

Mortality of King Salmon
Caught and Released Using
Sport Tackle in the Nushagak
River



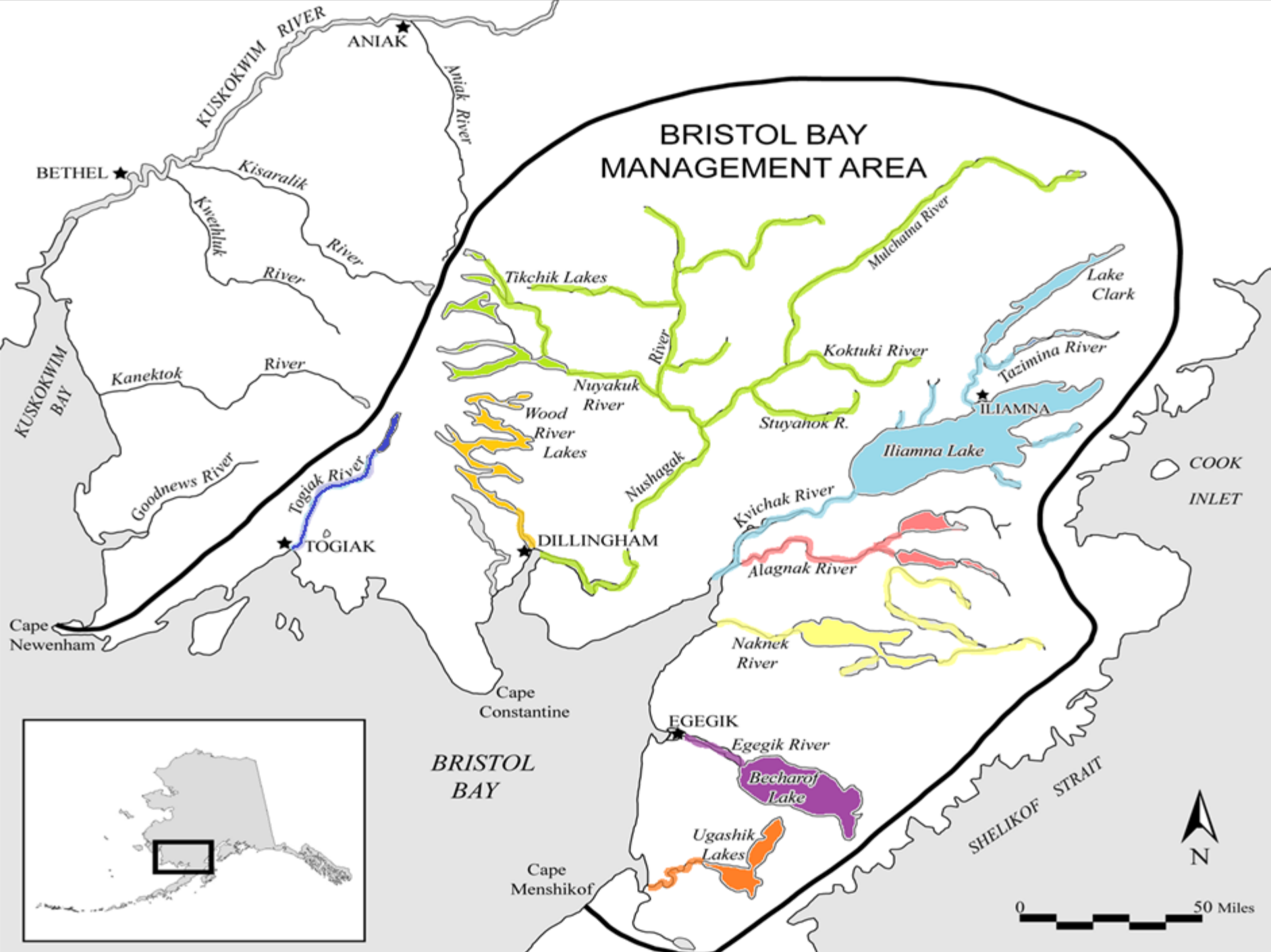
Division of Sport Fish

RC 3
Tab#: 7

Outline

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BRISTOL BAY MANAGEMENT AREA

ANIAK

BETHEL

TOGIAK

DILLINGHAM

EGEGIK

ILIAMNA

KUSKOKWIM BAY

BRISTOL BAY

COOK INLET

SHELIKOF STRAIT

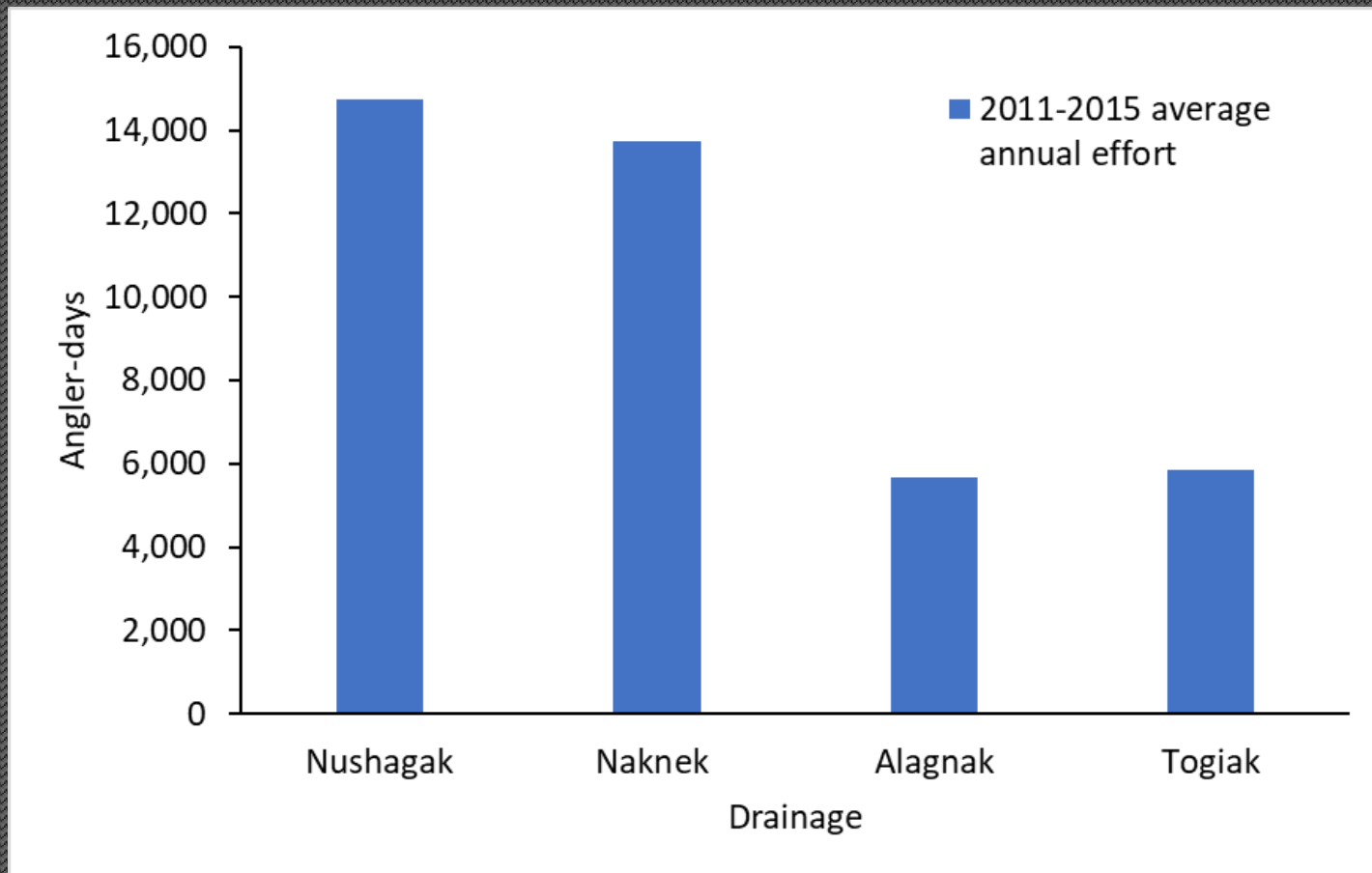


Background

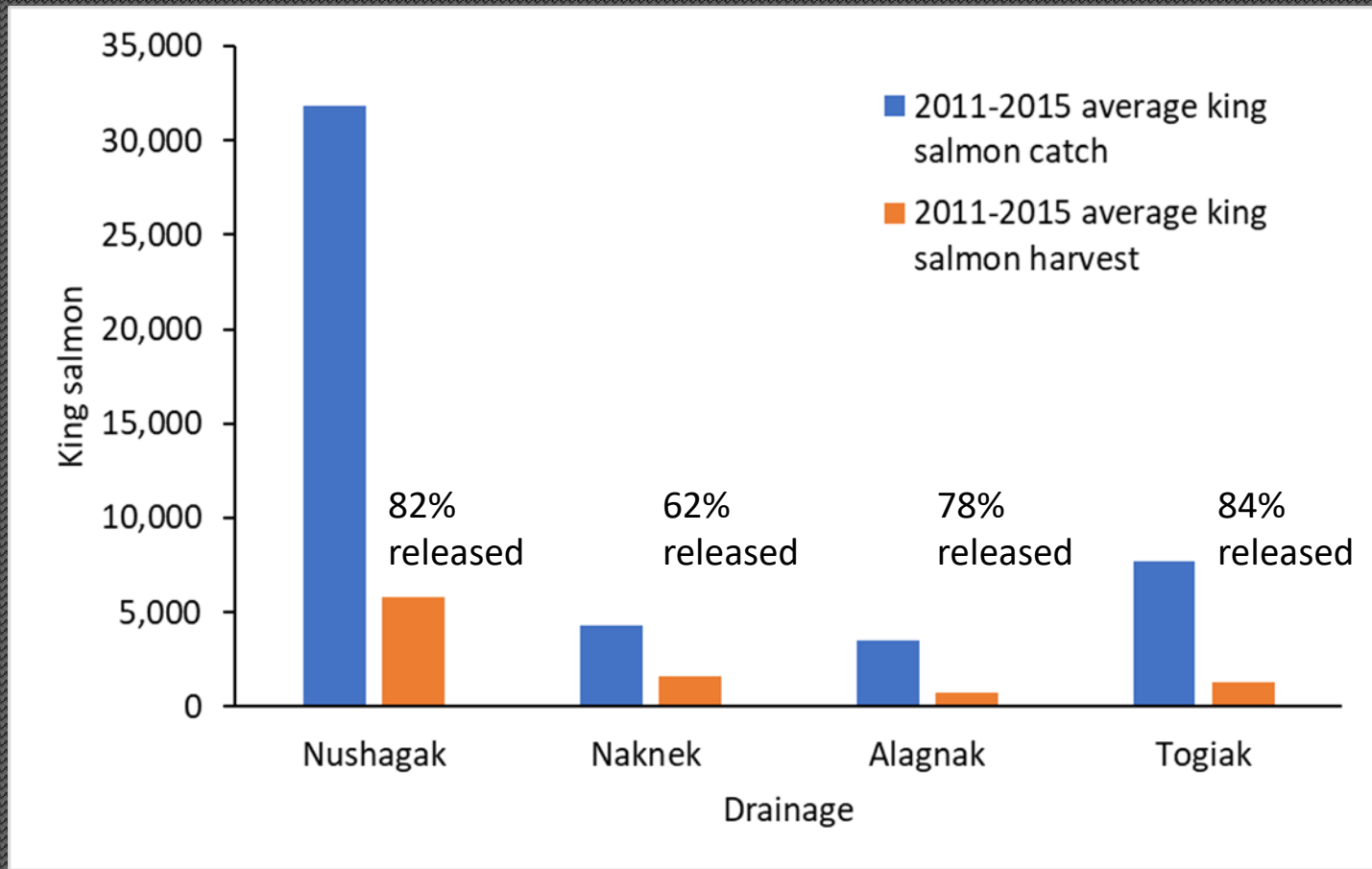
- Previous Studies
 - Willamette '04
12.2% estimated
 - Kenai '91
8.8% estimated (early)
5.9% estimated (late)
- Nushagak
 - Estimated sport harvest avg.
2011-2015 = 6,191
 - Estimated sport catch avg.
2011-2015 = 31,840



Effort



Catch & Harvest



Regulations

- Bag Limit
 - Fish 20" or longer
 - 2 per day, 2 in possession, only 1 over 28"
 - 4 per year
 - After taking a bag limit of king salmon, a person may only use unbaited artificial lures or flies with *one single-hook* , for the remainder of the day.
 - All harvested king salmon must be recorded.
 - Fish less than 20"
 - 5 per day, 5 in possession
 - Any king salmon removed from the water must be harvested.
- Gear Restriction
 - Only one single-hook may be used May 1-July 31.



Objectives

- Primary
 - Estimate short term (5d) mortality rate for king salmon ≥ 500 mm mid-eye to fork length caught and released in the lower Nushagak River.
- Secondary
 - Estimate the effects of selected biological and sport fishery related variables.
 - Estimate length and sex composition of king salmon sport caught in the lower Nushagak River.
 - Examine all captured king salmon for previously applied marks.



Project Design

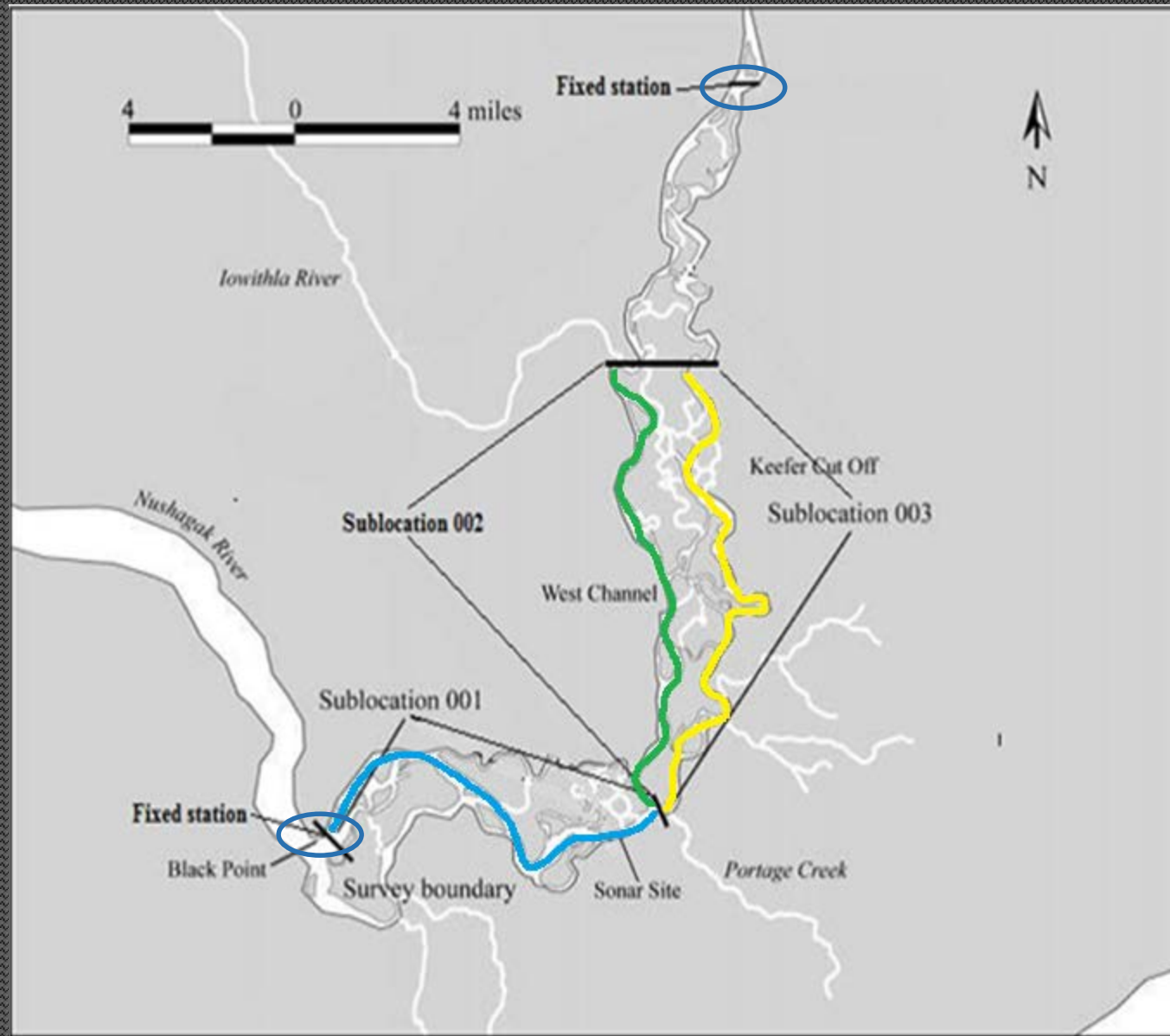
- Replicate Sport Fishery
 - Logbook, creel & harvest survey data
 - 3 sub-locations
 - 60% baited / 40% unbaited
 - Most common combinations of tackle & angling methods
- Radio Tag & Track
 - 174 per year for 2 years
 - 5 day survival
 - Track movement via GPS
- Record Selected Variables
 - Hook location, condition, river section



Code Definitions for Selected Variables

- **Hook Location**
 - 8 location codes
 - Example: 1 = upper jaw, 2 = roof of mouth, 3 = esophagus etc.
- **Bleeding Severity**
 - 0 – 3 ranging from “none, no evidence of external bleeding” to “severe, copious amounts of blood”
- **Overall External Appearance**
 - 0 – 3 ranging from “no apparent handling affects” to “heavy slime and scale loss”
- **Swimming Away Condition**
 - 0 – 3 ranging from “no apparent handling effects” to “assumed mortality”

Sublocations



Methods

- Radio Tags
 - 90-day battery life
 - Appropriate size for king salmon
 - Mortality signal (4 hours)
- Data Loggers & Receivers
 - Aerial surveys
 - Fixed stations
 - Boat surveys
- Cradles & Nets
 - Aluminum tagging cradle
 - Standard landing net
- Crew Leader & Crew
 - Two 2-person crews 2017, three 2-person crews 2018
 - Guide & guide camp emulation



- Tagging

- Hinged and padded aluminum cradles
- Standard landing nets
- PVC tag applicators
- Crew communication
- Varied handling



- Tracking

- Aerial
 - Cessna 185, Cessna 207, Maule M7
 - 6 or 7 days a week
 - Scanning frequencies
- Boat
 - Backup for weather or logistical purposes
- Stationary
 - Fixed antennas above & below tagging area

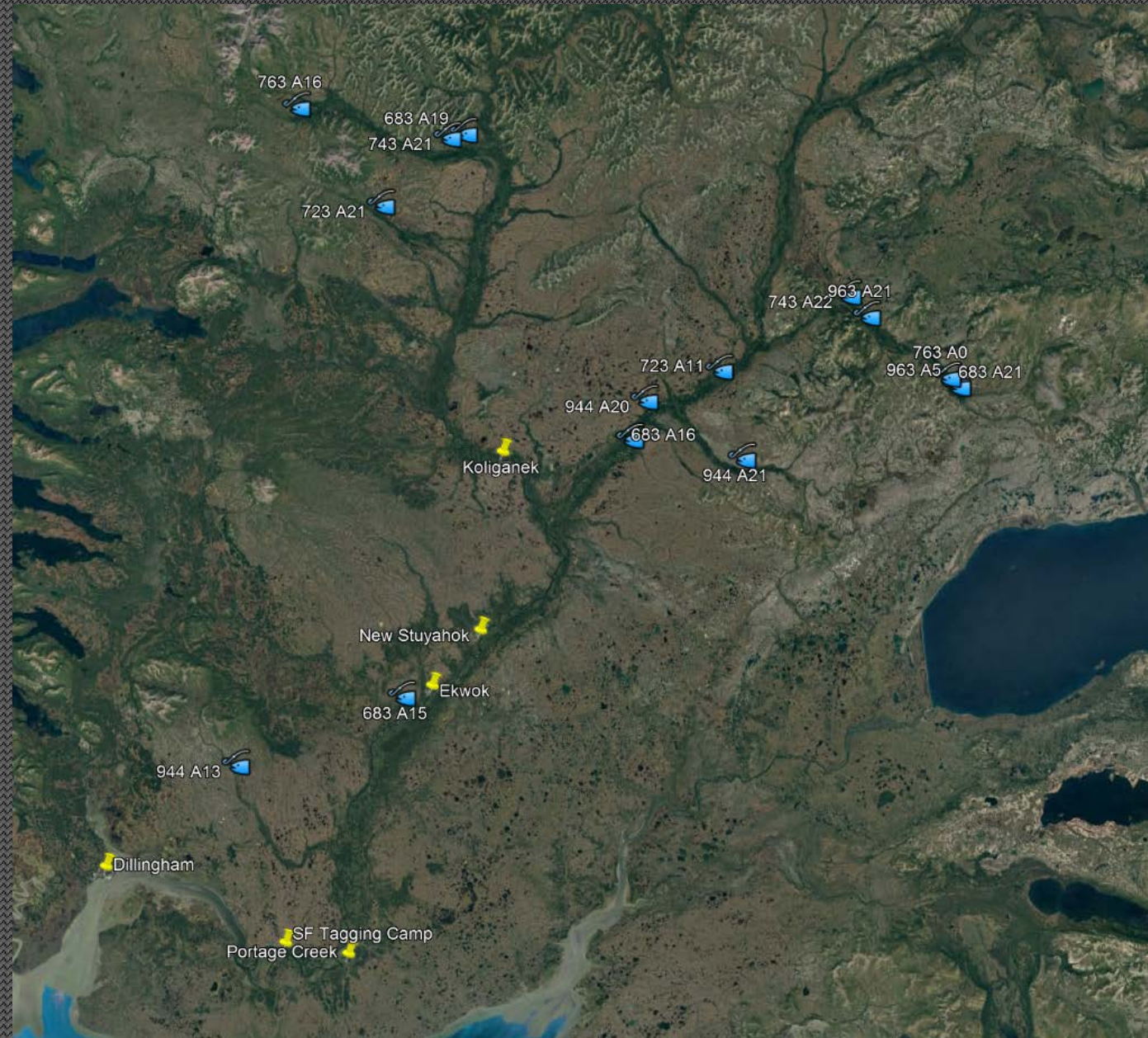


Preliminary Results

- 2017
 - 107 tags deployed
 - 1 tag lost or defective
 - 1 tag dropped (unable to establish final status)
 - 7 mortalities
 - 6.7% mortality (preliminary)
- 2018
 - 210 tags deployed
 - 5 tags lost or defective
 - 4 tags dropped (unable to establish final status)
 - 12 mortalities
 - 6.0% mortality (preliminary)

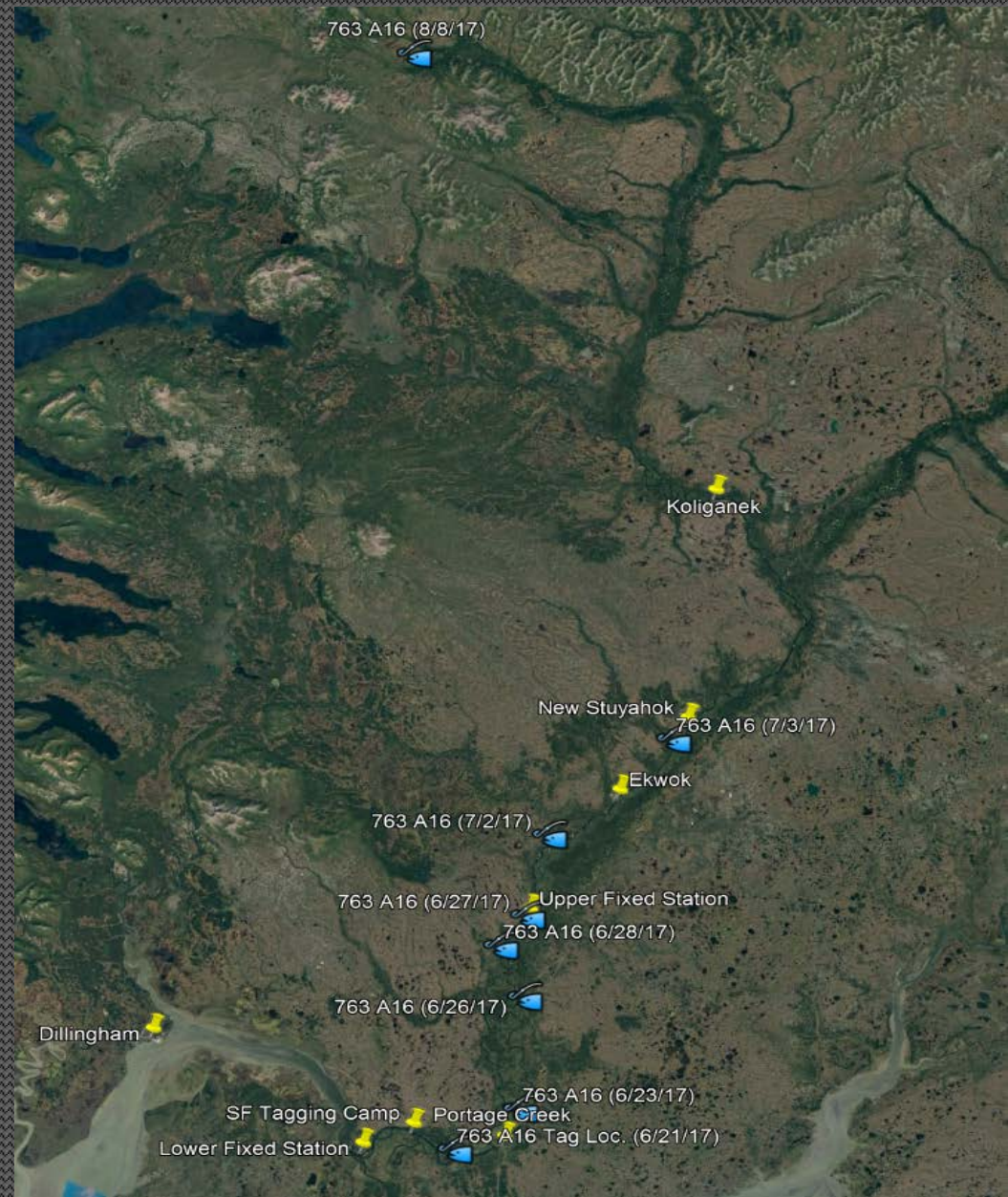


Likely spawners (8/2017)



• Fish 763 A16

- ~140 miles
- Male
- Fork length: 560mm
- Method: down-trolling
- Gear: Spin & Glo (unbaited)
- Landing time: 3:34
- Handling time: 4:21
- Hook location: 1 (upper jaw)
- Bleeding: 0 (none)
- Swimming away: 1 (shows some stress)
- Overall external condition: 1 (some slime loss, scales intact)



Thank You

Lee Borden
Assistant Area Management Biologist
Bristol Bay Management Area
ADF&G, Division of Sport Fish
(907) 842-2427
lee.borden@alaska.gov



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