

# Dispersal patterns and summer ocean distribution of adult Dolly Varden in the Beaufort Sea using satellite telemetry

Michael Courtney<sup>1</sup>, Andrew Seitz<sup>1</sup>, Brendan Scanlon<sup>2</sup>, and Randy Brown<sup>3</sup>

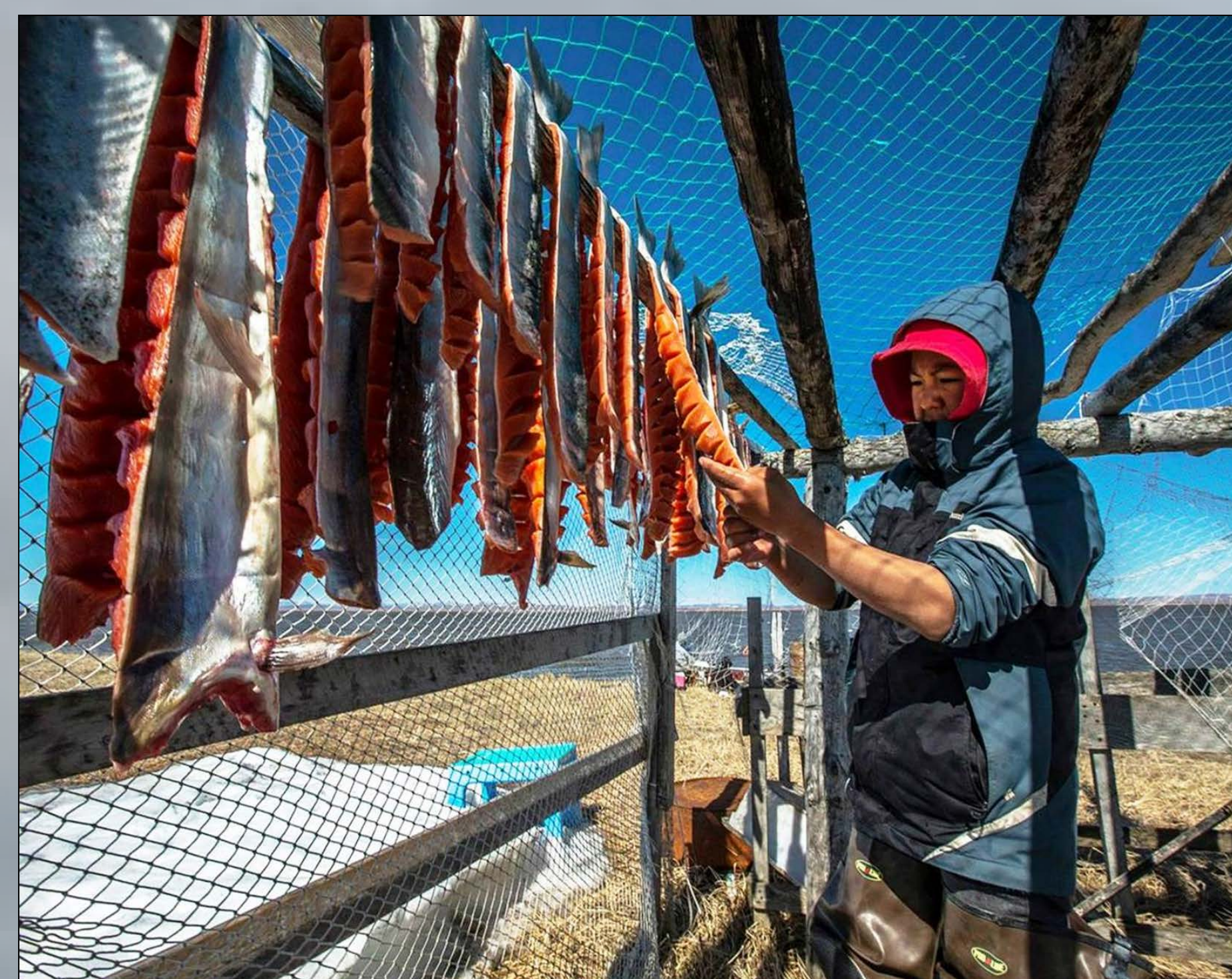
<sup>1</sup>School of Fisheries and Ocean Sciences, University of Alaska Fairbanks

<sup>2</sup>Alaska Department of Fish and Game, Sport Fish Division

<sup>3</sup>US Fish and Wildlife Service

## Introduction

- Dolly Varden (*Salvelinus malma*) is an important subsistence fish in northern Alaskan
- Dolly Varden may be broadly distributed throughout the Pacific Ocean during the summer, but its distribution in the Beaufort Sea is unknown
- Fisheries managers are unable to assess the interactions of human activities in the Beaufort, such as gas and oil exploration, on Dolly Varden



## Objective

- To provide information on the oceanic distribution, and depth and temperature occupancy of Dolly Varden

## Methods

- Captured Dolly Varden with hook and line and gillnets from rivers and coastal regions in northern Alaska
- PSAT tagged captured Dolly Varden over 60 cm (FL) and released them
- While externally attached, the PSATs measured and archived temperature, depth and estimated geolocation
- The tags detached from the fish, floated to the surface, and transmitted archived data to satellites and provided an end location

## Results

- 13 Dolly Varden  $66.4 \pm 3.6$  cm (FL; range 62–72 cm) were captured, and tagged in the Ivishak River (n=9) and in nearshore areas adjacent to Kaktovik, AK (n=4) (Fig. 2)
- Tagged Dolly Varden were at liberty for 15–75 days, and transited a minimum distance of 9–101 km ( $42 \pm 29$  km)
- Eight tags (62%) reported from freshwater rivers in northern Alaska, including the Hula Hula (n=2), Kongakut (n=1), and Ivishak (n=5) rivers (Fig. 2)
- Two tags failed to transmit end locations, and five never reported to satellites and were considered missing
- PSATs provided little of their archived depth and temperature readings

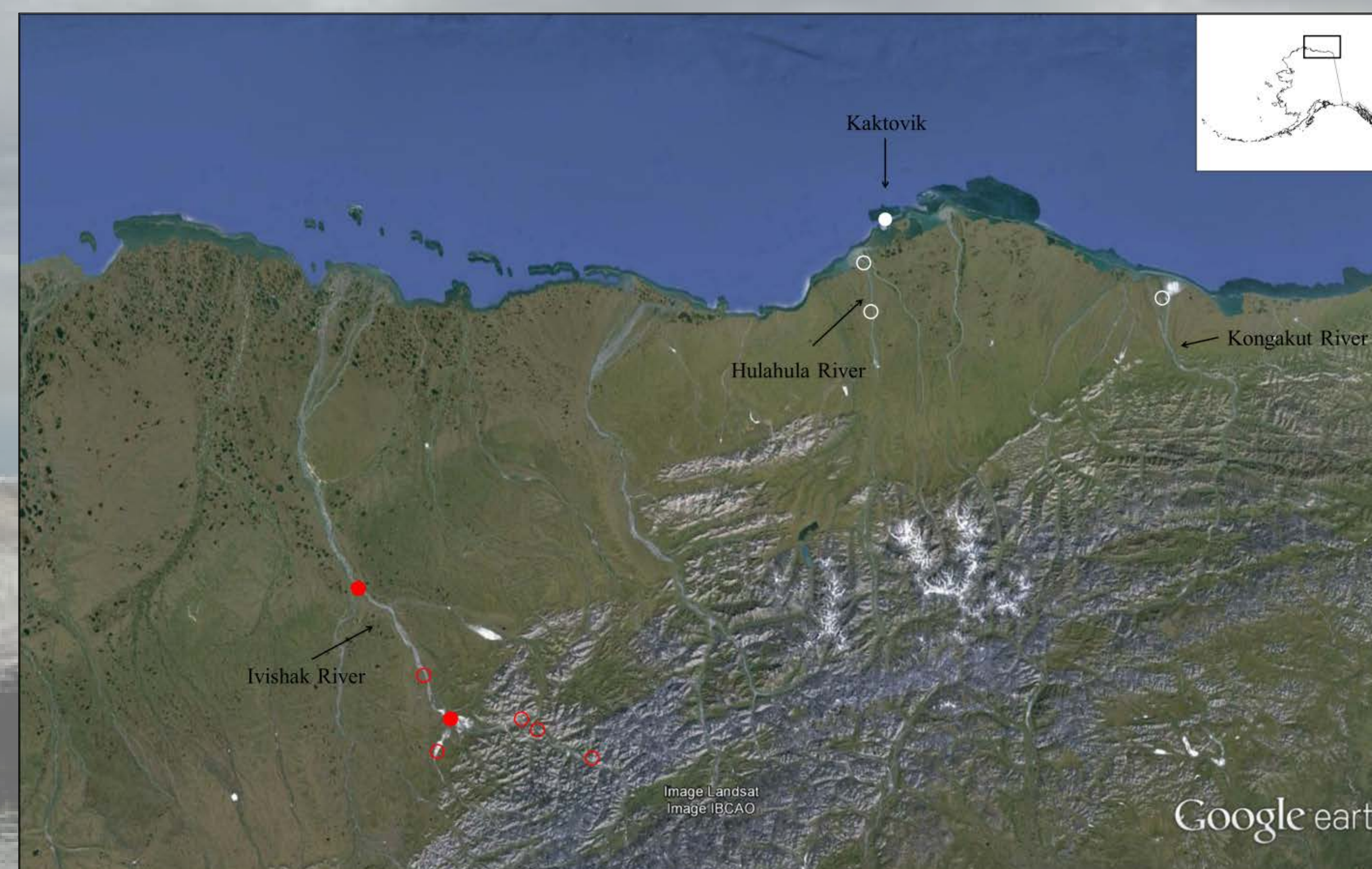


Figure 1. Tagging locations (solid circles) and end locations (hollow circles) of Dolly Varden from the North Slope of Alaska. The colors of the circles denote fish that were tagged in the Ivishak River (red) and coastal waters near Kaktovik, AK (white).

## Discussion

- No evidence that Dolly Varden tagged in the Ivishak River ever left freshwater
- Fish tagged in nearshore rivers appeared to quickly transit and reenter freshwater before the scheduled pop-up date
- In contrast to previous research on Dolly Varden of the North Slope, our results suggest that a proportion of adult Dolly Varden do not leave freshwater every summer

## Future

- In the summer of 2015, we plan to tag more Dolly Varden (n=20) on the North Slope
  - Sample in nearshore areas near Kaktovik in early to mid-July
  - Tag adult Dolly Varden on their spawning beds, in rivers on the North Slope, to examine their next ocean foraging foray
- These changes in sampling design will hopefully increase the amount of information received from PSATs, and provide insights on the oceanic depth and temperature occupancy, and spatial distribution of Dolly Varden in the Beaufort Sea