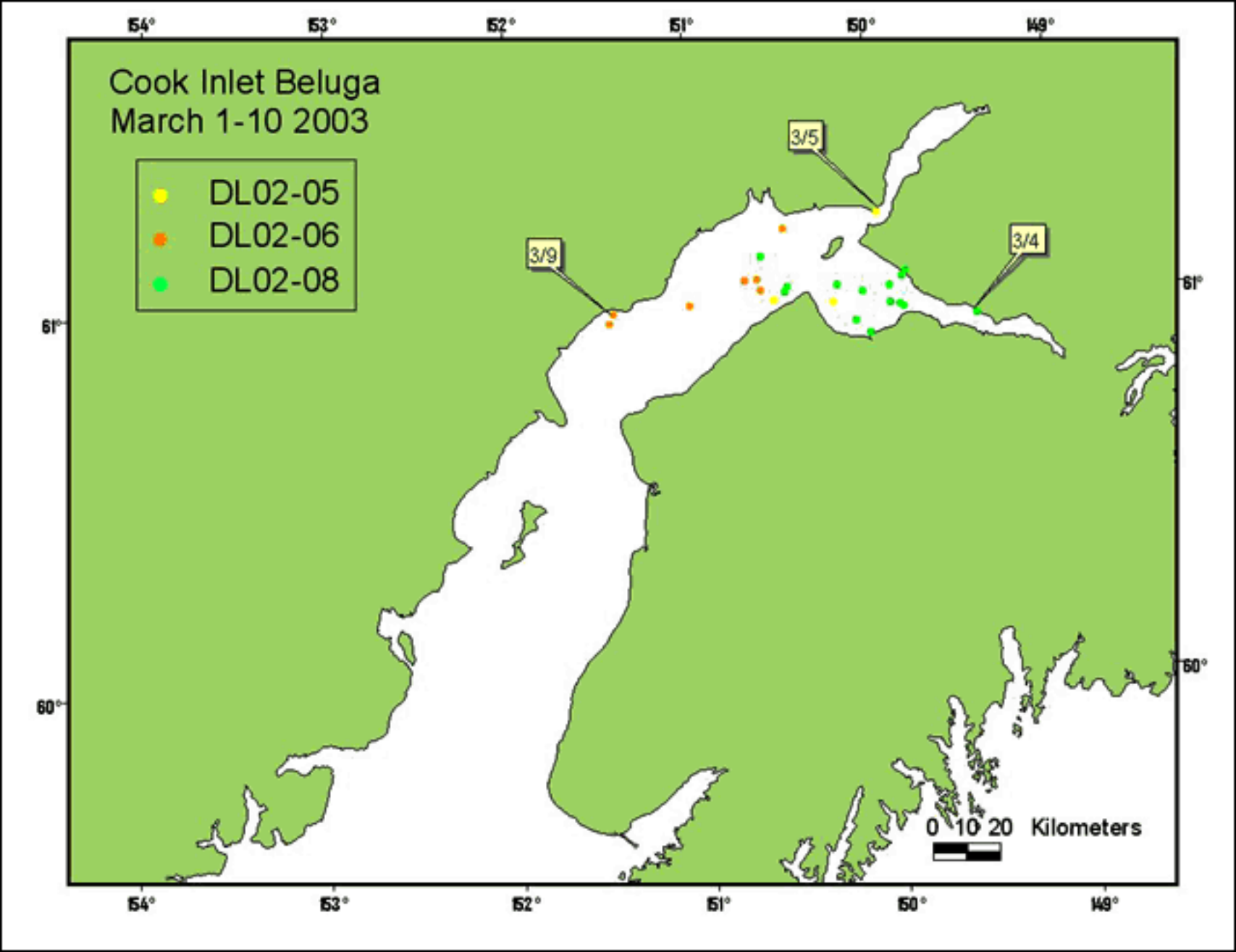
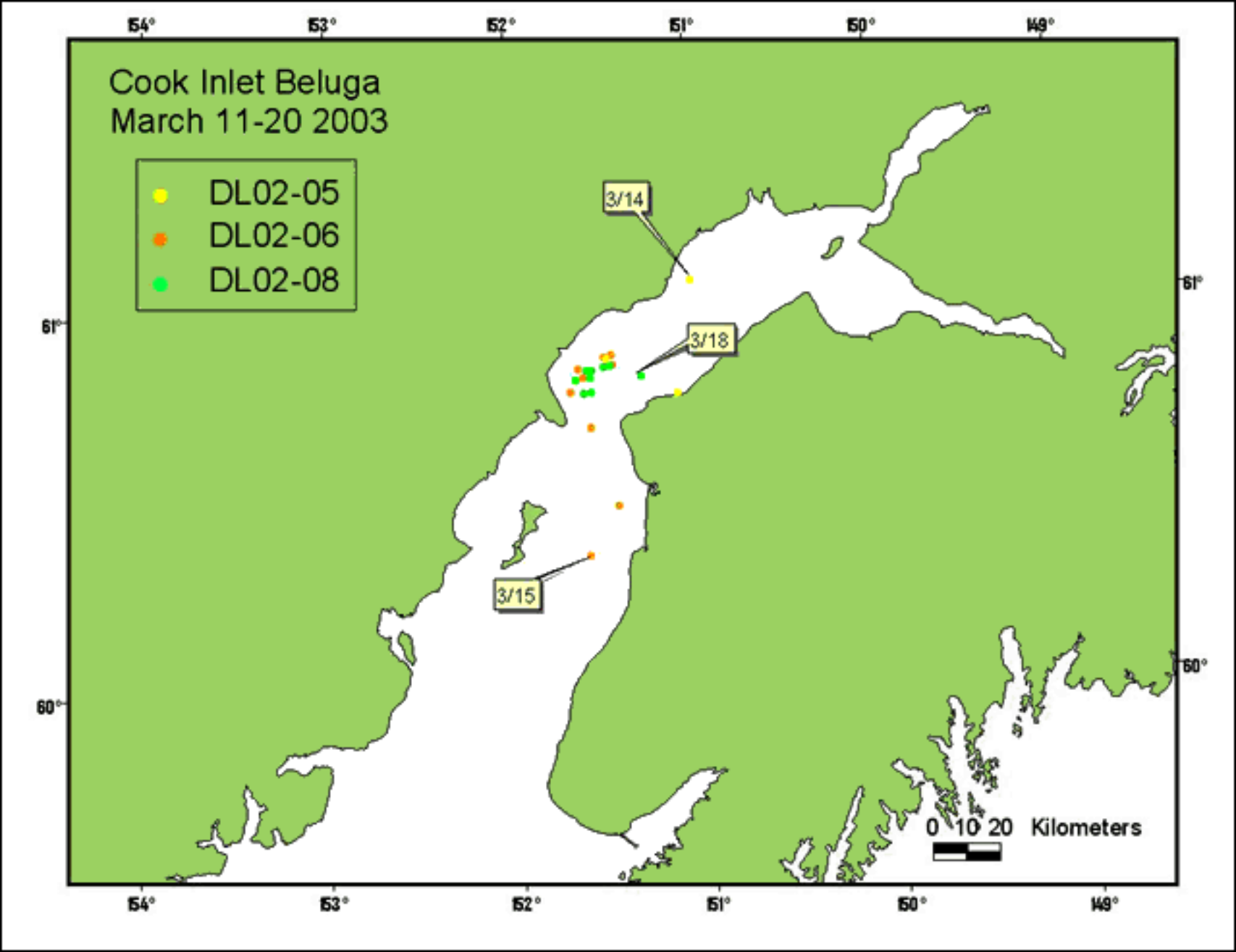
61°
60°


Cook Inlet Beluga
March 1-10 2003
DL02-05
DL02-06
DL02-08
3/5
3/4
3/9
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
March 11-20 2003
DL02-05
DL02-06
DL02-08
3/14
3/18
3/15
154°
153°
152°
151°
150°
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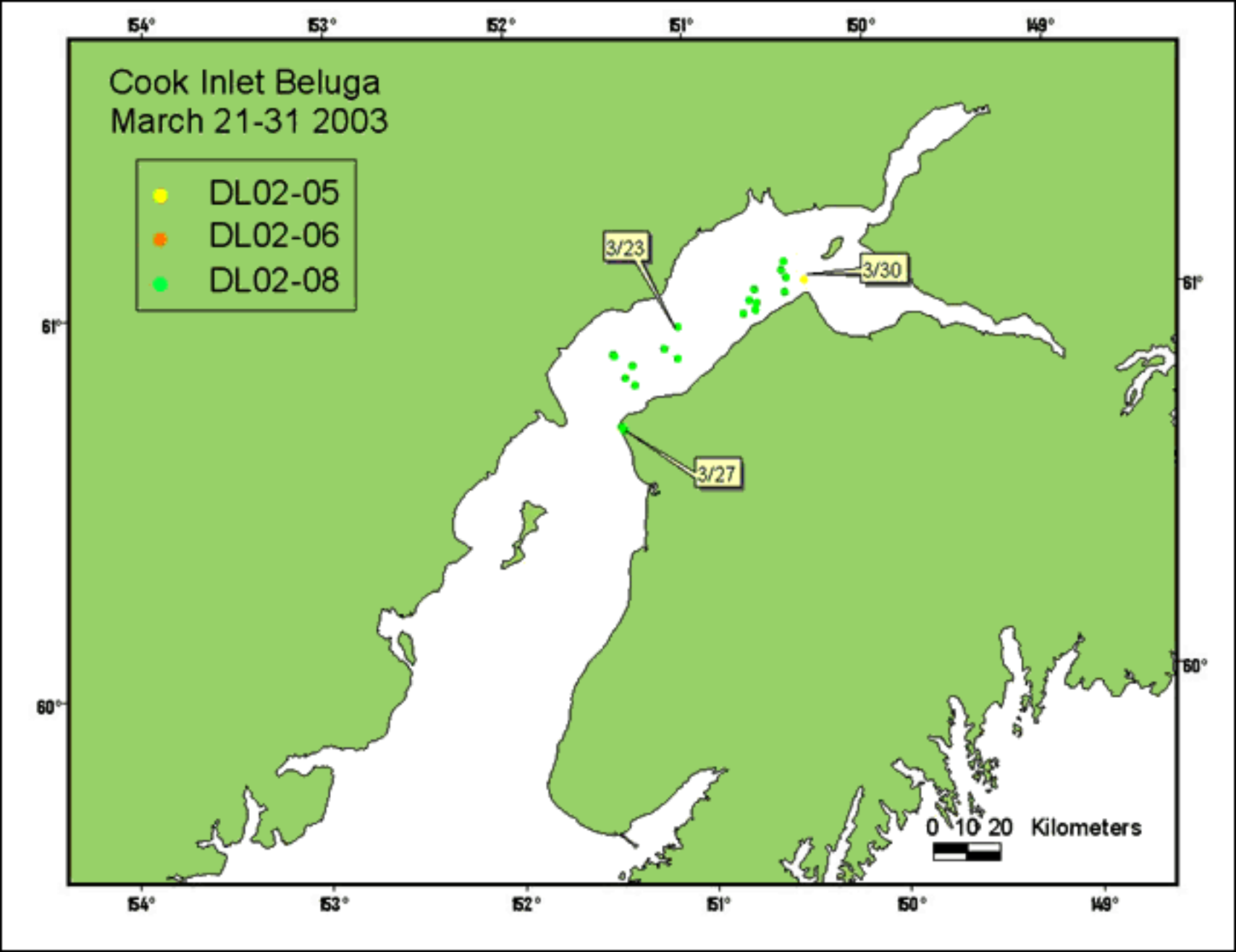
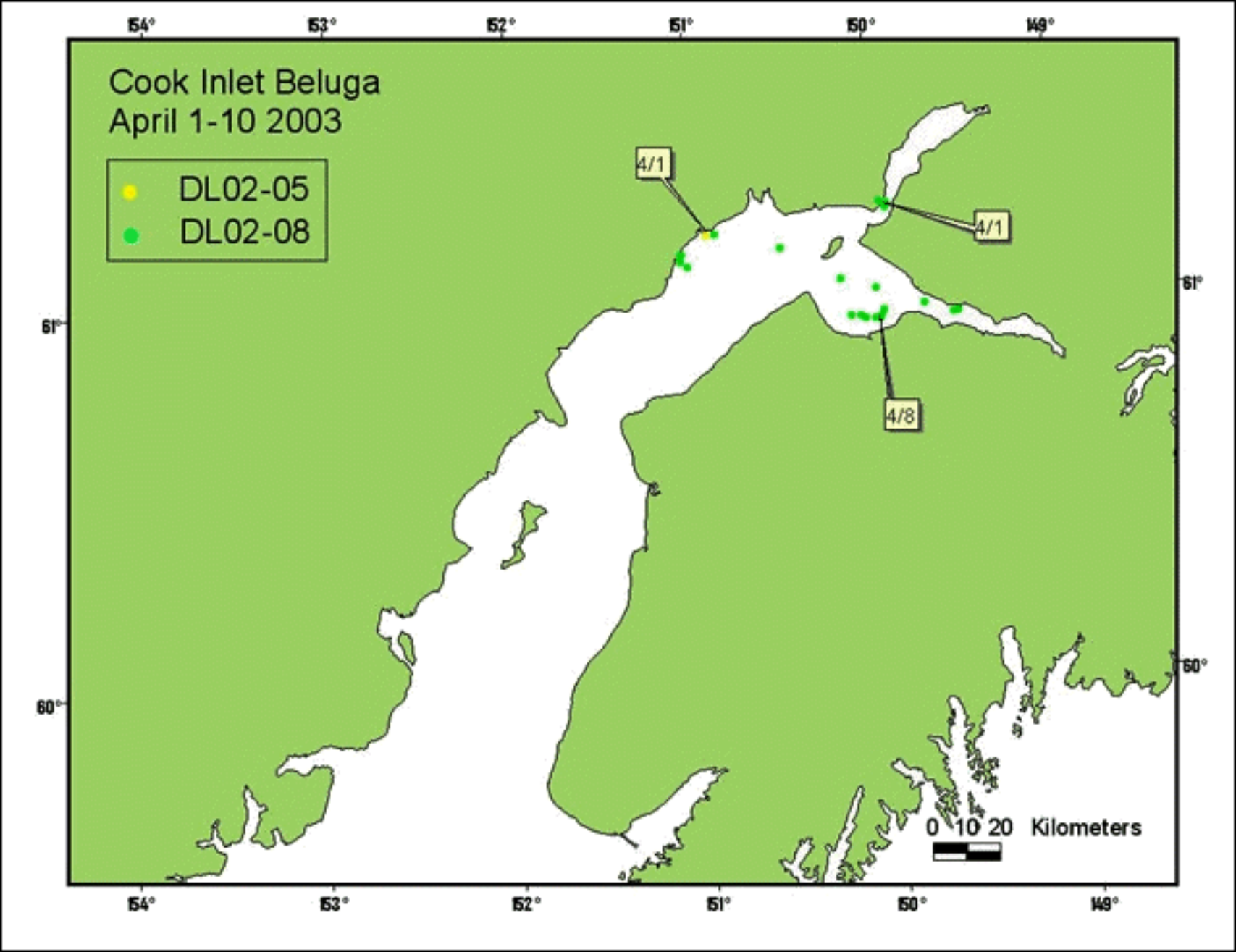
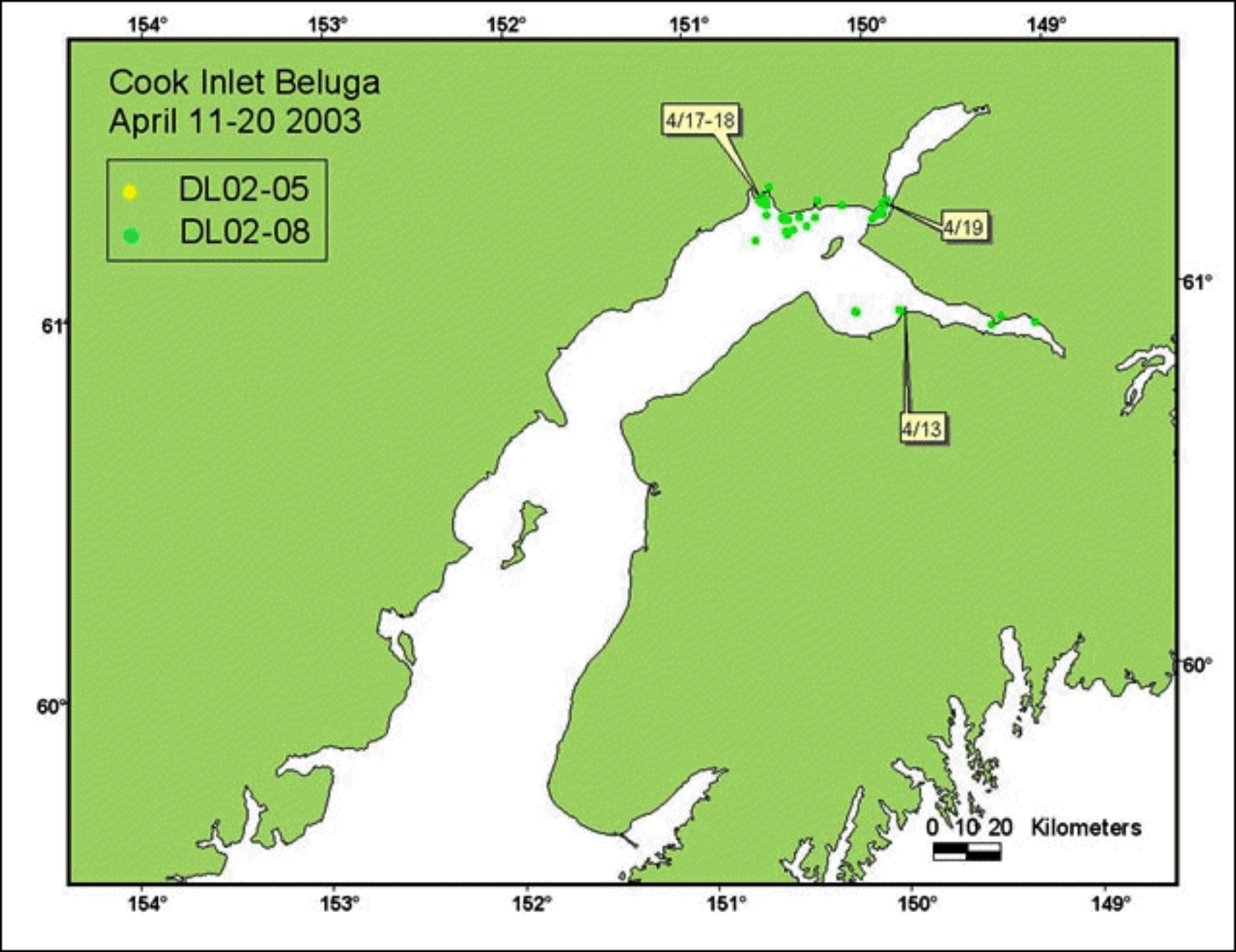
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
March 21-31 2003
DL02-05
DL02-06
DL02-08
3/23
3/30
3/27
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
April 1-10 2003
DL02-05
DL02-08
4/1
4/1
4/8
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
April 11-20 2003
DL02-05
DL02-08
4/17-18
4/19
4/13
154°
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152°
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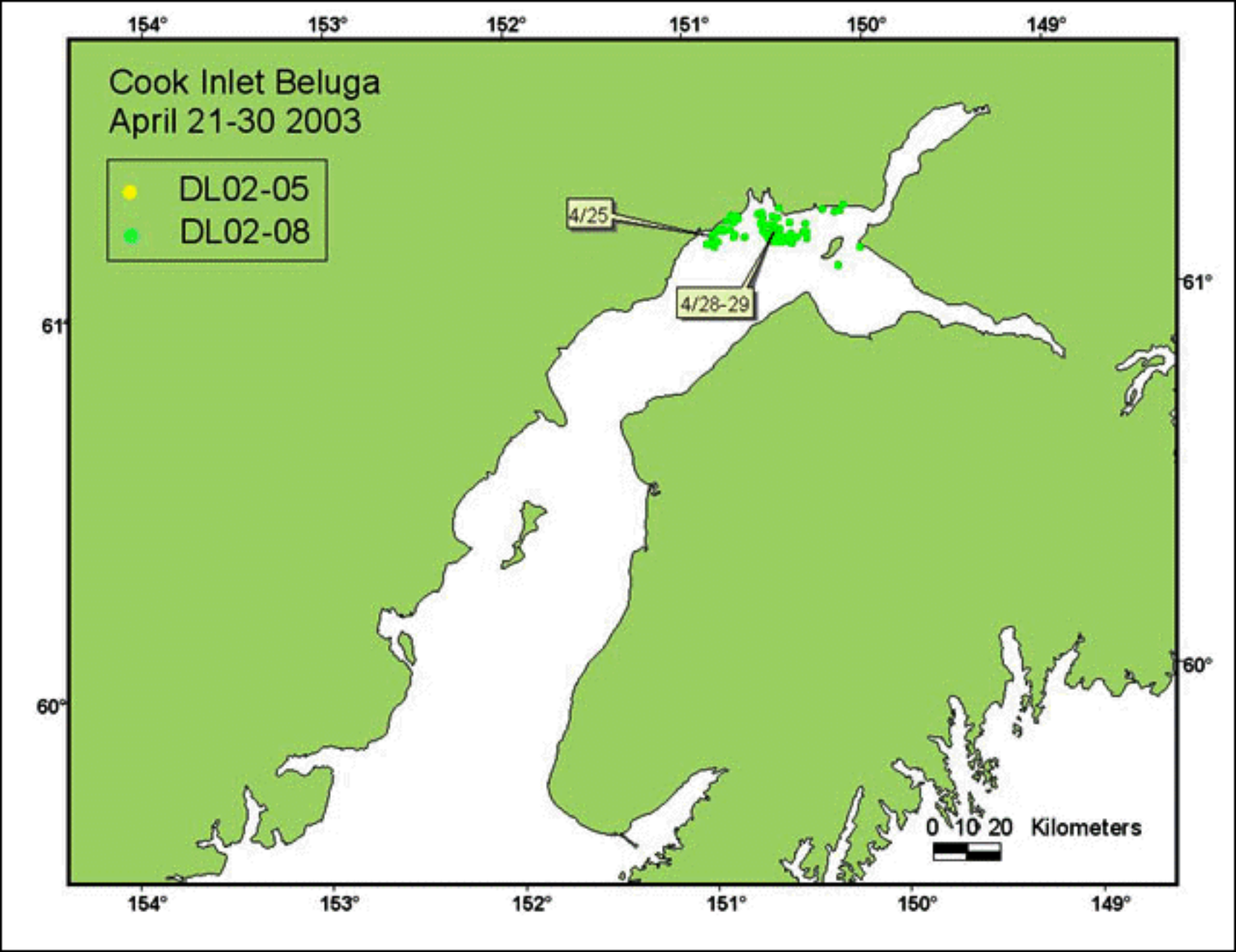
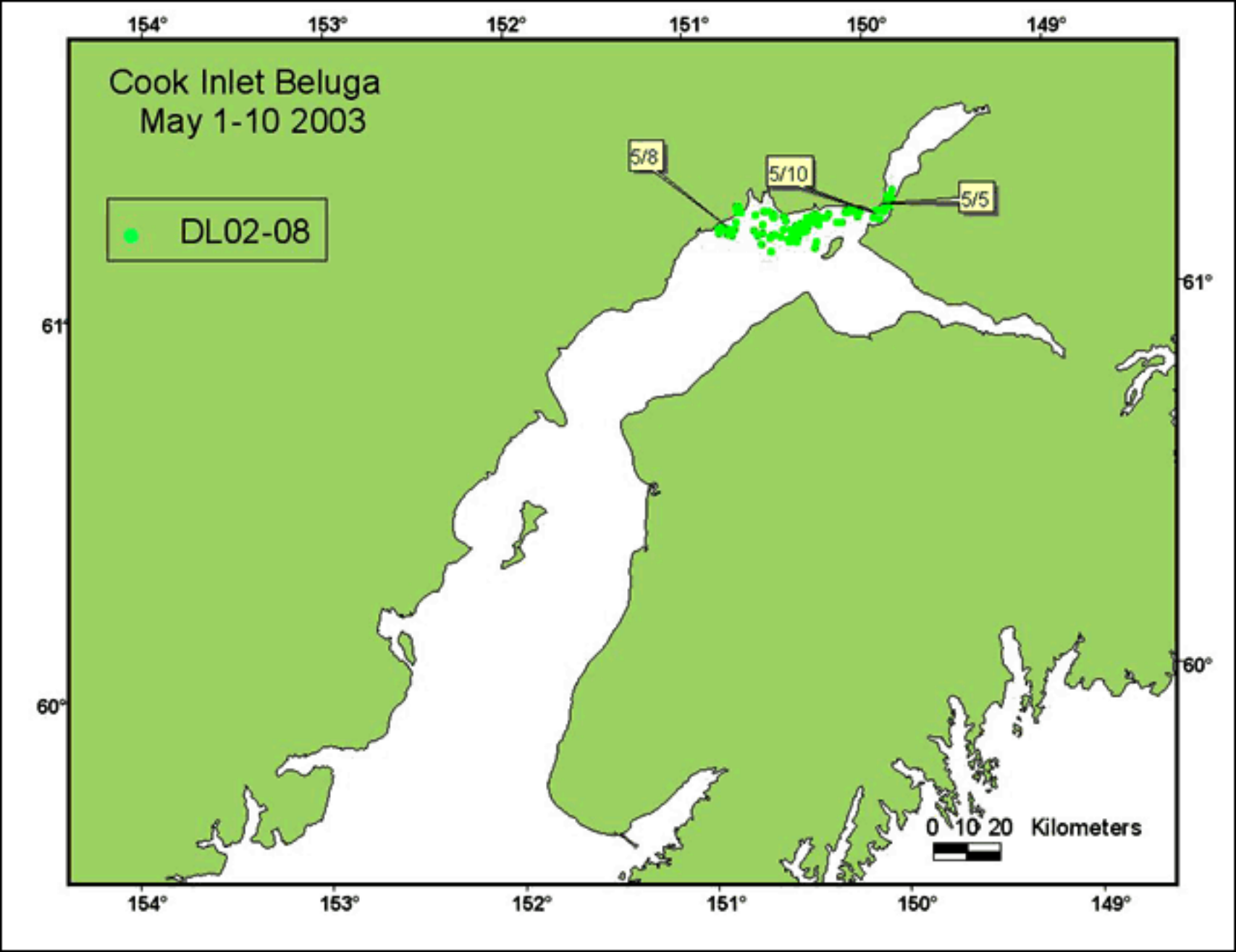
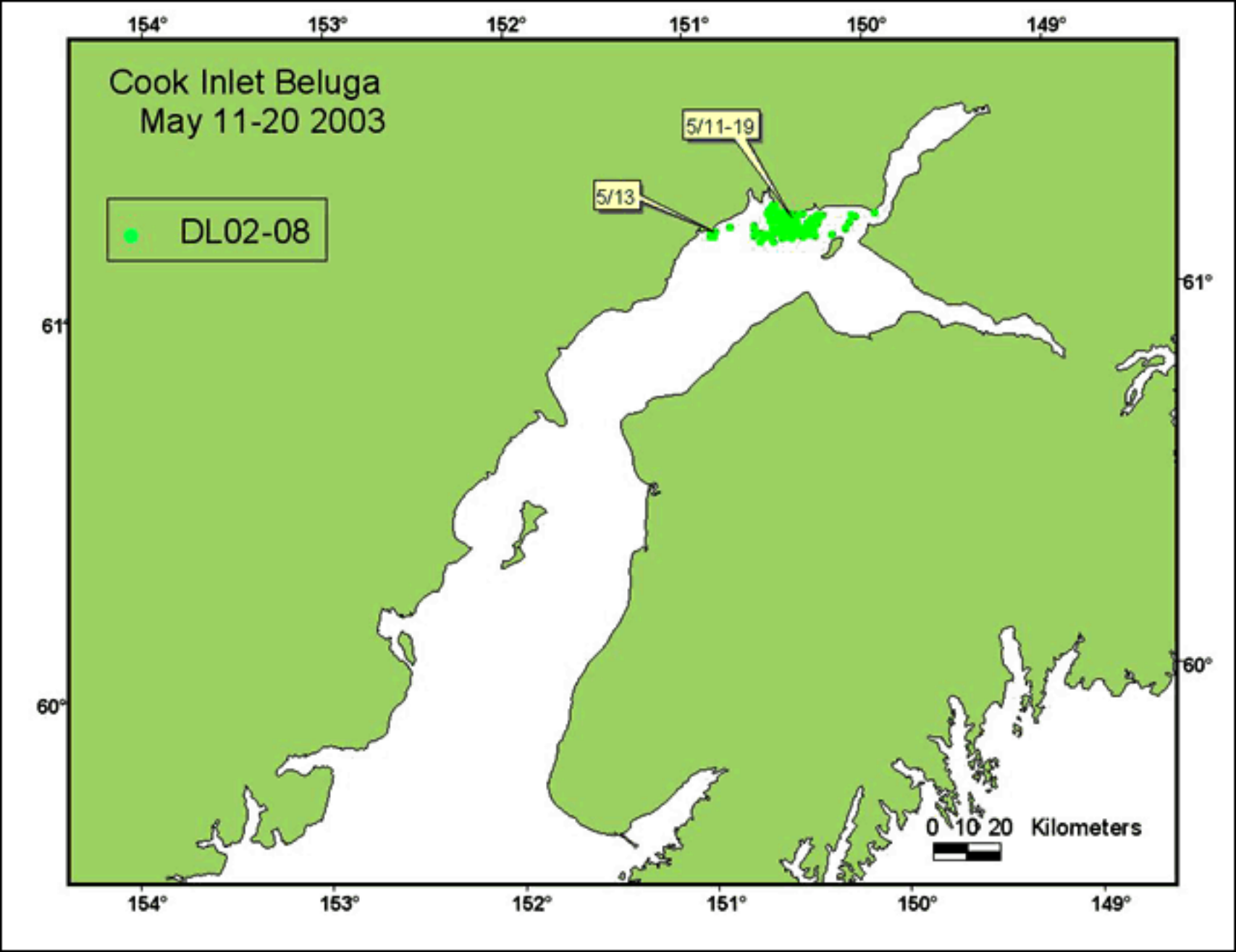
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
April 21-30 2003
DL02-05
DL02-08
4/25
4/28-29
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
May 1-10 2003
DL02-08
5/8
5/10
5/5
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
May 11-20 2003
DL02-08
5/11-19
5/13
154°
153°
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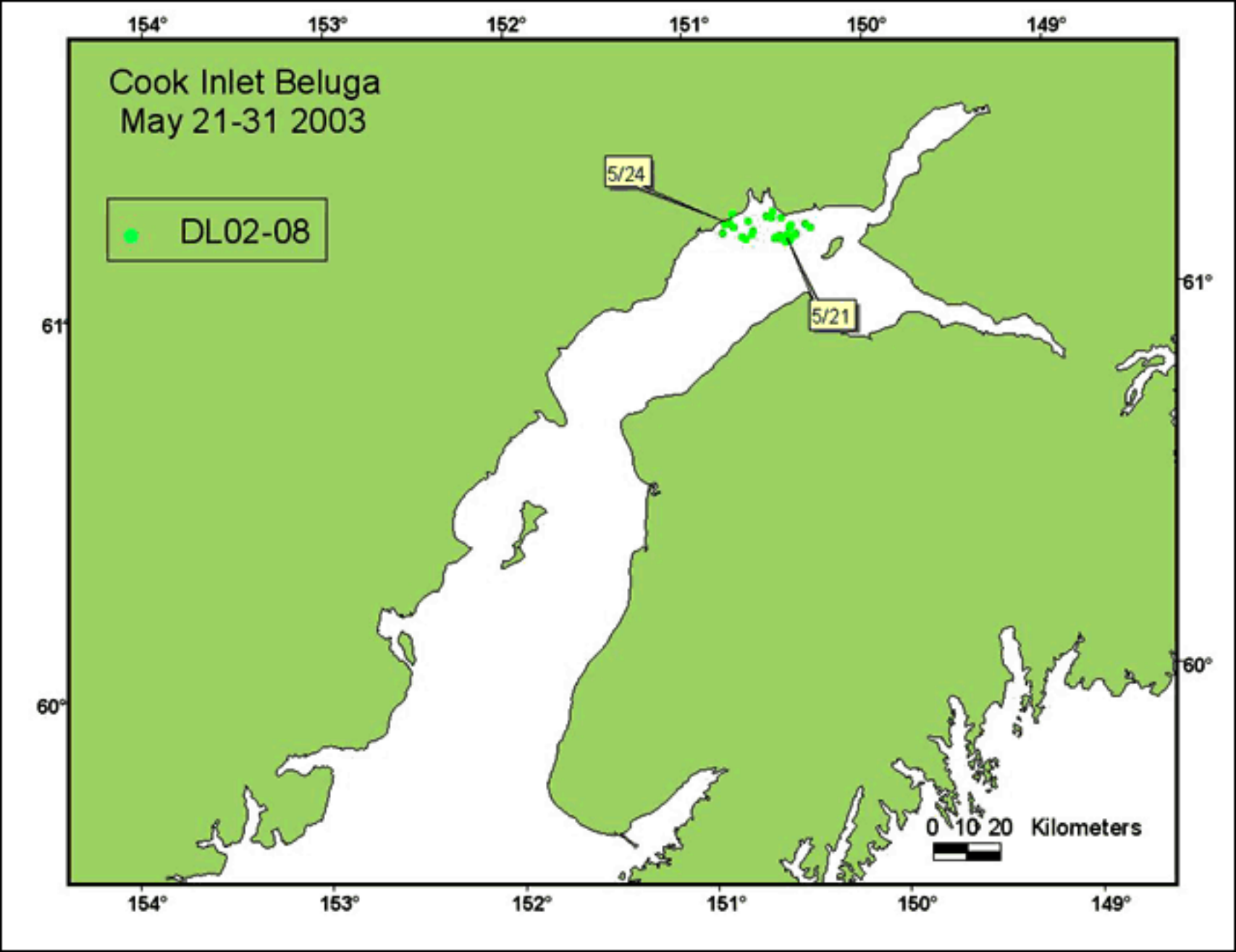
0 10 20 Kilometers


Cook Inlet Beluga
May 21-31 2003
DL02-08
5/24
5/21
154°
153°
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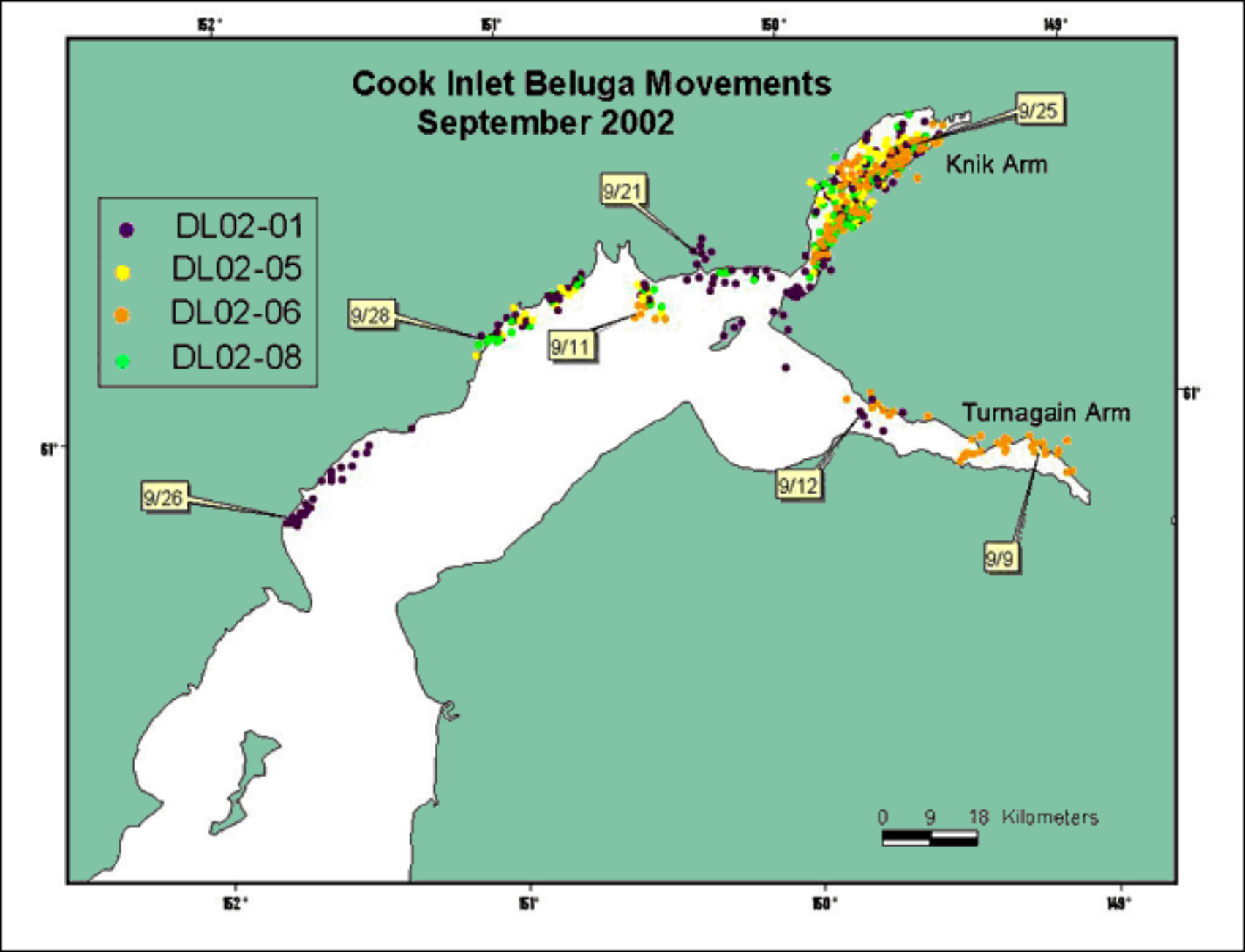
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga Movements
September 2002
DL02-01
DL02-05
DL02-06
DL02-08
9/25
Knik Arm
9/21
9/28
9/11
Turnagain Arm
9/26
9/12
9/9
0 9 18 Kilometers
152°
151°
150°
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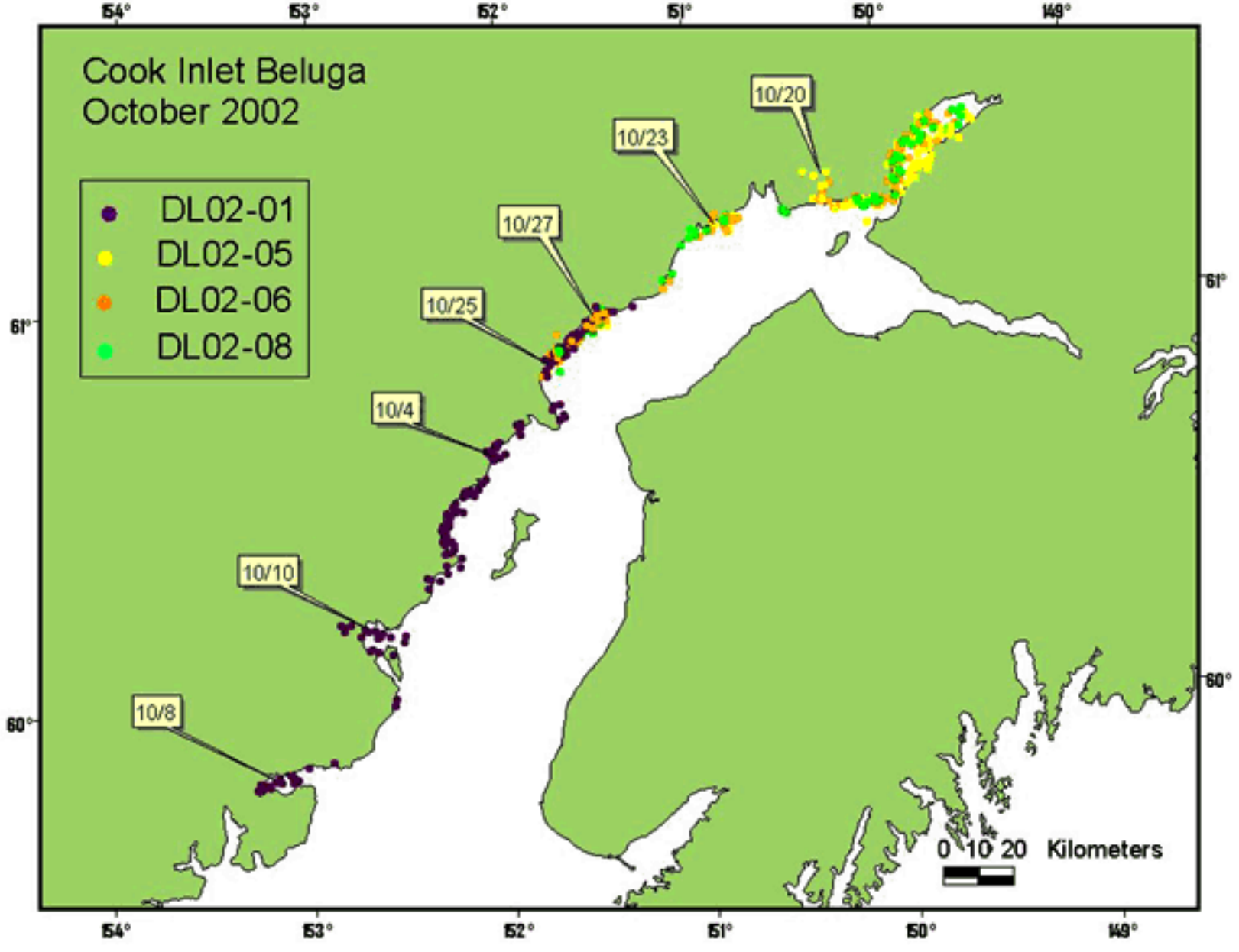
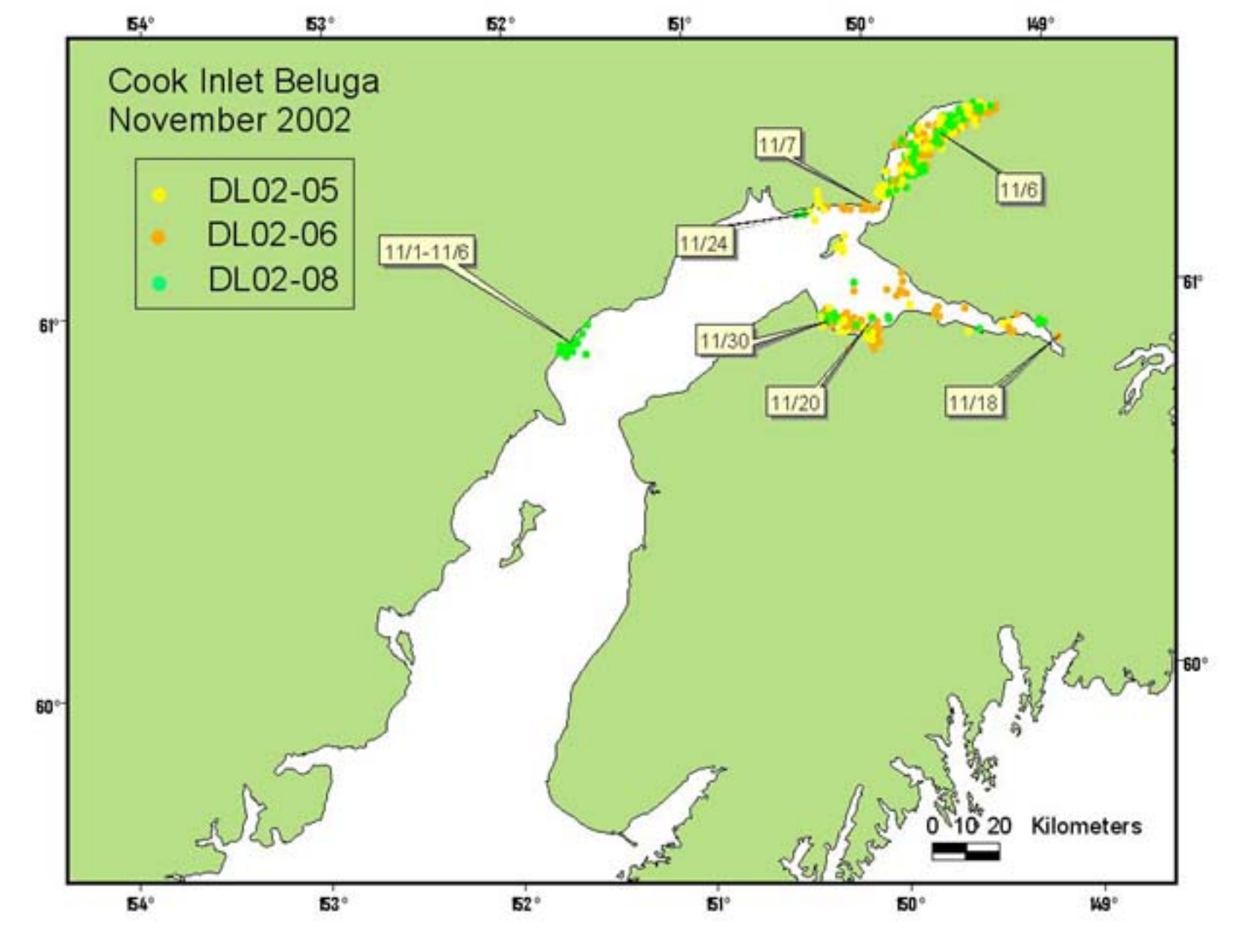
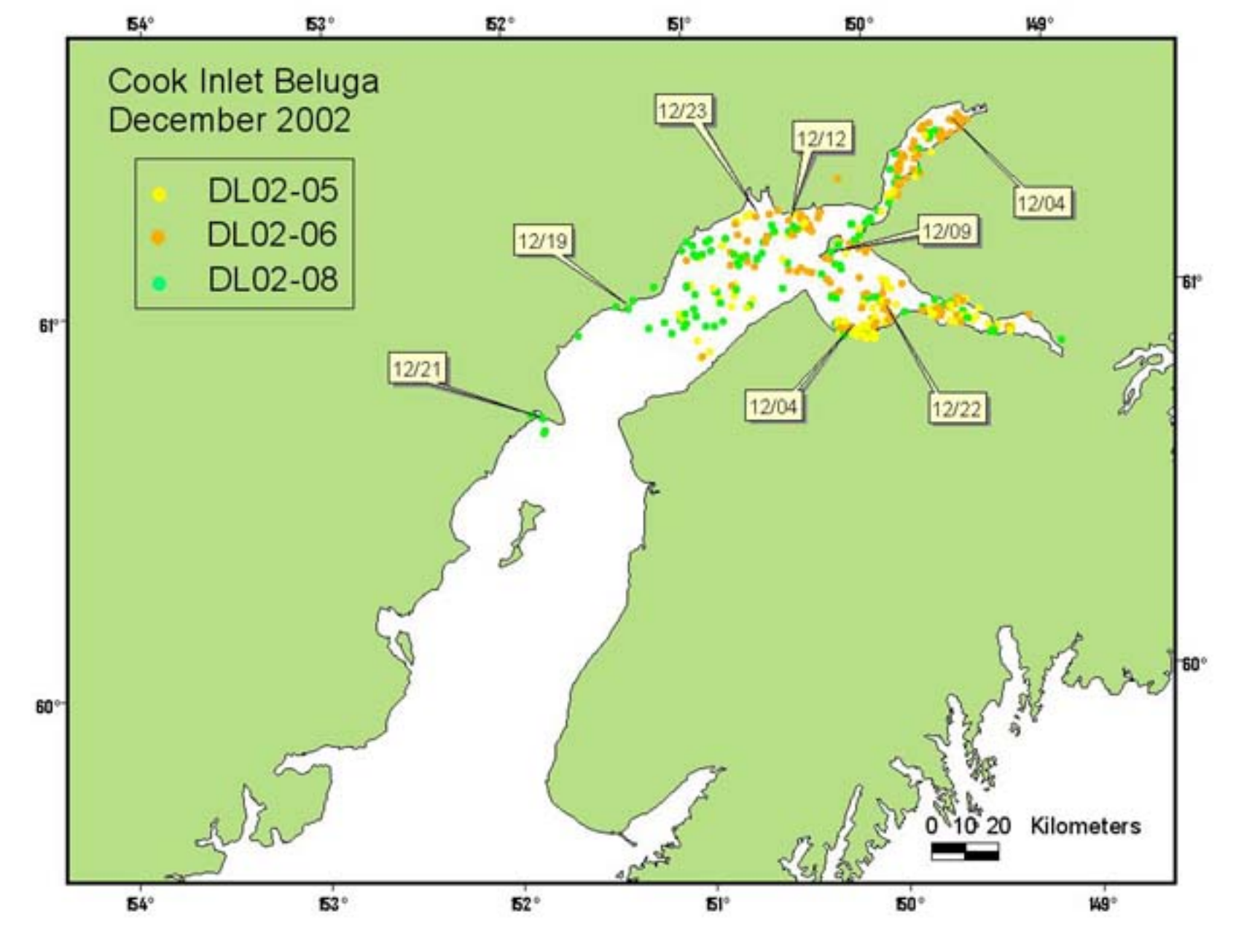
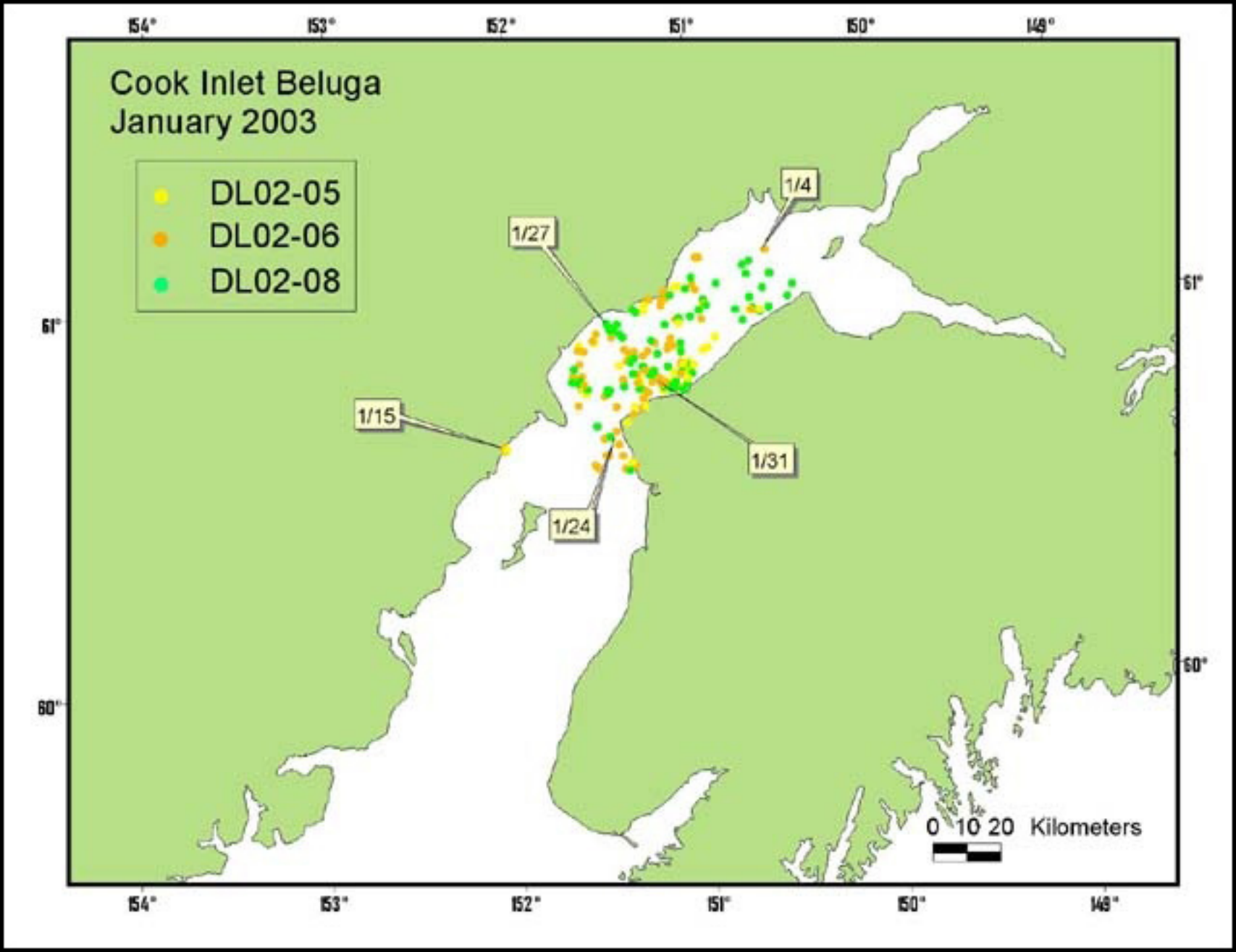
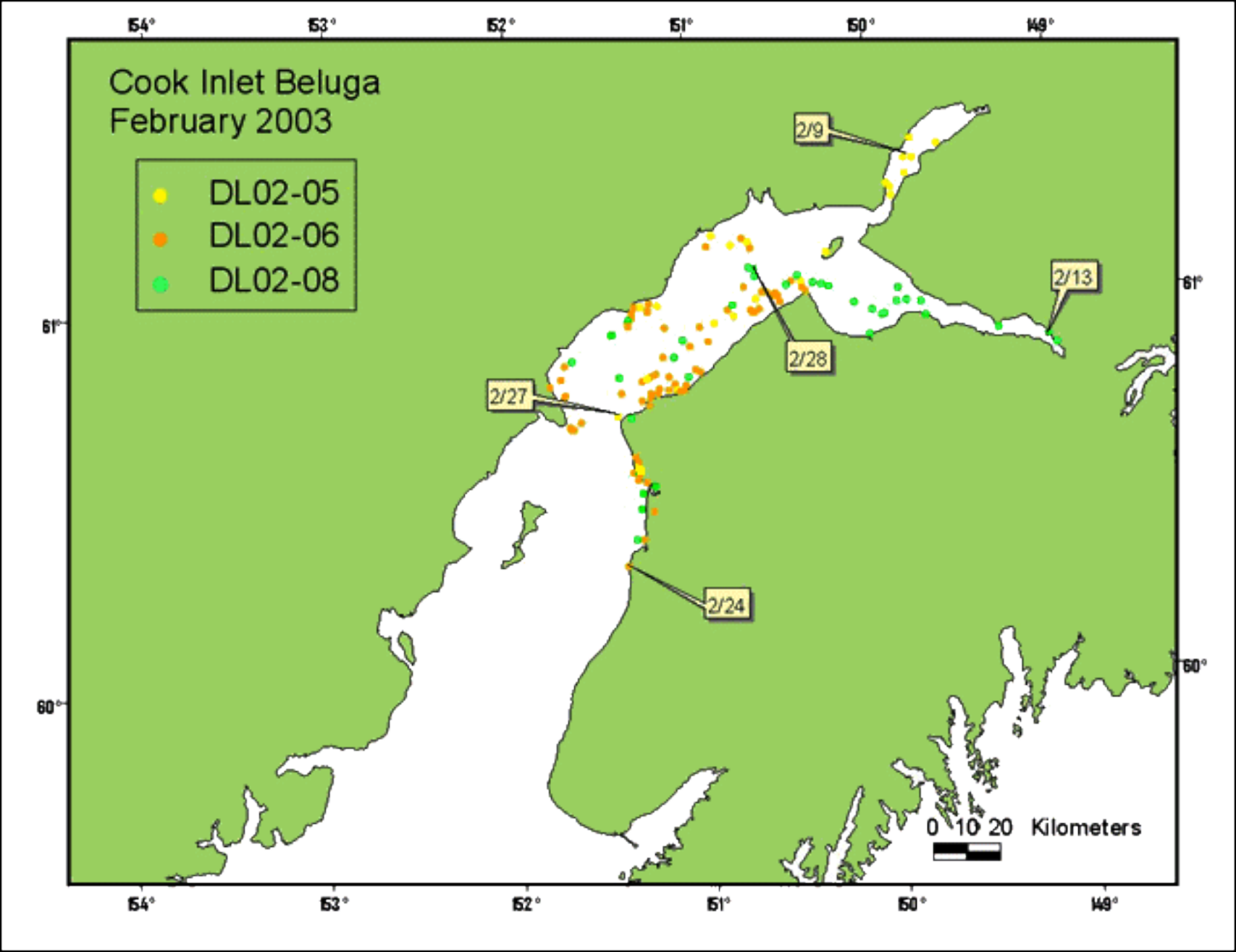
61°

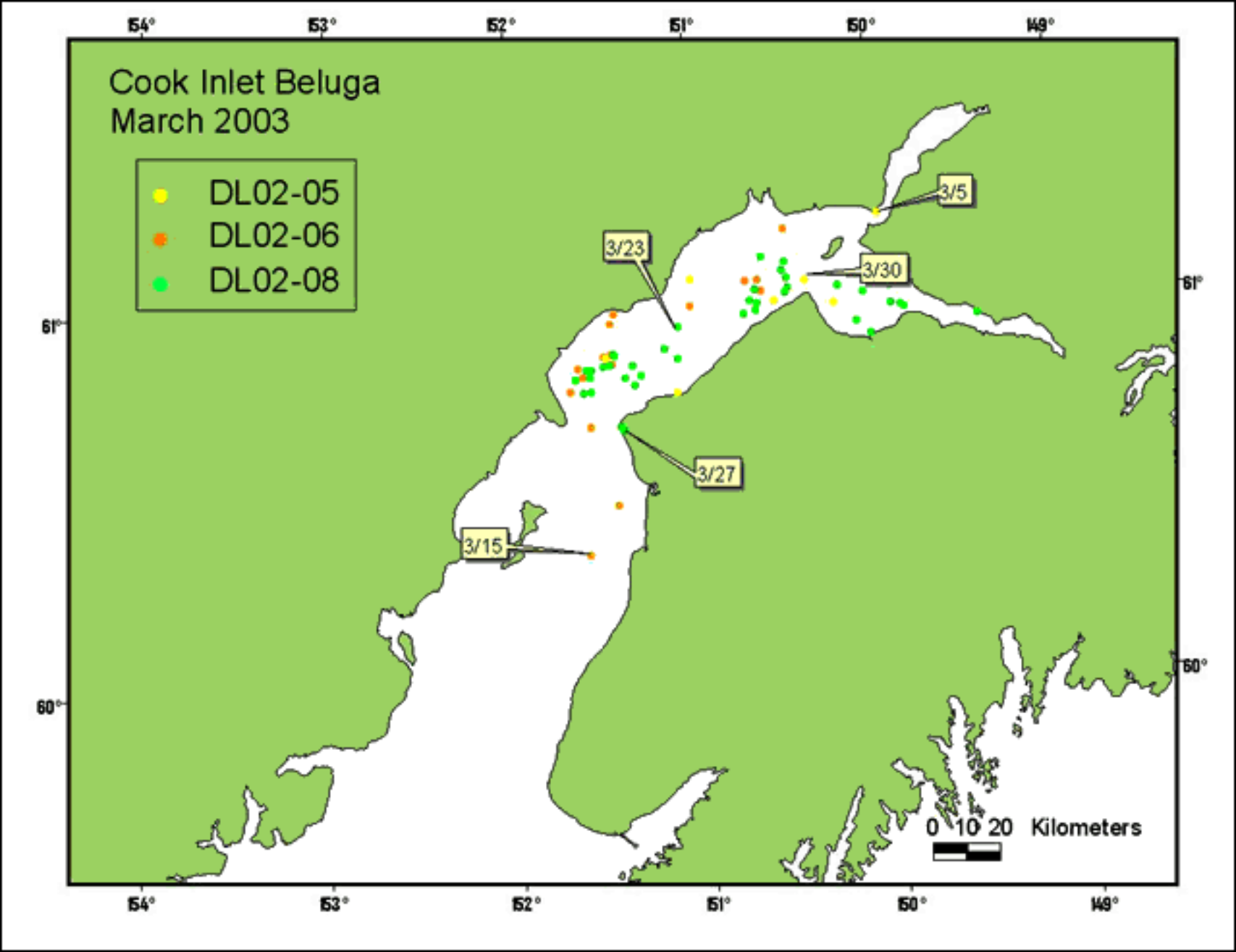

Cook Inlet Beluga
October 2002
DL02-01
DL02-05
DL02-06
DL02-08
10/20
10/23
10/27
10/25
10/4
10/10
10/8
0 10 20 Kilometers
154°
153°
152°
151°
150°
149°
61°
60°

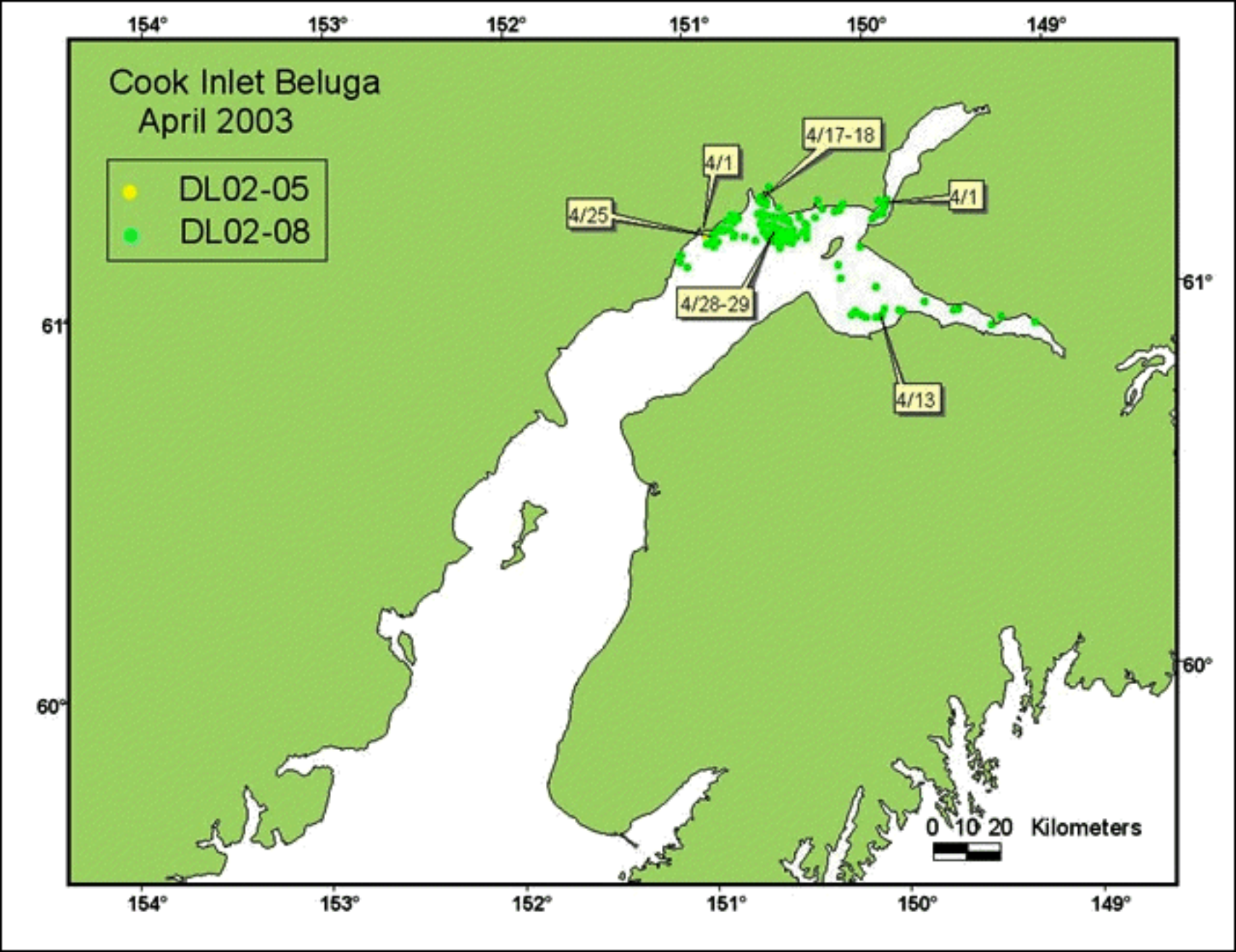

Cook Inlet Beluga
November 2002
DL02-05
DL02-06
DL02-08
11/1-11/6
11/7
11/6
11/24
11/30
11/20
11/18
0 10 20 Kilometers
154°
153°
152°
151°
150°
149°
61°
60°

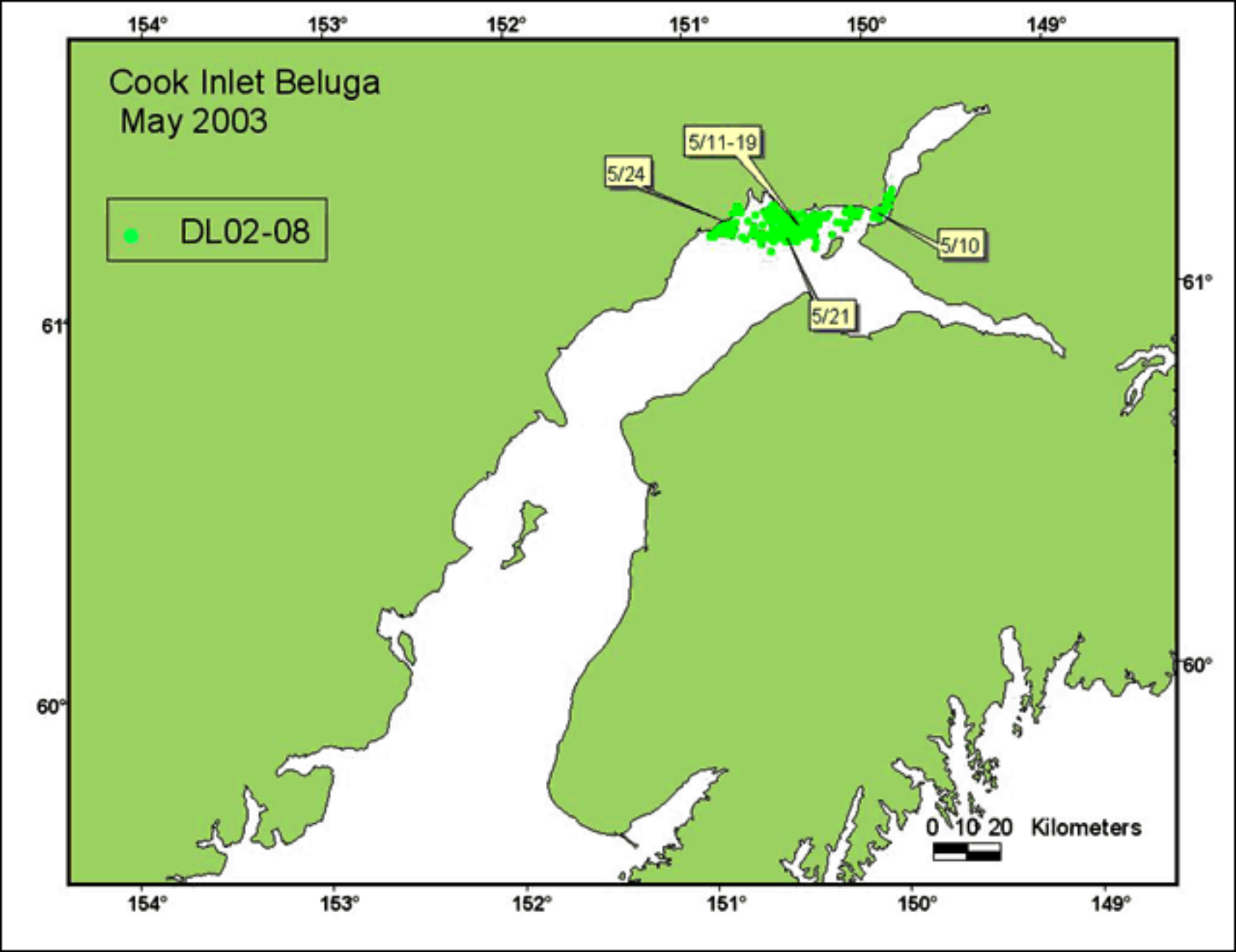

Cook Inlet Beluga
December 2002
DL02-05
DL02-06
DL02-08
12/23
12/12
12/04
12/09
12/19
12/21
12/04
12/22
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
January 2003
DL02-05
DL02-06
DL02-08
1/4
1/27
1/15
1/31
1/24
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
February 2003
DL02-05
DL02-06
DL02-08
2/9
2/13
2/28
2/27
2/24
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
March 2003
DL02-05
DL02-06
DL02-08
3/5
3/23
3/30
3/27
3/15
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
April 2003
DL02-05
DL02-08
4/1
4/17-18
4/1
4/25
4/28-29
4/13
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers


Cook Inlet Beluga
May 2003
DL02-08
5/11-19
5/24
5/10
5/21
154°
153°
152°
151°
150°
149°
61°
60°
0 10 20 Kilometers