ALASKA FISHERIES SCIENCE CENTER
National Marine Mammal Laboratory
Polar Ecosystems Program

Aleutian Harbor Seal Satellite Telemetry Study

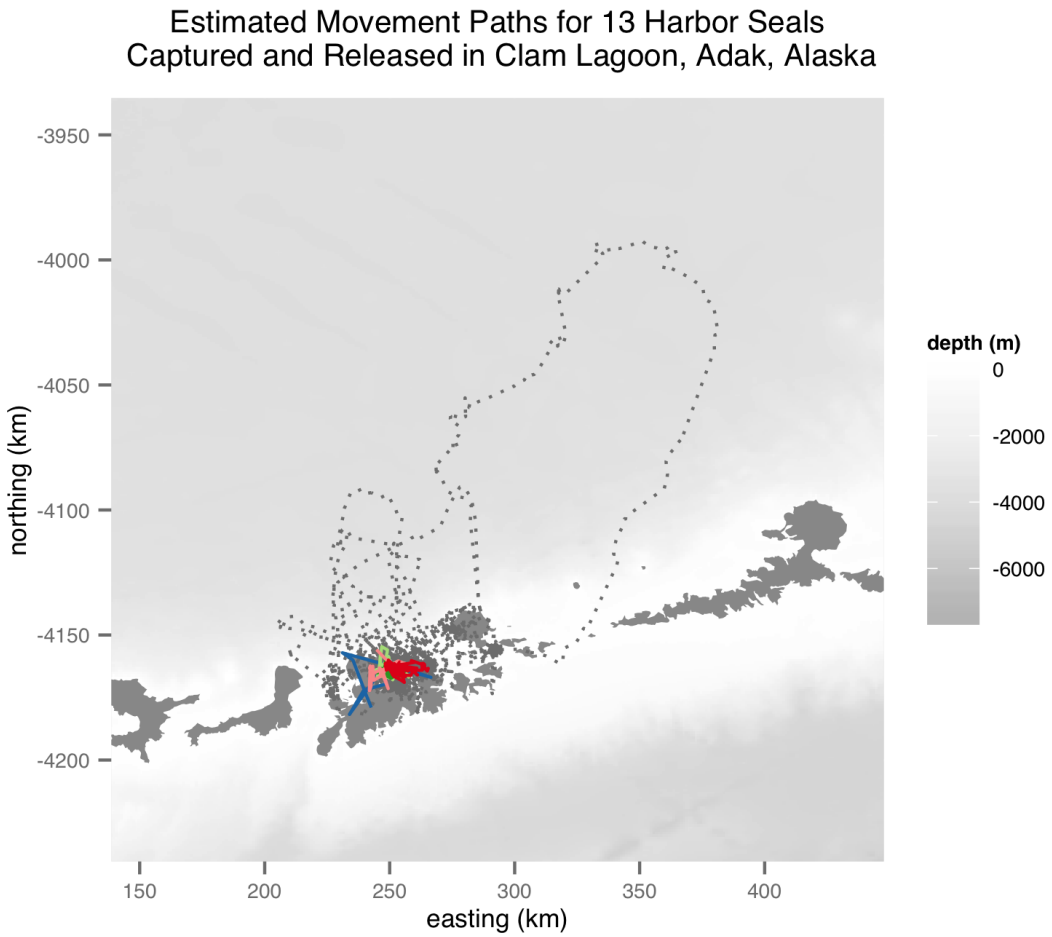
Shawn P. Dahle, Josh M. London and Peter L. Boveng

Report Generated: May 04 2015

Background

A team of biologists and veterinarians from NOAA, the National Park Service, and the Marine Mammal Center–with logistical support from the U.S. Fish and Wildlife Service–conducted a research project on harbor seals on Adak Island during September 2-9, 2014. The goal of this project was to collect baseline data on the seals' health and behaviors since no prior studies have been conducted on harbor seals in the Aleutian Islands. Using small boats and tangle nets, the team captured 15 seals in Clam Lagoon, located in the northeast corner of Adak Island. The sex composition was 10 females and 5 males, and by age-class was 9 adults, 5 sub-adults, and 1 weaned pup. All seals were examined, measured, and weighed to assess their physical condition. Blood and tissue samples were collected to analyze their health, diet, and genetic composition. Although samples have not been tested yet for contaminants or diseases, all of the seals appeared to be healthy and in good condition.

Satellite tags were attached to hair on the heads or backs of 13 seals that had sufficiently completed their annual "molt" (shedding and regrowth of hair and skin). These tags will transmit the seals' movements and diving and haul-out behaviors for up to 1 year, then will fall off during next year's molt. Most seals also received a smaller satellite tag attached to their rear flipper which transmits location and haul-out data (no dive behavior) when the seals are out of the water. Two seals (`PV2014_2004` and `PV2014_2013`) were not sufficiently molted and only received the flipper tags. Because of the limited transmission opportunity, movement paths from these animals are less precise.



Tag Summary and Status

Table 1: Summary table describing tag status through May 3 2015

Seal ID	Age	Sex	Tag ID	Tag Placement	Most Recent Data
PV2014_2001	Adult	F	137489	FLPR	2014-12-30 14:32:18
PV2014_2001	Adult	F	37521	HEAD	2015-04-08 04:31:33
PV2014_2002	Adult	F	137502	FLPR	2014-09-19 21:30:38
PV2014_2002	Adult	F	141930	HEAD	2015-03-30 07:58:21
PV2014_2003	Adult	F	137488	FLPR	2015-01-25 23:55:45
PV2014_2003	Adult	F	141935	HEAD	2015-03-26 01:09:41
PV2014_2004	Adult	F	137499	FLPR	2015-05-01 17:06:43
PV2014_2005	Subadult	F	38552	HEAD	2015-04-02 03:40:16
PV2014_2006	Subadult	F	137503	FLPR	2015-05-02 18:18:53

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Seal ID	Age	Sex	Tag ID	Tag Placement	Most Recent Data
PV2014_2006	Subadult	F	99281	HEAD	2015-04-18 12:30:02
PV2014_2007	YOY	M	99284	BACK	2015-02-22 05:20:33
PV2014_2013	Adult	M	137496	FLPR	2014-11-19 13:38:19
PV2014_2014	Adult	F	137506	FLPR	2015-03-27 01:03:03
PV2014_2014	Adult	F	141937	HEAD	2015-03-15 02:54:53
PV2014_2015	Adult	F	137494	FLPR	2015-01-30 23:56:29
PV2014_2015	Adult	F	141936	HEAD	2015-03-28 16:38:05
PV2014_2016	Subadult	M	66977	HEAD	2015-04-28 00:04:07
PV2014_2017	Subadult	F	137493	FLPR	2015-03-06 01:35:00
PV2014_2017	Subadult	F	141932	HEAD	2015-03-22 01:54:11
PV2014_2018	Adult	M	137516	FLPR	2015-05-02 20:26:29
PV2014_2018	Adult	M	141934	HEAD	2015-03-23 02:50:17
PV2014_2019	Subadult	M	137512	FLPR	2015-04-20 18:27:19
PV2014_2019	Subadult	M	36526	HEAD	2015-04-14 09:33:19
PV2014_2020	Adult	F	137507	FLPR	2015-02-22 21:47:45
PV2014_2020	Adult	F	141933	HEAD	2015-03-24 03:18:03

Highlights Since March 2015

Many tags stopped transmitting during late March and April, likely due to battery failure. All 13 head or back-mounted tags have stopped transmitting and only 3 of 12 flipper-mounted tags remain. This is likely due to the tags transmitting more than expected as a result of higher than expected haul-out rates. Lower tag transmission rates will be used for future Aleutian harbor seal telemetry studies to hopefully extend their duration.

The 6 seals that were still being tracked during April showed restricted movements, remaining within about 20 km of Clam Lagoon, similar to the previous reporting period (February-March).

The 4 seals that transmitted dive data during April continued to dive at similar frequencies and depths as the previous reporting period.

The seals' haul-out behaviors also remained fairly consistent last month, with adult and subadult females hauling out mostly during the day, and subadult males showing a more variable haul-out pattern.

Movements, Dive and Haul-out Behavior by Sex and Age Class

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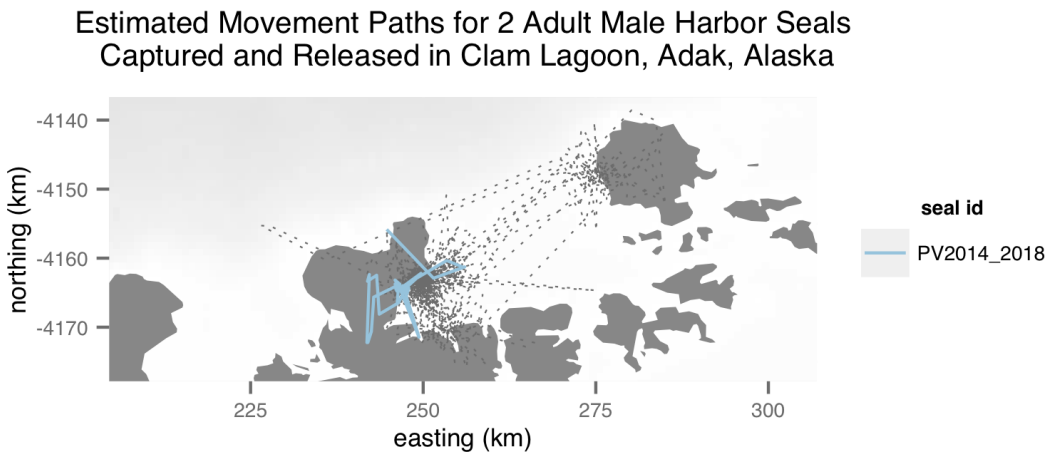

Figure 1: Map depicting the estimated movement paths for adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Movement paths are derived from a movement model with input from both Argos and GPS estimates. Dotted lines represent movement through the end of March 2015. Colored lines represent movement from April 1 to May 3.

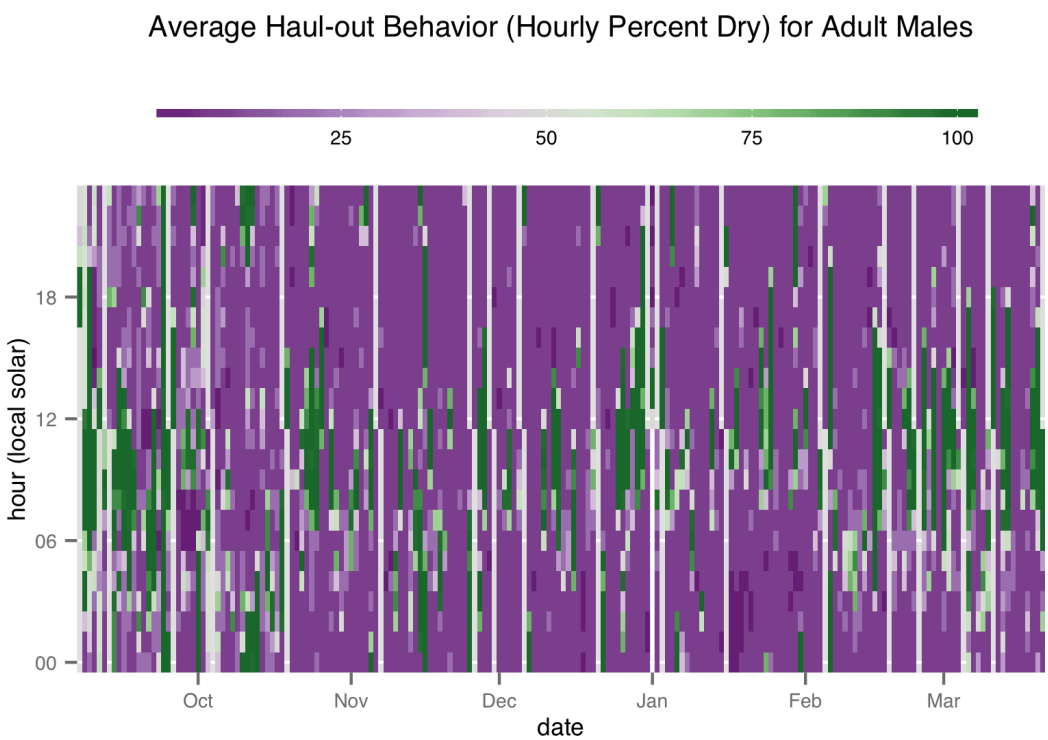

Figure 2: Average, hourly haul-out behavior (dry=onshore,wet=offshore) for adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Haul-out behavior is derived from wet/dry sensors on the satellite transmitters.

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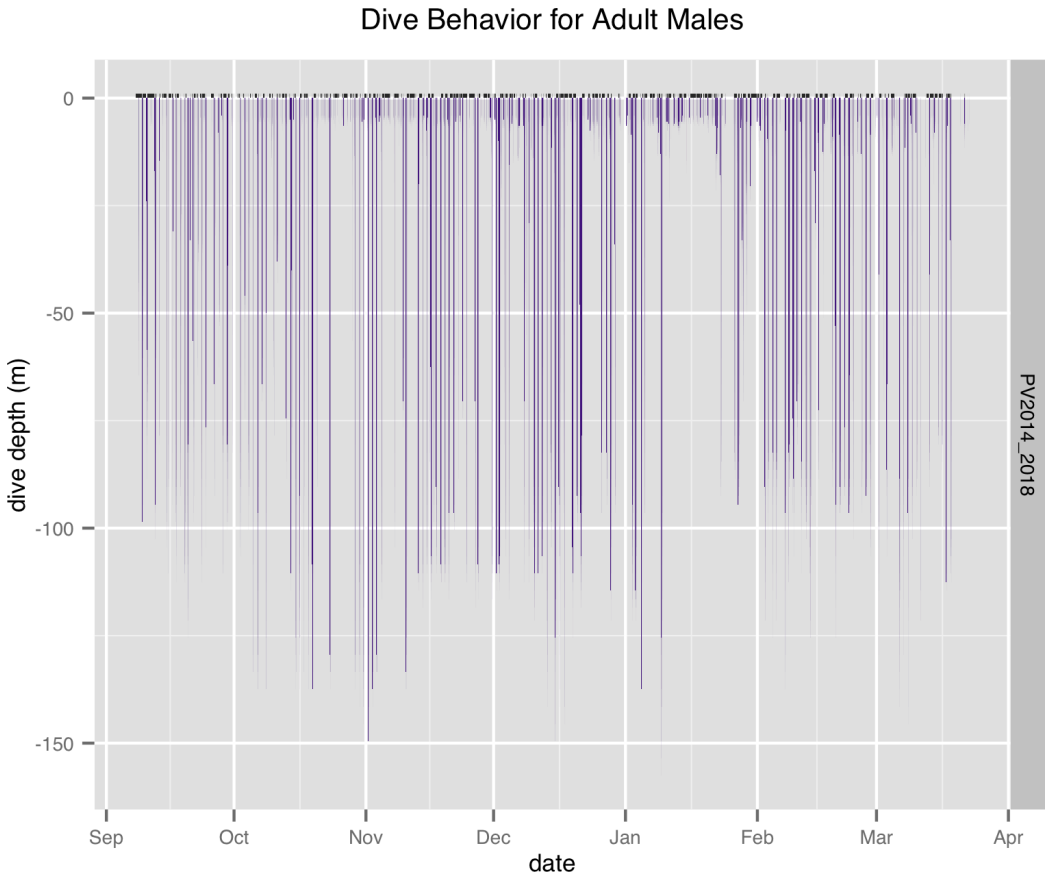

Figure 3: Dive behavior of adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Dive behavior is derived from a pressure/depth sensor on the satellite transmitter.

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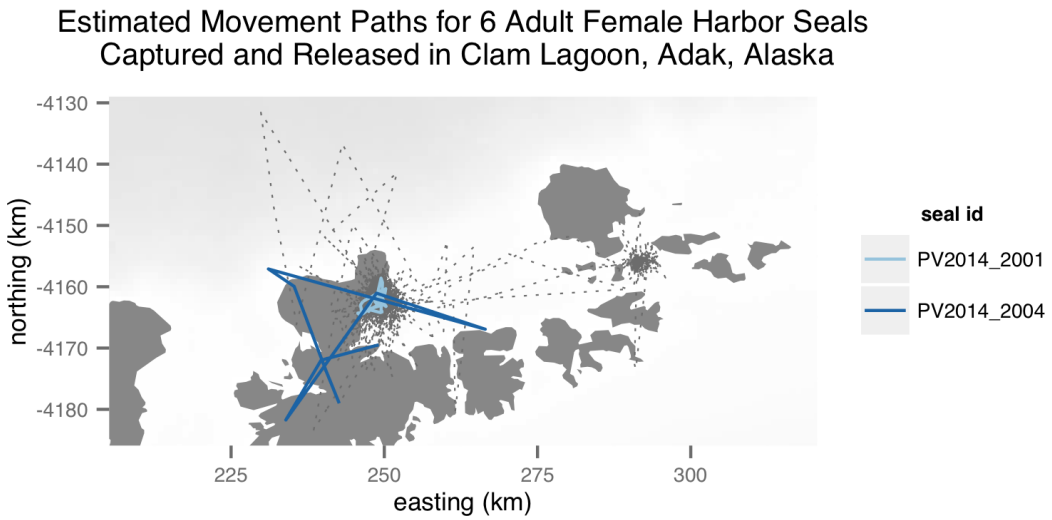

Figure 4: Map depicting the estimated movement paths for adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Movement paths are derived from a movement model with input from both Argos and GPS estimates. Dotted lines represent movement through the end of March 2015. Colored lines represent movement from April May 3.

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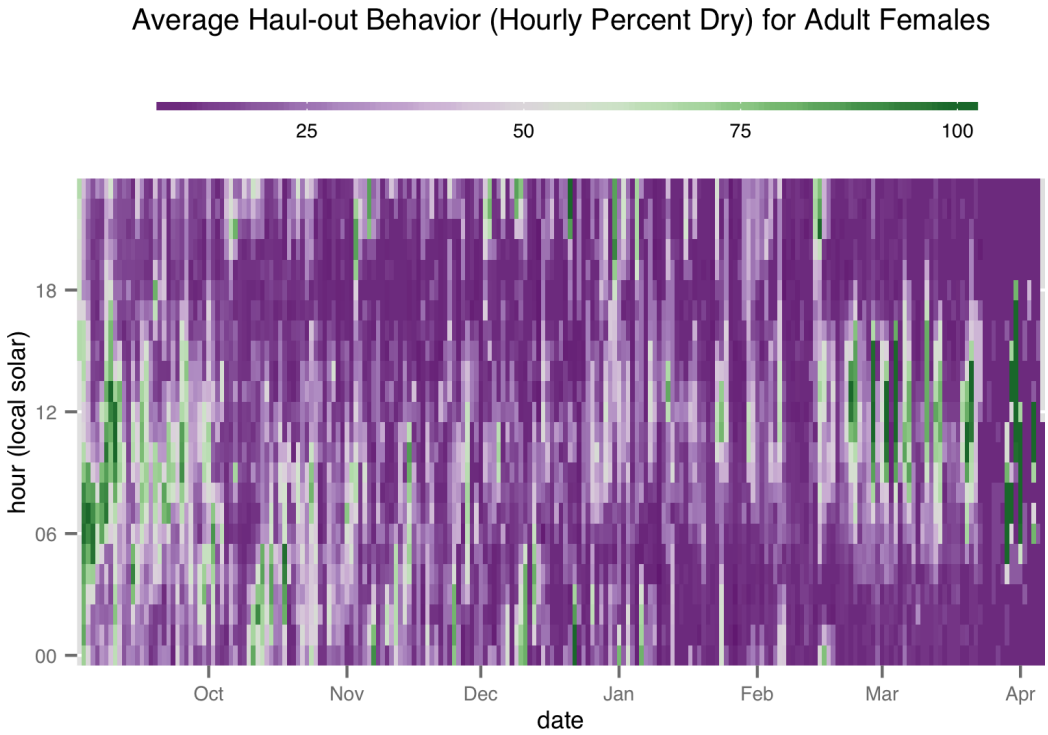

Figure 5: Average, hourly haul-out behavior (dry=onshore,wet=offshore) for adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Haul-out behavior is derived from wet/dry sensors on the satellite transmitters.

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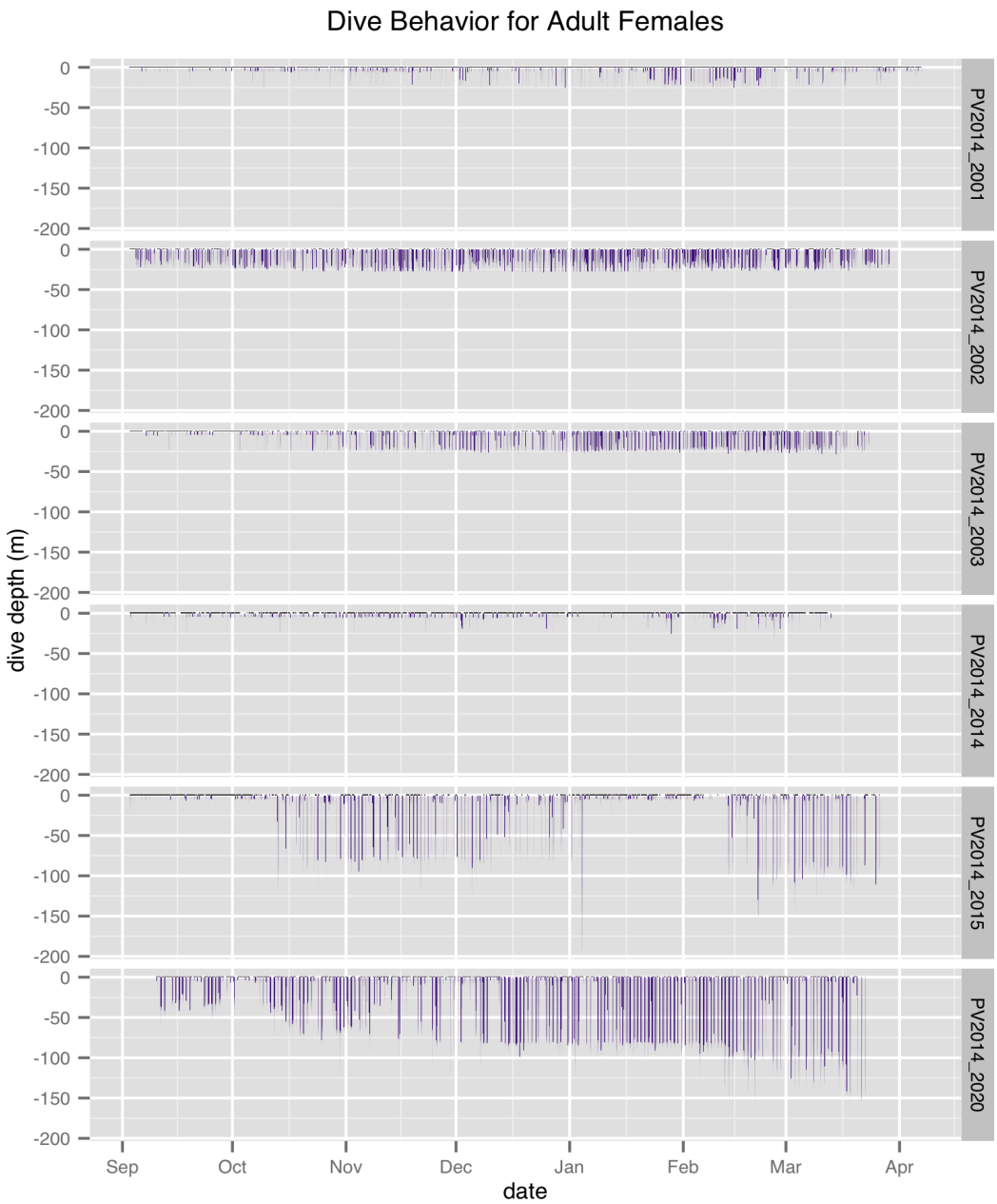

Figure 6: Dive behavior of adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Dive behavior is derived from a pressure/depth sensor on the satellite transmitter.

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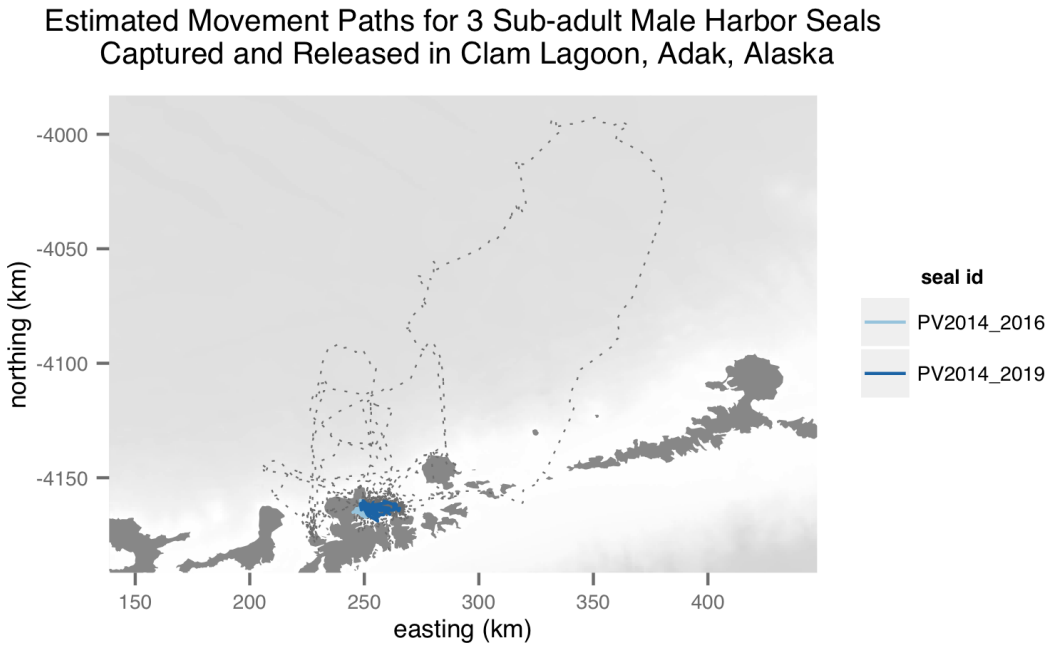

Figure 7: Map depicting the estimated movement paths for sub-adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Movement paths are derived from a movement model with input from both Argos and GPS estimates. Dotted lines represent movement through the end of March 2015. Colored lines represent movement from April 1 to May 3.

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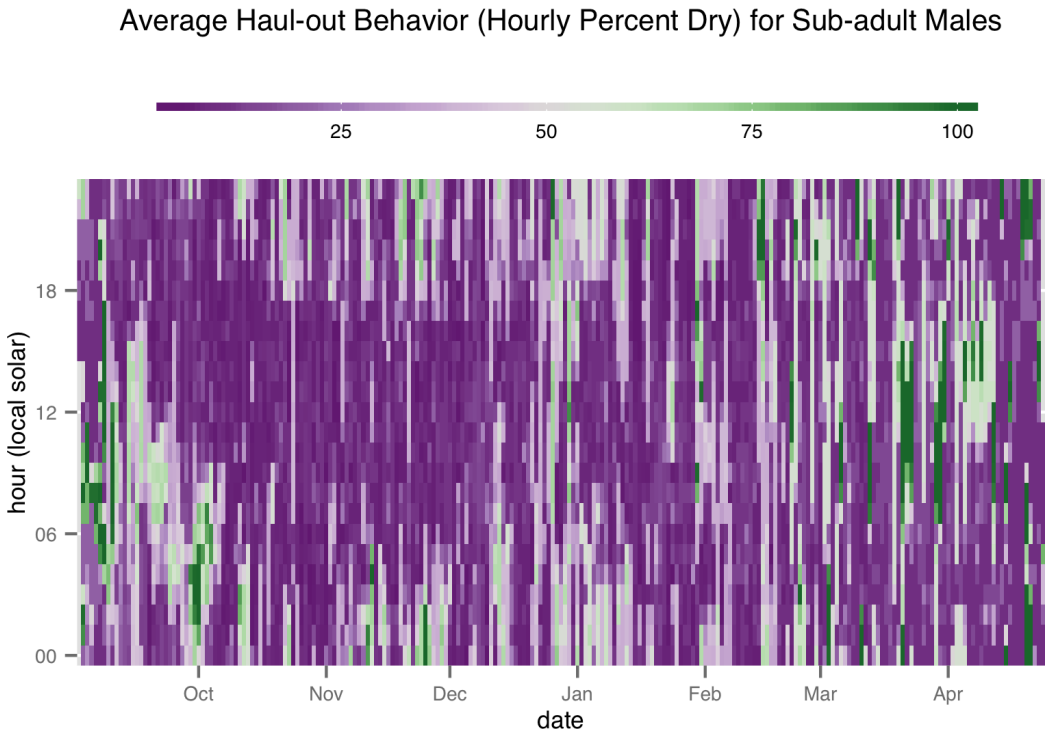

Figure 8: Average, hourly haul-out behavior (dry=onshore,wet=offshore) for sub-adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Haul-out behavior is derived from wet/dry sensors on the satellite transmitters.

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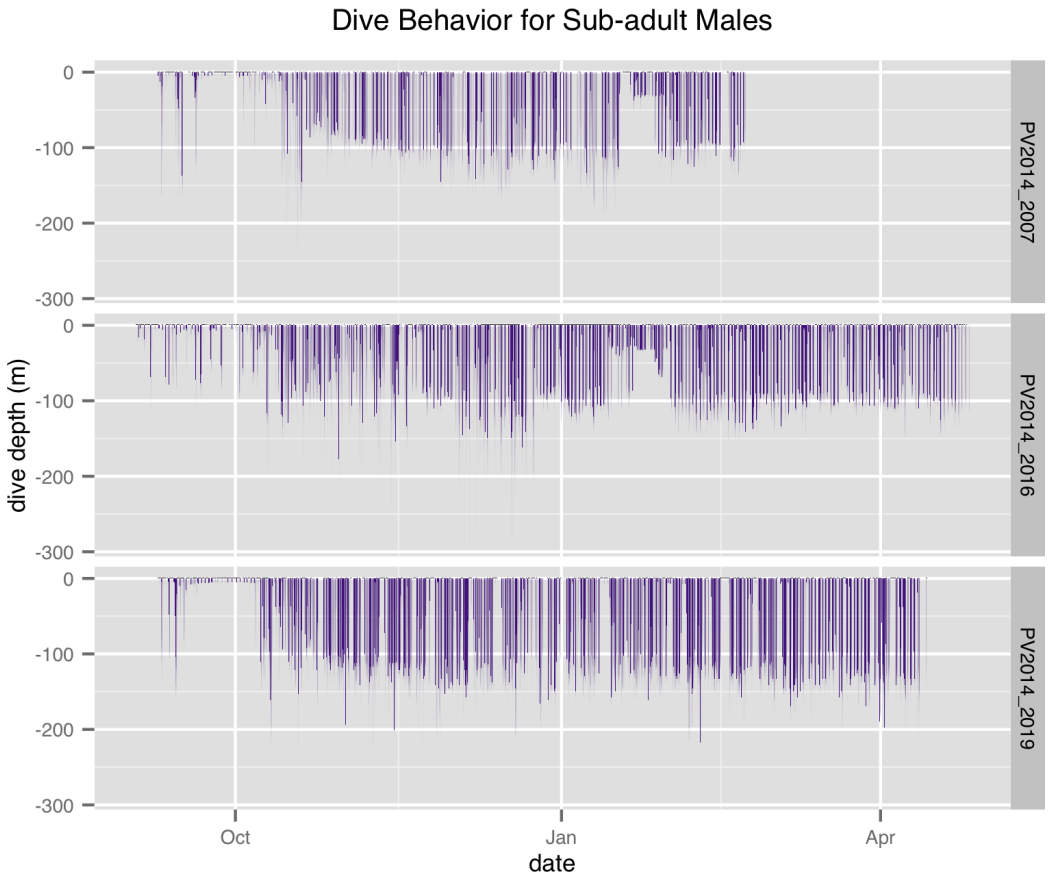

Figure 9: Dive behavior of sub-adult, male harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Dive behavior is derived from a pressure/depth sensor on the satellite transmitter.

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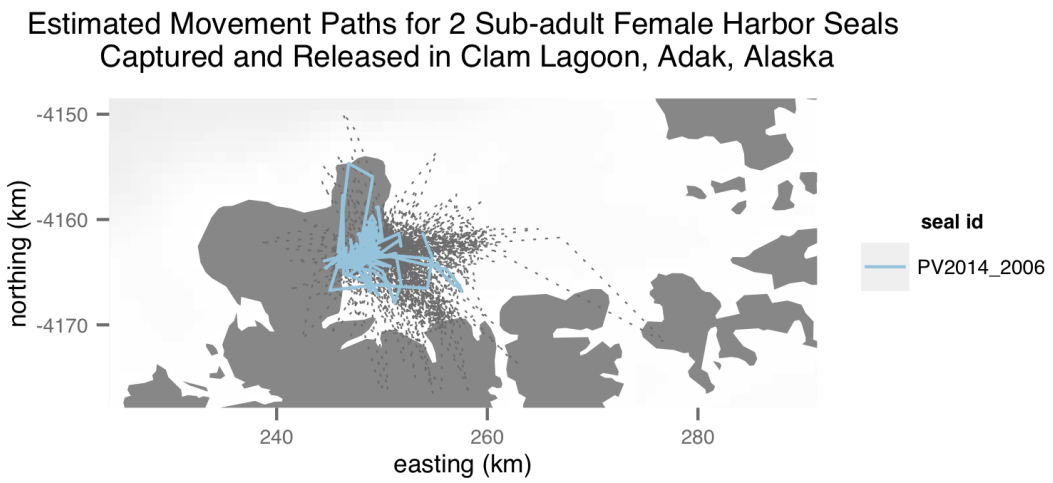

Figure 10: Map depicting the estimated movement paths for sub-adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Movement paths are derived from a movement model with input from both Argos and GPS estimates. Dotted lines represent movement through the end of March 2015. Colored lines represent movement from April 1 to May 3.

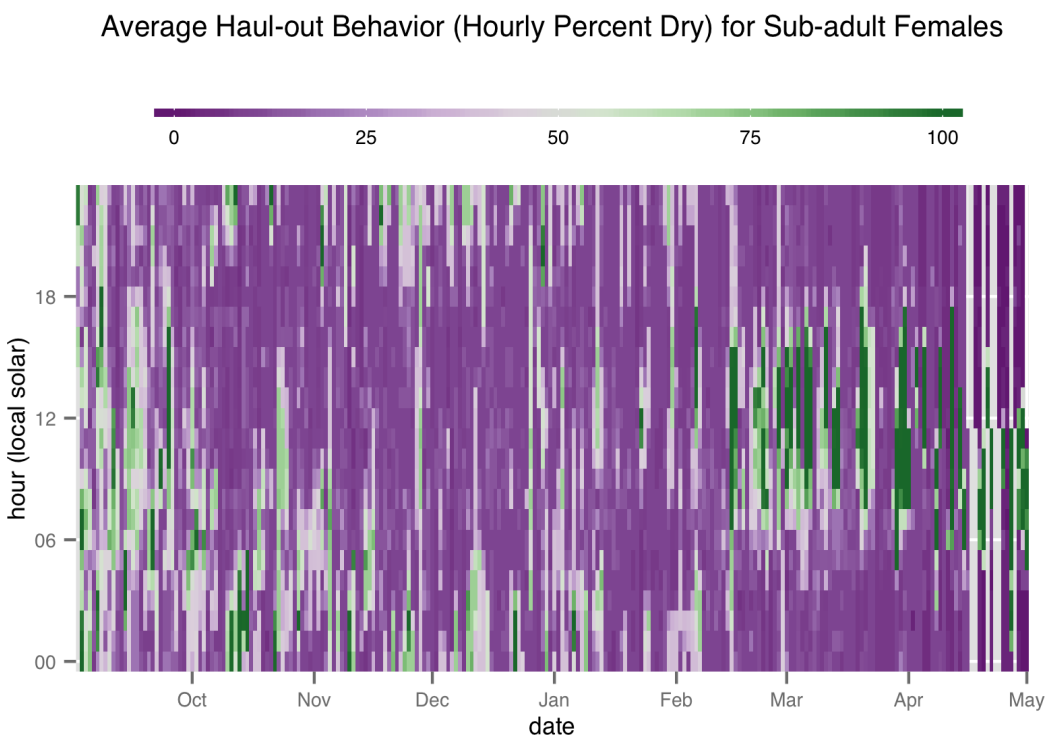

Figure 11: Average, hourly haul-out behavior (dry=onshore,wet=offshore) for sub-adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Haul-out behavior is derived from wet/dry sensors on the satellite transmitters.

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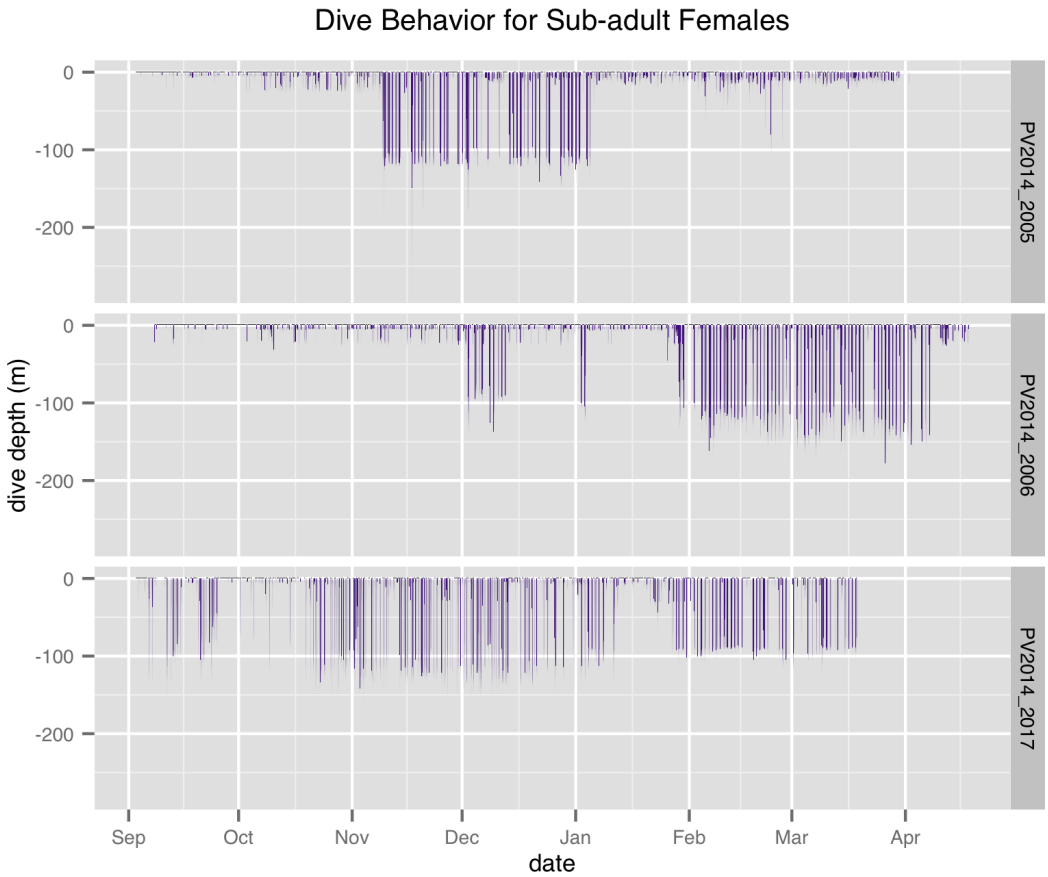

Figure 12: Dive behavior of sub-adult, female harbor seals captured and released in September 2014 in Clam Lagoon, Adak Island, Alaska. Dive behavior is derived from a pressure/depth sensor on the satellite transmitter.

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