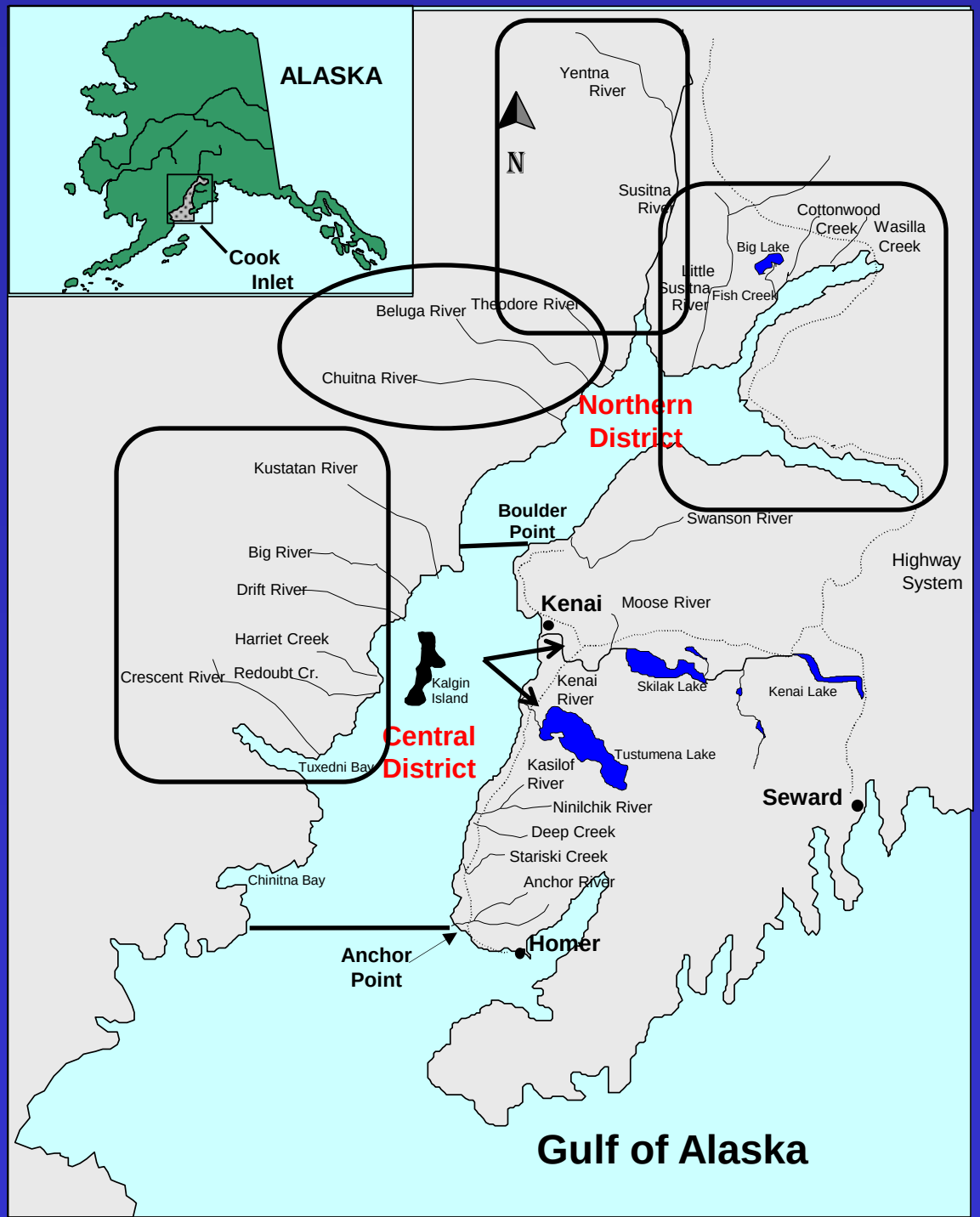
Upper Cook Inlet
Overview of Salmon Stocks and Management Plans

Tracy Lingnau, Region II
Commercial Fisheries

Charlie Swanton, Director
Sport Fisheries

March 2014

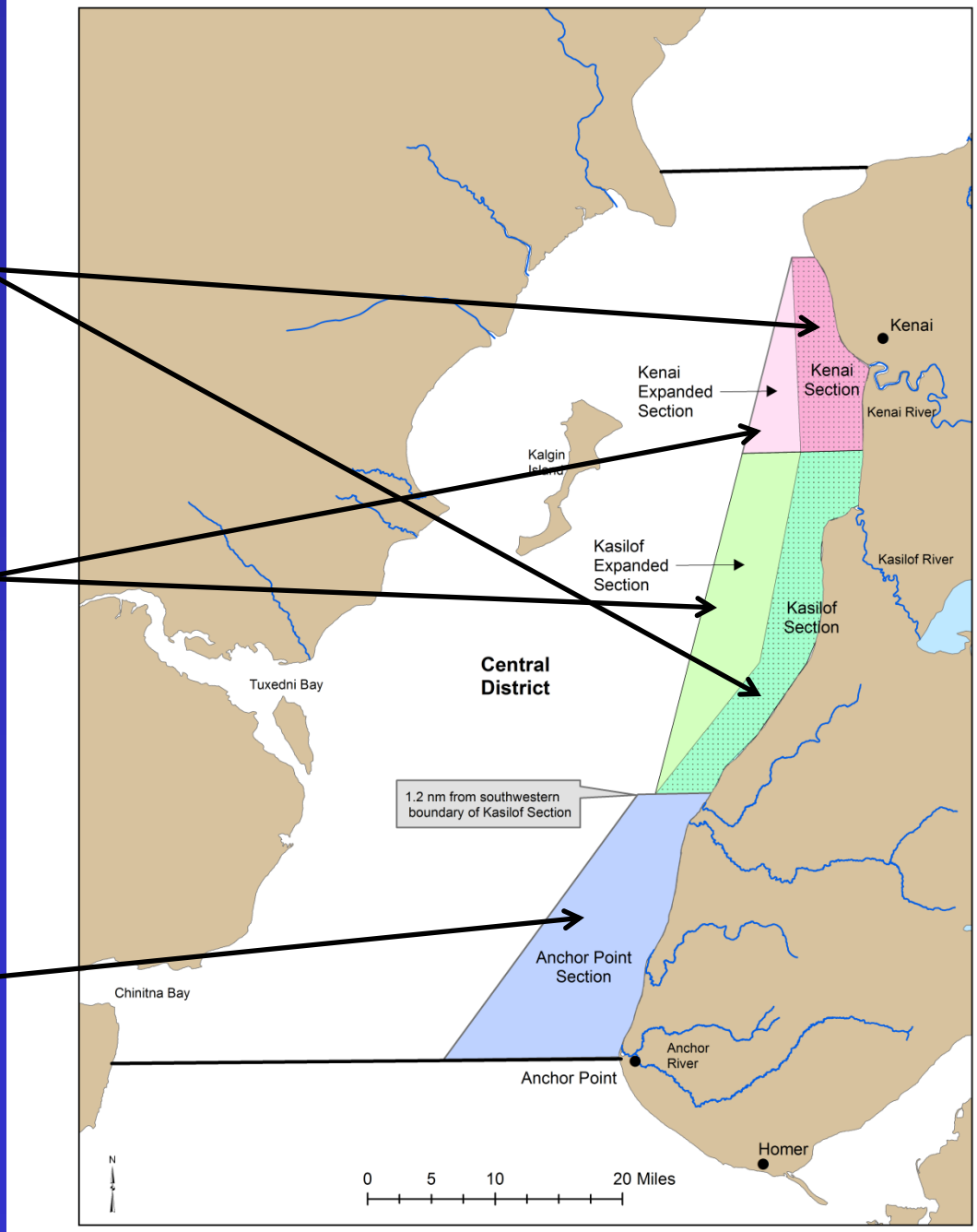

ALASKA
Cook Inlet
N
Yentna River
Susitna River
Cottonwood Creek
Wasilla Creek
Big Lake
Little Susitna River
Fish Creek
Beluga River
Theodore River
Chuitna River
Northern District
Kustatan River
Boulder Point
Swanson River
Highway System
Big River
Drift River
Kenai
Moose River
Harriet Creek
Crescent River
Redoubt Cr.
Kalgin Island
Kenai River
Skilak Lake
Kenai Lake
Central District
Tuxedni Bay
Tustumena Lake
Kasilof River
Seward
Ninilchik River
Deep Creek
Stariski Creek
Chinitna Bay
Anchor River
Homer
Anchor Point
Gulf of Alaska

Upper Cook Inlet Sections

Kenai & Kasilof Sections

Kenai & Kasilof Sections - Expanded

Anchor Point Section



OVERVIEW OF SALMON MANAGEMENT PLANS IN UPPER COOK INLET

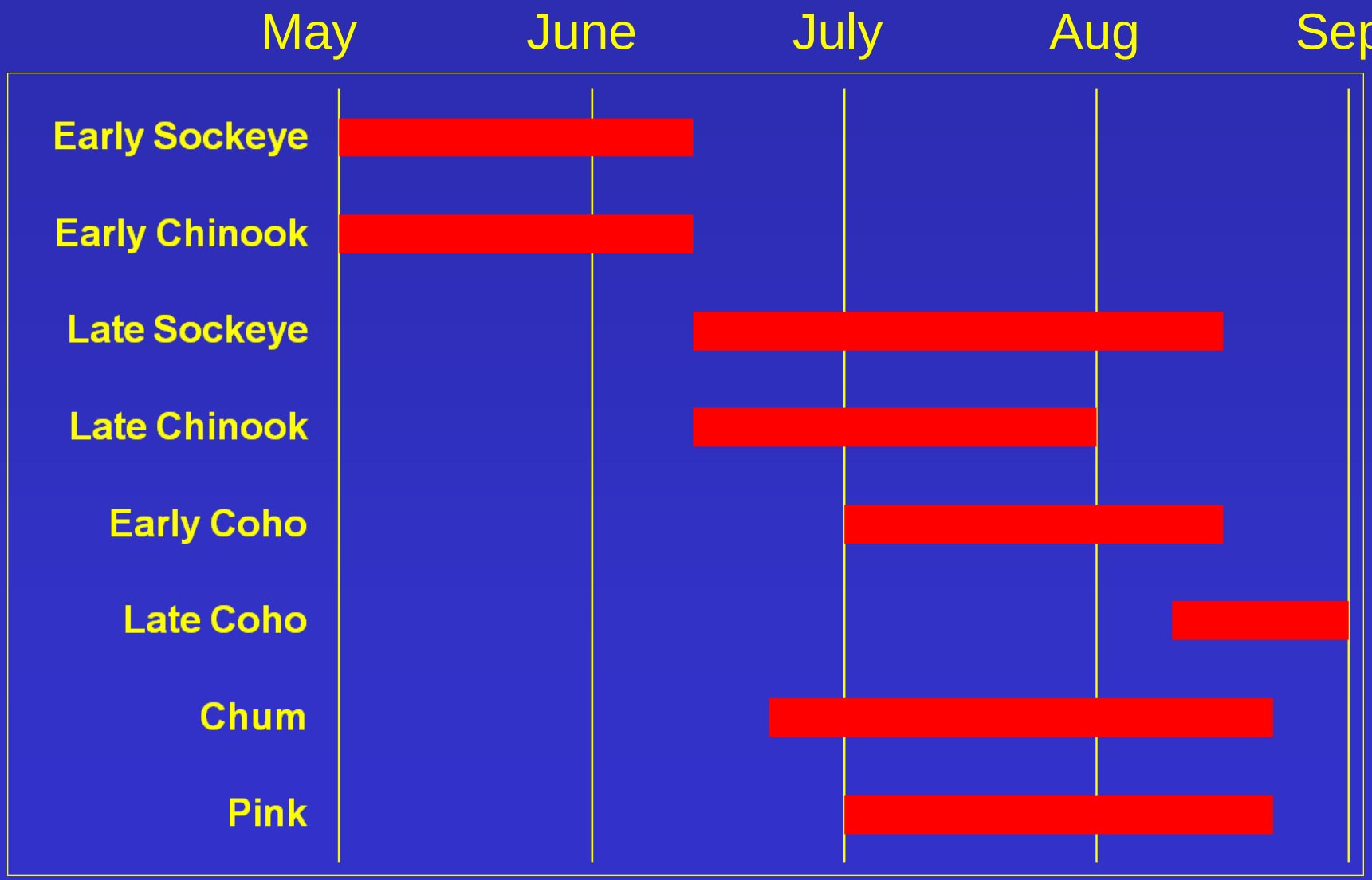
OVERVIEW OF SALMON MANAGEMENT PLANS IN UPPER COOK INLET

- The Upper Cook Inlet Salmon Management Plan guides harvest and allocations of stocks through step down management plans. Meeting escapement goals is primary objective of the department.

- “Step-down plans” provide specific objectives and guidelines to the department for in-season management of salmon resources. Specific management objectives and allocative instructions.

- Step-down plans are structured around migratory timing of major stocks of salmon moving through Upper Cook Inlet.

Run Timing of Salmon in Upper Cook Inlet



Organization of Management Plans in Upper Cook Inlet

There are a total of 17 management plans in the UCI Mgmt Area

UCI Salmon Management Plan
Yentna River Subsistence Plan
UCI Personal Use Plan
Riparian Habitat Plan

Early (⟵ Prior to July 1)	**Middle** (July)	**Late** (August ⟶)
Northern District King	Kenai LR King	Kenai Coho
Kenai/Kasilof ER King	Kenai LR Sockeye	Pink Salmon
Big River Sockeye	Kasilof Salmon	
UCI Marine Early King	Packer's Creek Sockeye	

Russian River Sockeye ⟷

Central District Drift Plan ⟶

Northern District Salmon ⟶

Organization of Management Plans in Upper Cook Inlet

UCI Salmon Management Plan

Cook Inlet Subsistence Fisheries
UCI Personal Use Plan
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UCI Marine Early King	Packer's Creek Sockeye	

← Russian River Sockeye →

Central District Drift Plan →

Northern District Salmon →

UCI Subsistence Fisheries

- **Most of UCI is designated as a nonsubsistence area.**
- **Two small subsistence fisheries:**
  - **<u>Tyonek</u>**
    - King salmon fishery in Tyonek Section of Northern District.
    - Set gillnets used.
  - **<u>Upper Yentna River</u>**
    - Sockeye fishery in upper reaches of Yentna River.
    - Fish wheels with a live box.

PERSONAL USE SALMON MANAGEMENT PLAN

- Parts overlap all timeframes; emphasis is during mid-July.
- Evolved from subsistence fisheries.
- **Fisheries:**
  - One remaining set gillnet fishery - targets Kasilof sockeye.
  - Largest two are dip net fisheries target Kasilof and Kenai sockeye.
  - Fish Creek and Beluga dip net fisheries.
  - Date-triggered and focus on sockeye salmon.

RIPARIAN HABITAT FISHERY MANAGEMENT PLANS

- Not specific to any time frame, although emphasis is clearly during the middle time frame (July).
- The objective of these management plans are to provide the ability to regulate inriver fisheries to protect riparian habitat.
- Most of the assessment and application has been for the Kenai River late run sockeye and king salmon fishery.

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Russian River Sockeye

Central District Drift Plan →

Northern District Salmon →

MANAGEMENT PLANS DURING THE EARLY TIMEFRAME (PRIOR TO JULY 1)

- Most stocks are managed primarily for recreational purposes.

- **Fisheries:**
  - Freshwater sport fisheries for king salmon.
  - Sport fishery for early-run Russian River sockeye.
  - Commercial fisheries for Northern Cook Inlet king salmon and Western Cook Inlet sockeye.

MANAGEMENT PLANS DURING THE EARLY TIMEFRAME (PRIOR TO JULY 1)

Northern District King Salmon Management Plan

- Management guidelines for commercial king salmon fishery. Monday periods between May 25 and June 24; 12 hour periods.

Kenai R. and Kasilof R. Early-Run King Salmon Conservation Mgmt. Plan

- Ensure adequate escapement, conserve unique large size Kenai River kings, and provide guidelines primarily to sport fishery.

Big River Sockeye Salmon Management Plan

- Guidelines for commercial fishery in Kustatan Subdistrict and west side of the Kalgin Island Subdistrict.

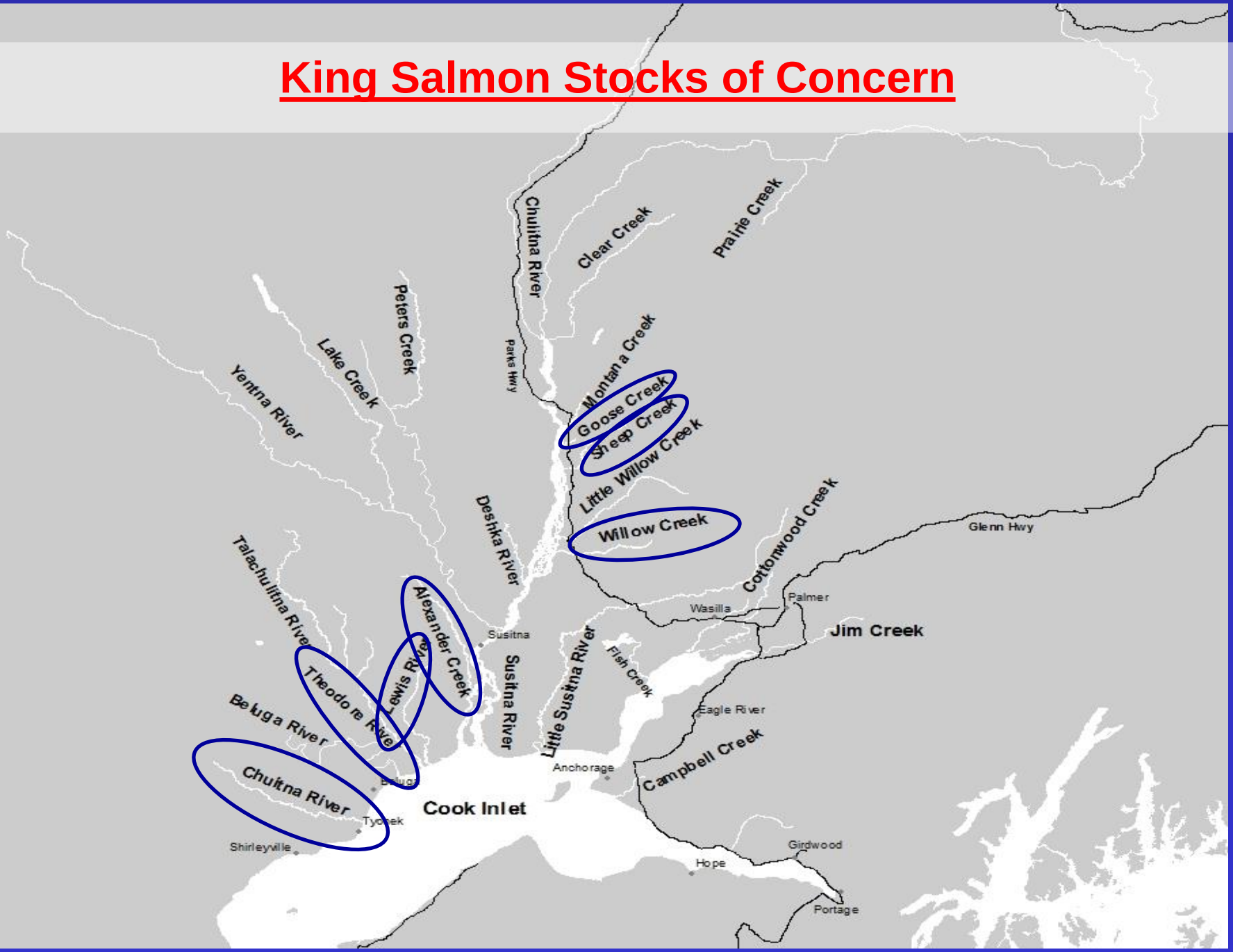
UCI Salt Water Early-Run King Salmon Management Plan

- Guidelines for the king salmon sport fishery in Deep Creek Area.

Russian River Sockeye Salmon Management Plan

- Ensure adequate escapement and provide guidelines to preclude allocation conflicts.
- Early run harvested primarily by sport fishery, late-run harvested by sport, commercial and personal use fisheries.

King Salmon Stocks of Concern



Recent Northern District Tributary Aerial Survey Counts

		Escapements				
Stock	**Goal Range**	**2009**	**2010**	**2011**	**2012**	**2013**
Alexander Creek	2,100–6,000	275	177	343	181	588
Chuitna River	1,200–2,900	1,040	735	719	502	1,690
Goose Creek	250–650	65	76	80	57	62
Lewis River	250–800	111	56	92	107	61
Theodore River	500–1,700	352	202	327	179	476
Willow Creek	1,600–2,800	1,113	1,173	1,061	756	1,752

Organization of Management Plans in Upper Cook Inlet

UCI Salmon Management Plan
Cook Inlet Subsistence Fisheries
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Kenai/Kasilof ER King	Kasilof River	Pink Salmon
Big River Sockeye	Kenai Late Run Sockeye	
UCI Marine Early King	Packer's Creek Sockeye	

Russian River Sockeye

Central District Drift Plan →

Northern District Salmon →

MANAGEMENT PLANS DURING THE MIDDLE TIMEFRAME (JULY)

- Sockeye, chum, and pink salmon are managed primarily for commercial uses.
- Kenai late run king salmon managed primarily for sport and guided sport uses.
- Minimize the incidental take of Northern District coho, late Kenai king, and Kenai coho.
- Major fisheries: commercial, personal use, sport and guided sport fishing.

KASILOF RIVER SALMON MANAGEMENT PLAN

- Harvest Kasilof sockeye salmon excess to escapement needs and harvest salmon in fisheries that have historically taken them.
- Achieving lower end of Kenai OEG takes priority over not exceeding upper end of Kasilof OEG.
- Sets commercial season opening dates, allowable fishing time, limits on additional fishing time, and mandatory closed periods.
- Opening of fishery through July 7: maximum 48 hours of emergency order fishing time per week, and close fishery for 36 consecutive hours per week beginning Thursday or Friday.
- Special Harvest Area should be rarely used, and only after exhausting other methods.
- Tied to Kenai River late run sockeye salmon management plan after July 7.

KENAI RIVER LATE-RUN KING SALMON MANAGEMENT PLAN

- Ensure adequate escapement of late-run king salmon.
- Managed primarily for sport and guided sport uses.
- Provides specific direction on managing sport, guided sport, and commercial fisheries to achieve escapement goal.
- Habitat assessment.

KENAI RIVER LATE-RUN KING SALMON MANAGEMENT PLAN

- Begins July 1 and to achieve the Kenai River king salmon escapement goal of 15,000 fish.
- If less than 15,000 fish projected, closes all fisheries harvesting Kenai River king salmon.
- When escapement projected to be between 15,000 and 22,500
  - If catch and release in the sport fishery is allowed, commercial fishing restricted to 12 hours per week.
  - If sport fishery is limited to no bait, set gillnet fishery limited to no more than 36 hours of fishing per week.
- Between August 1 and 15, fishing only allowed in set gillnet fishery if escapement greater than 16,500
- Reduction of nets and depth of mesh.

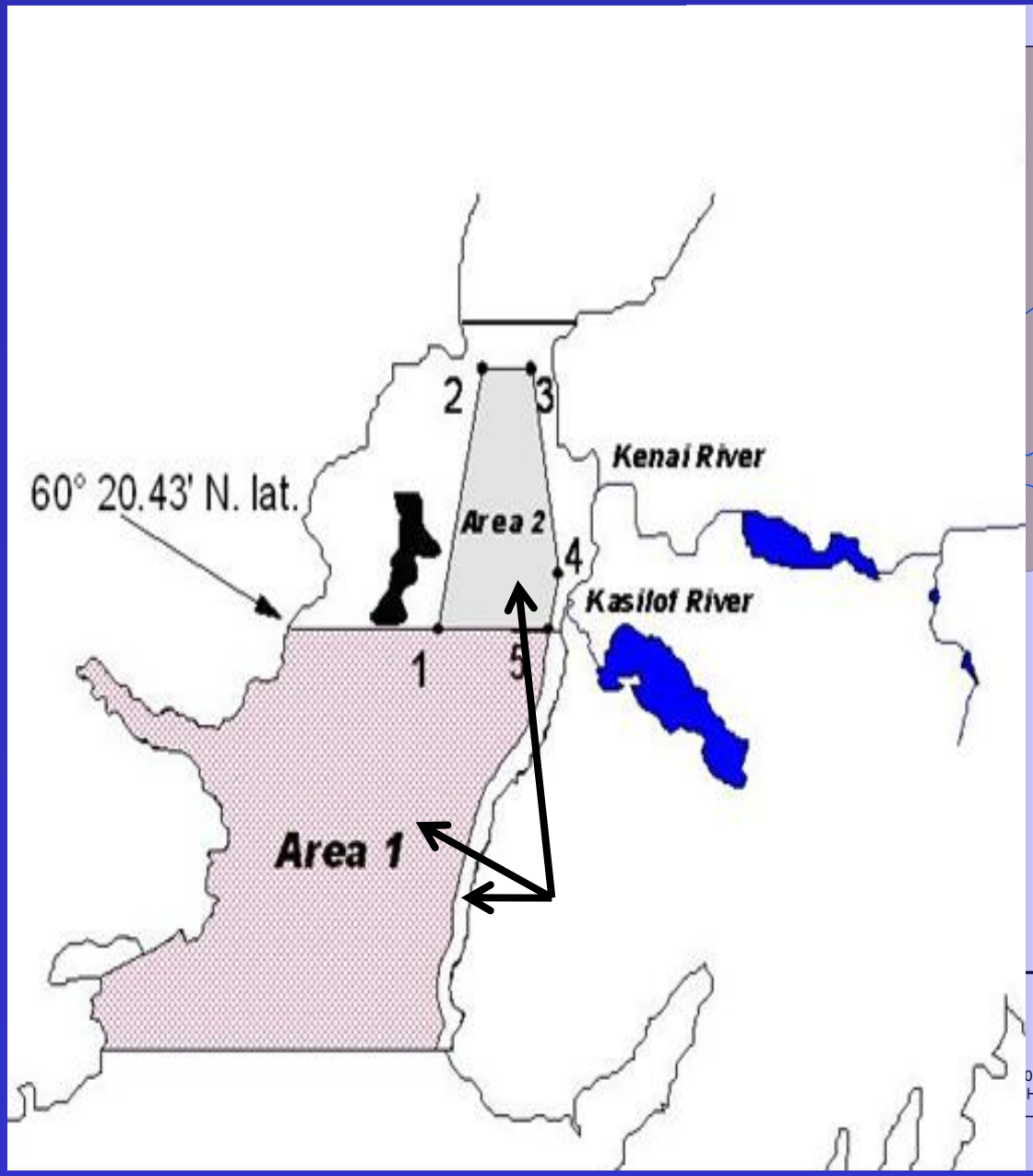
KENAI RIVER LATE RUN SOCKEYE SALMON MANAGEMENT PLAN

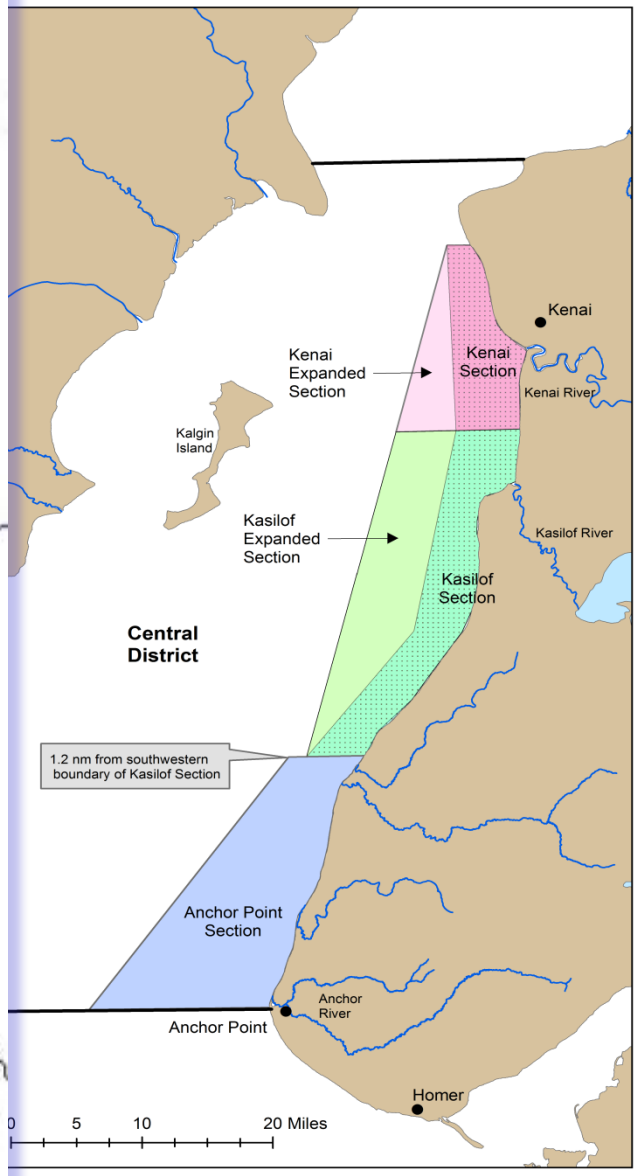
- Manage Kenai late run sockeye:
  - Primarily for commercial uses.
  - Minimize commercial harvests of ND coho, late-run Kenai king, and Kenai coho.
  - Specific objectives: 1) meet OEG range, 2) achieve inriver goals, and 3) distribute escapements evenly within OEG range in proportion to run size.
- Fishing time dependent on run strength; larger runs = more fishing time; closed fishing windows except in runs less than 2.3 million sockeye salmon.
- Establishes inriver goals based on abundance (<2.3 mil, 2.3-4.6 mil, >4.6 mil) and guidelines for each run strength range.
- Inriver goal tiers are 0.9-1.1, 1.0-1.2 and 1.1-1.35 million sockeye salmon.
- Habitat assessment.

Central District Drift Gillnet Fishery Management Plan

- Kenai, Kasilof and Anchor Point Sections
- Drift Areas 1, 2, 3, and 4
- During certain time periods, the drift fleet is limited to areas within the central district, allowing fish to migrate to the north.

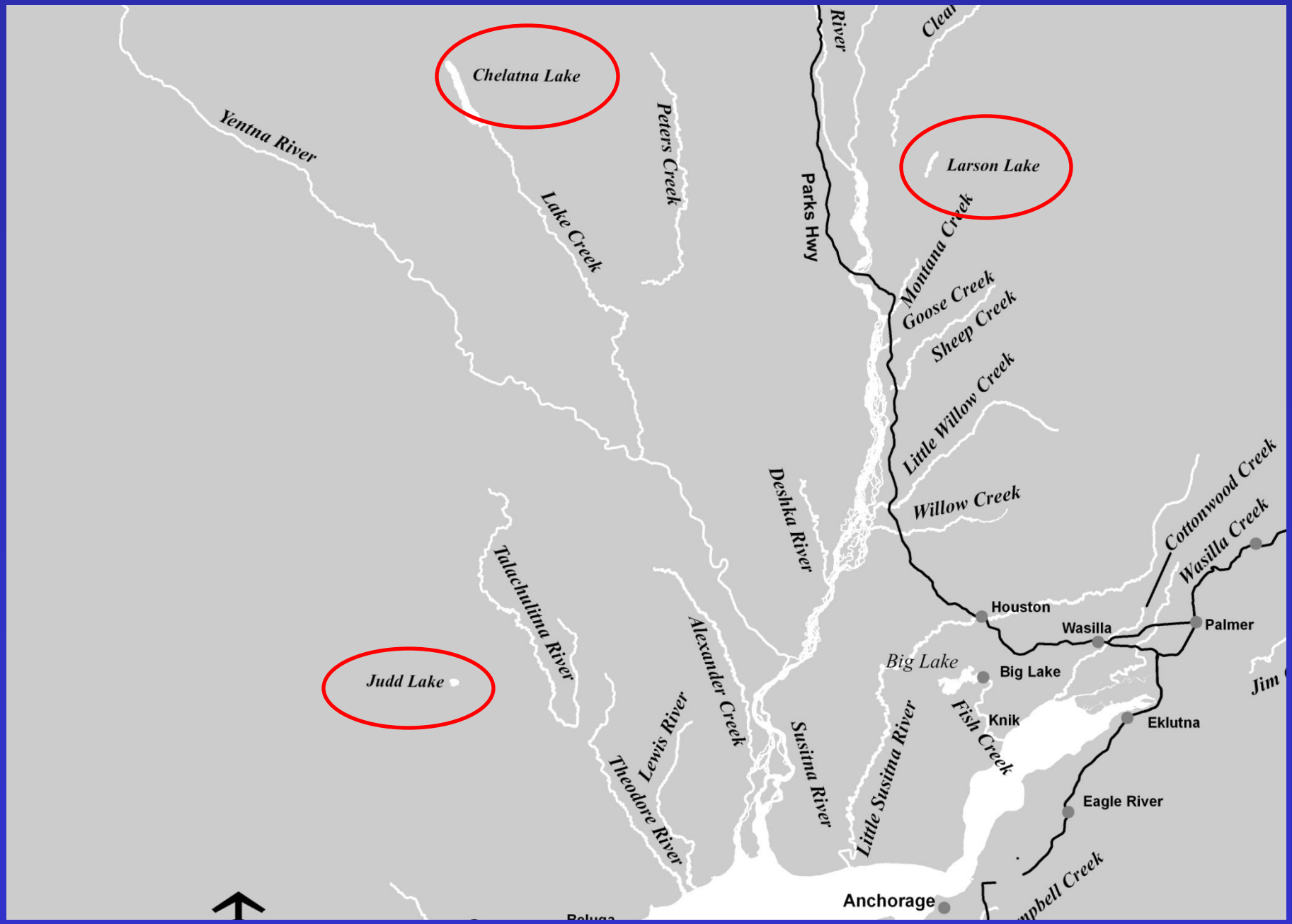
Central District Drift Gillnet Fishing Areas



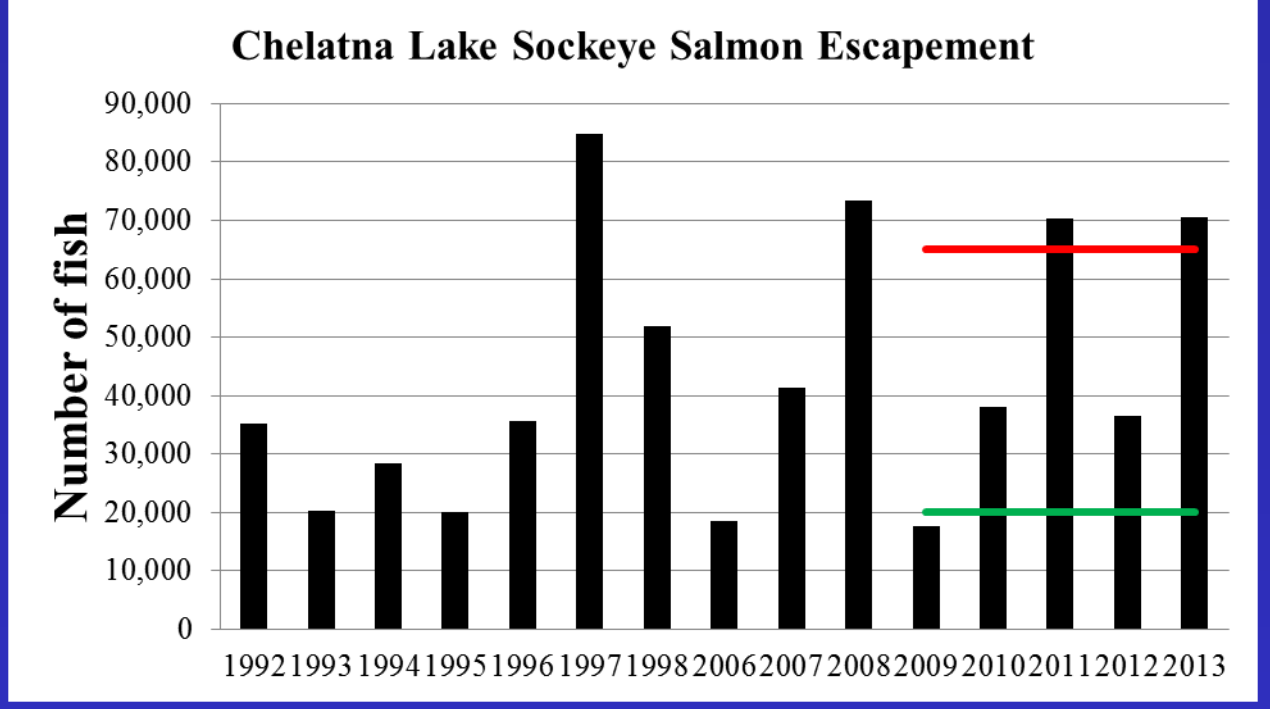


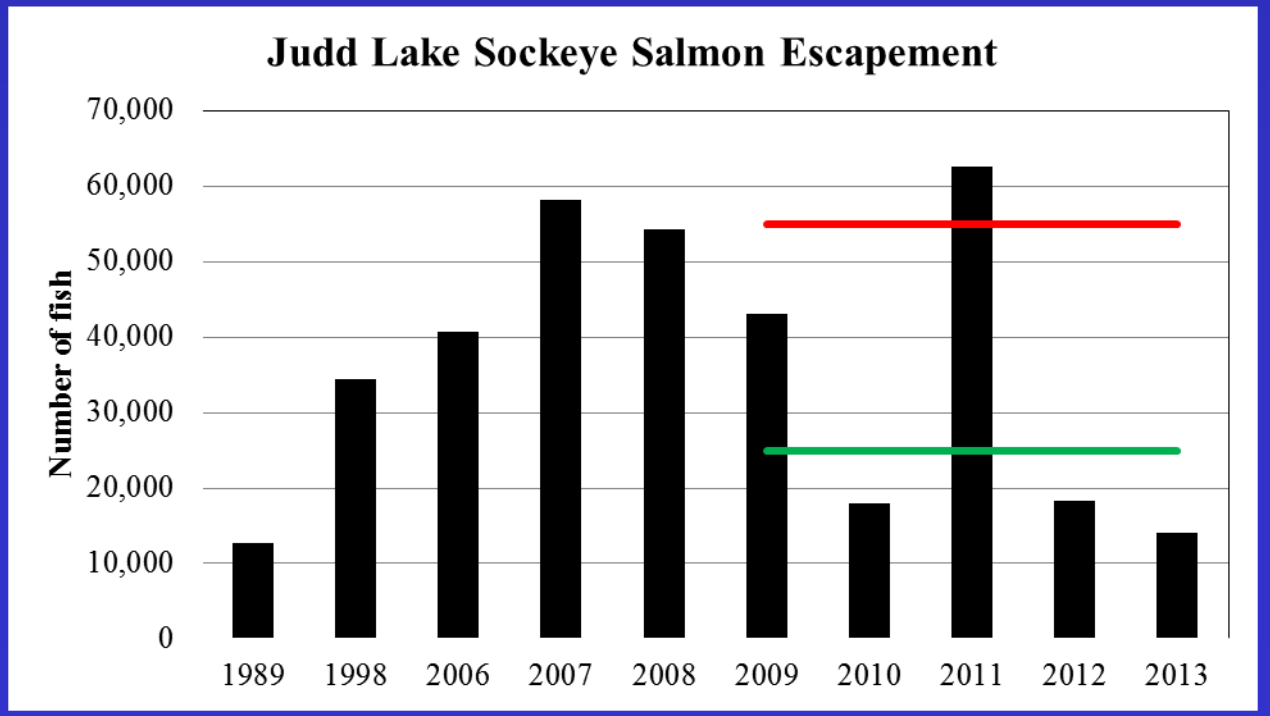
NORTHERN DISTRICT SALMON MANAGEMENT PLAN

- Manage harvest of Northern District chum, pink, and sockeye for commercial uses.
- Minimize harvest of Northern District coho salmon by:
  - Additional Northern District periods not allowed if coho salmon expected to be most abundant stock in harvest.
  - Regular periods only after August 15 in the Northern District .
- Susitna River sockeye salmon are stock of yield concern. Action plan states:
  - June 25 – July 19: regular fishing periods only.
  - July 20 – August 6: one net only.

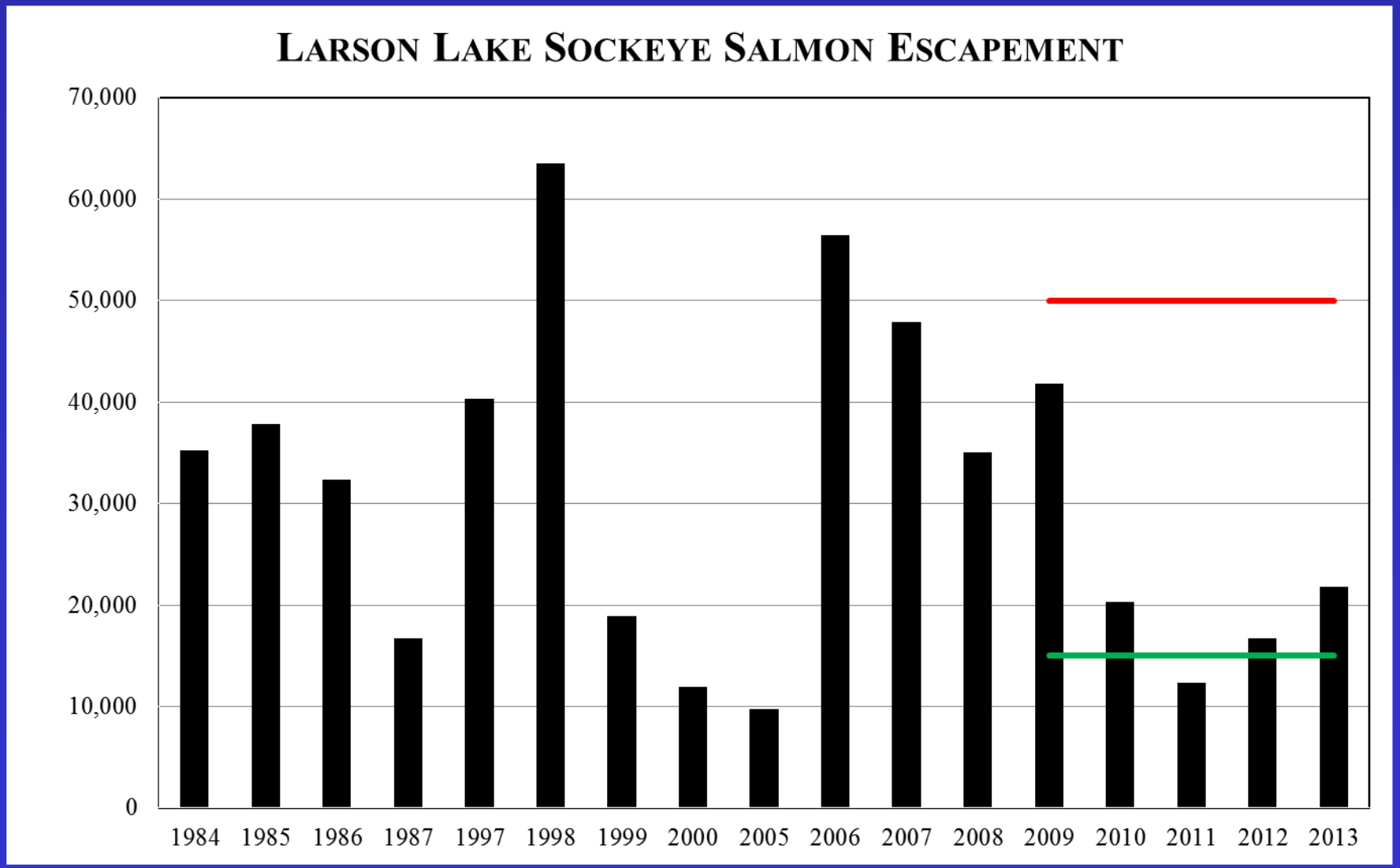

Chelatna Lake
Yentna River
Peters Creek
Lake Creek
Parks Hwy
Larson Lake
Montana Creek
Goose Creek
Sheep Creek
Little Willow Creek
Willow Creek
Deshka River
Talachulitna River
Judd Lake
Alexander Creek
Lewis River
Theodore River
Susitna River
Little Susitna River
Fish Creek
Houston
Wasilla
Palmer
Cottonwood Creek
Wasilla Creek
Big Lake
Big Lake
Knik
Eklutna
Eagle River
Anchorage

Susitna River Weir Sockeye Salmon Counts





Susitna River Weir Sockeye Salmon Counts



OVERVIEW OF SALMON MANAGEMENT PLANS IN UPPER COOK INLET

Summary:

- Meeting escapement goals are the primary objective of all management plans.
- Management plans are structured around migratory timing of major stocks of salmon moving through Upper Cook Inlet.
- “Step-down” plans provide specific management objectives to the department for management and allocation of fisheries.

Chinook Salmon Research Initiative

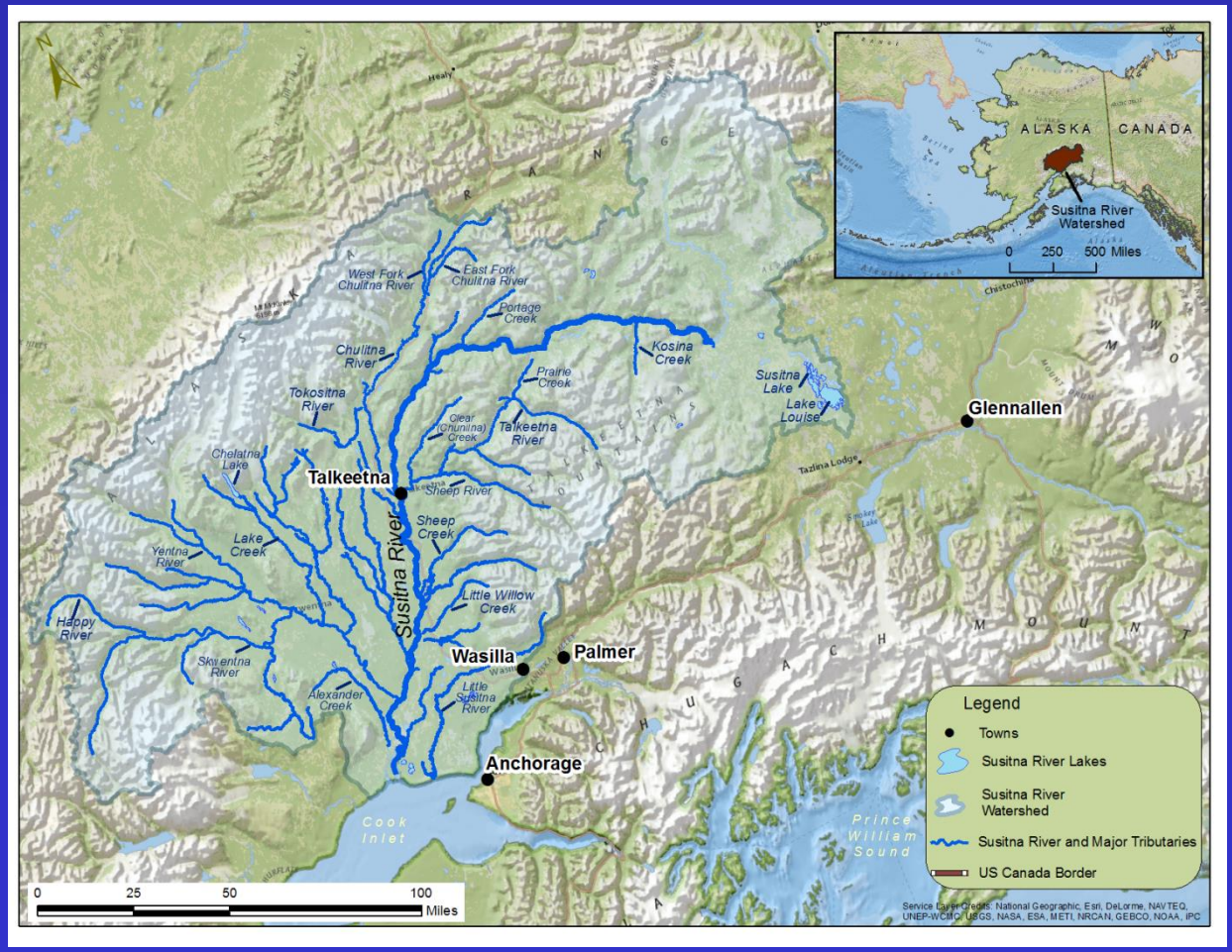
Susitna River

Adult Spawning Abundance

Juvenile Abundance

Cook Inlet Area Harvest, Genetics, and CWT

Local and Traditional Knowledge Survey

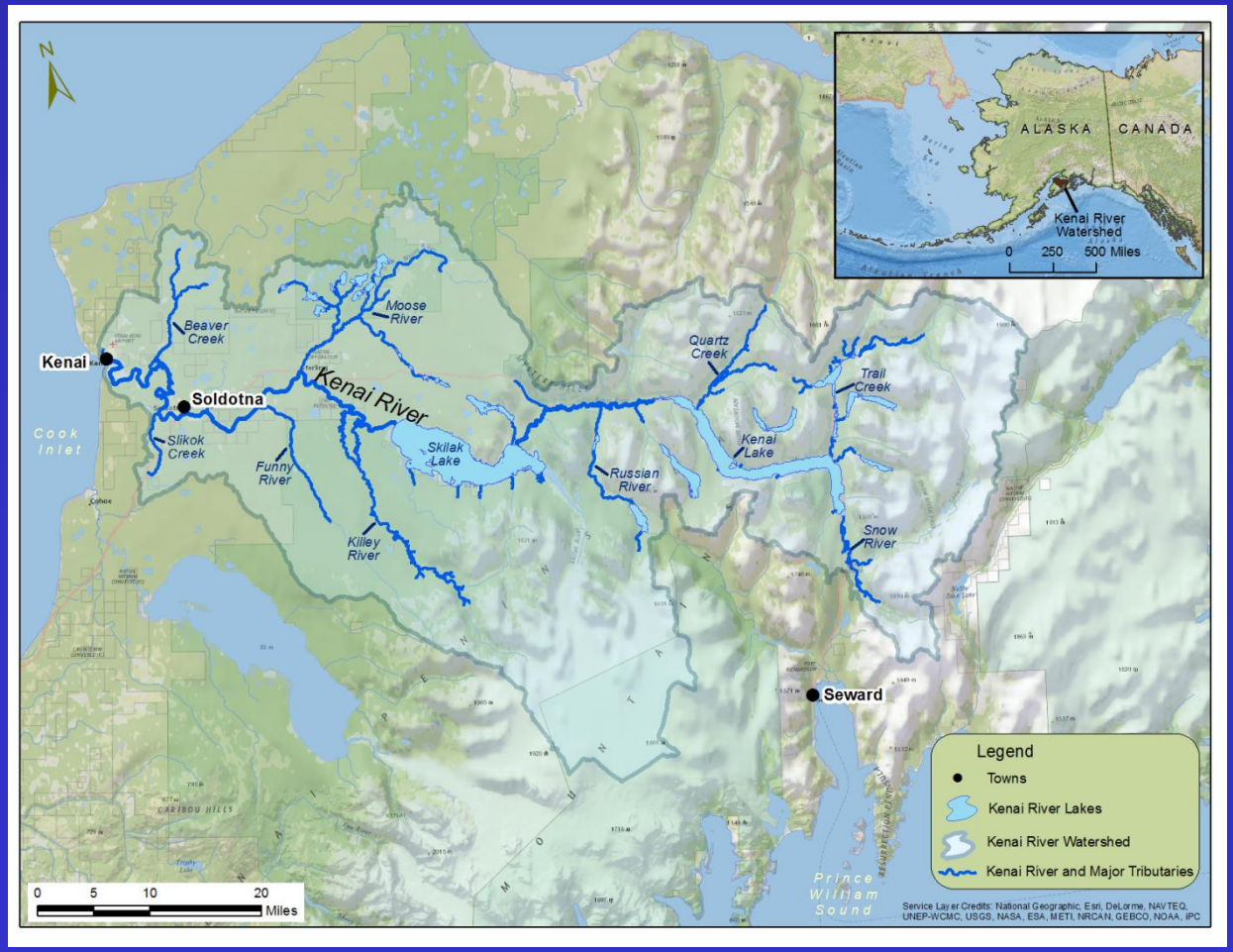


Chinook Salmon Research Initiative

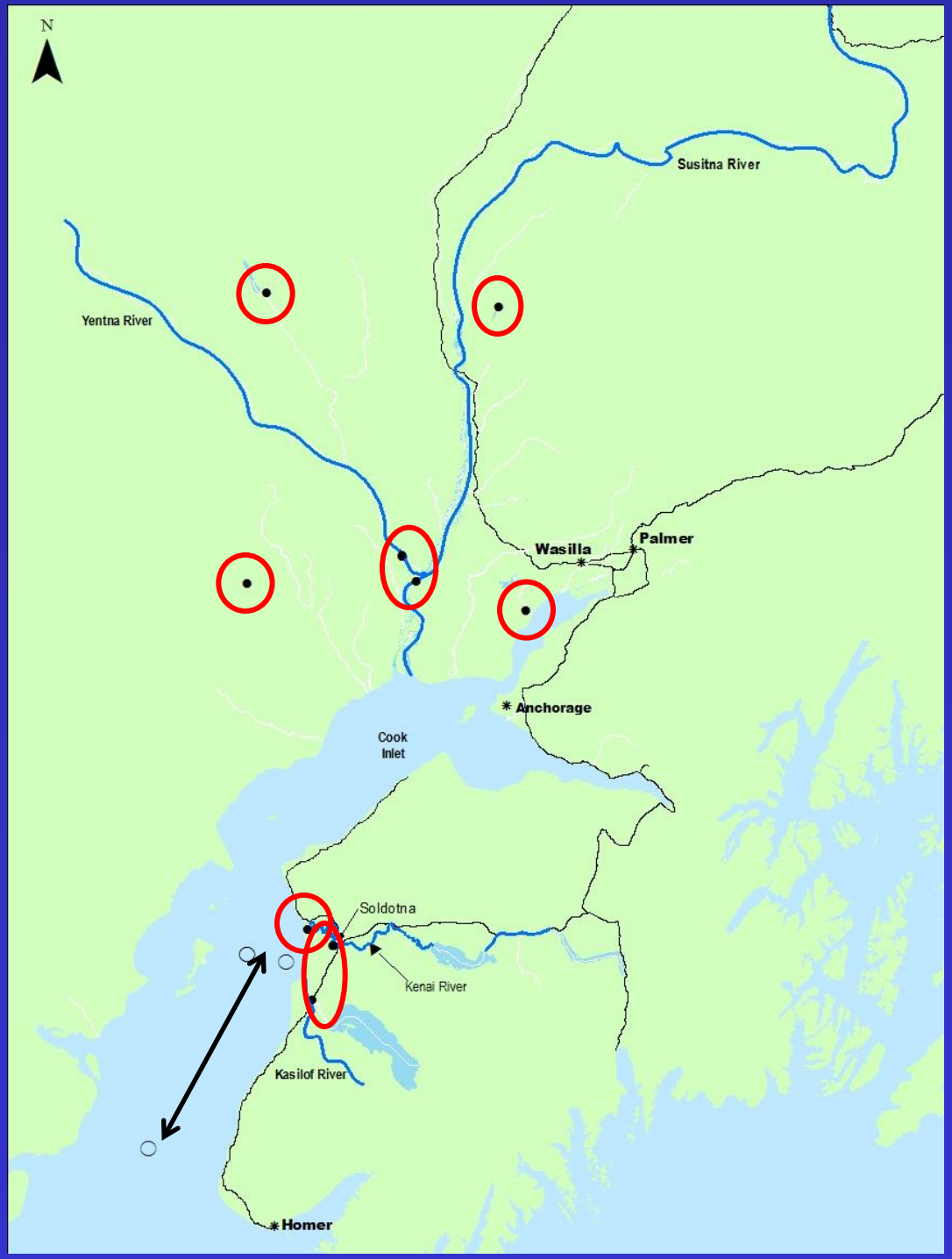
Kenai River

Cook Inlet Area Harvest, Genetics, and CWT

Local and Traditional Knowledge Survey



Additional Fishery Research Projects



Genetic Stock Identification Projects

- Post-season stock identification of sockeye harvest.
  - Improves estimate of total for each stock
  - More robust escapement goal analysis
  - Provides stock harvest through time
- Retrospective analysis of historic sockeye harvest
  - Provides historic run sizes
  - Improve brood tables
  - Partially funded by MatSu Fish & Game Commission

Genetic Stock Identification Projects

- Post-season stock identification of Chinook harvest.
  - Improves estimate of total for each stock
  - More robust escapement goal analysis
  - Separates Kenai, Kasilof, and Other stocks
- Develop genetic baseline for UCI coho salmon
  - New project – first for this species
  - Necessary to understand total run (catch & escapement)
- Post-season stock identification of coho harvest
  - First of three years
  - Improved understanding of stock-specific assessment

Upper Cook Inlet Offshore Test Fisheries

Anchor Point Test Fishery

- Began in 1979
- 6 stations fished on a transect from Anchor Point to west side of Cook Inlet
- Purpose is to estimate annual sockeye salmon run size and run timing
- Began sockeye salmon GSI work in 2006
- Important tool for commercial fisheries management

Kalgin Island Test Fishery

- Began in 2012 as Susitna River sockeye salmon GSI project
- 7 stations fished on a transect from Blanchard Line to west side of Cook Inlet
- Purpose is to estimate spatial and temporal distribution of Susitna sockeye salmon
- In 2013, coho salmon GSI samples are now collected from the same vessel
- Purpose of coho GSI is spatial and temporal distribution of NCI coho stocks
- Beginning in 2014, north test boat will fish 4 stations on each of two transect lines

Bendix to DIDSON Conversion

- 3 year side-by-side comparison of the 2 sonars
- 5 rivers – Kenai, Kasilof, Yentna, Copper, Nushagak
- Adjusted Bendix estimates based on linear regression results
- DIDSON:Bendix ratios varied by river and side of the river but consistent across comparison years
- Report documenting comparison results:
  - *Maxwell, S. L., A. V. Faulkner, L. Fair, and X. Zhang. 2011. A comparison of estimates from 2 hydroacoustic systems used to assess sockeye salmon escapement in 5 Alaska Rivers. Alaska Department of Fish and Game, Fishery Manuscript Series No. 11-02, Anchorage.*

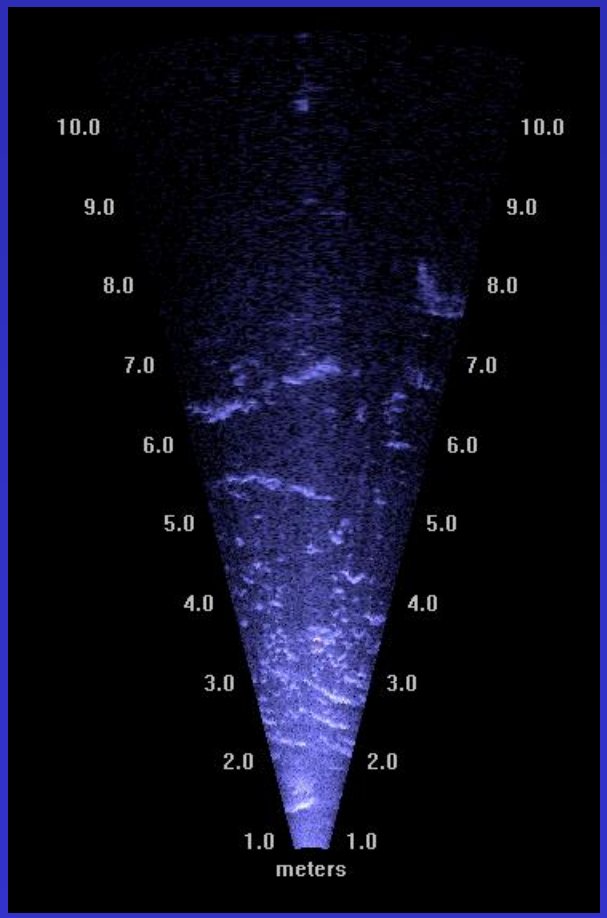
Bendix to DIDSON Conversion

What is a Bendix Counter?

- echo-counting, single

What is a DIDSON?

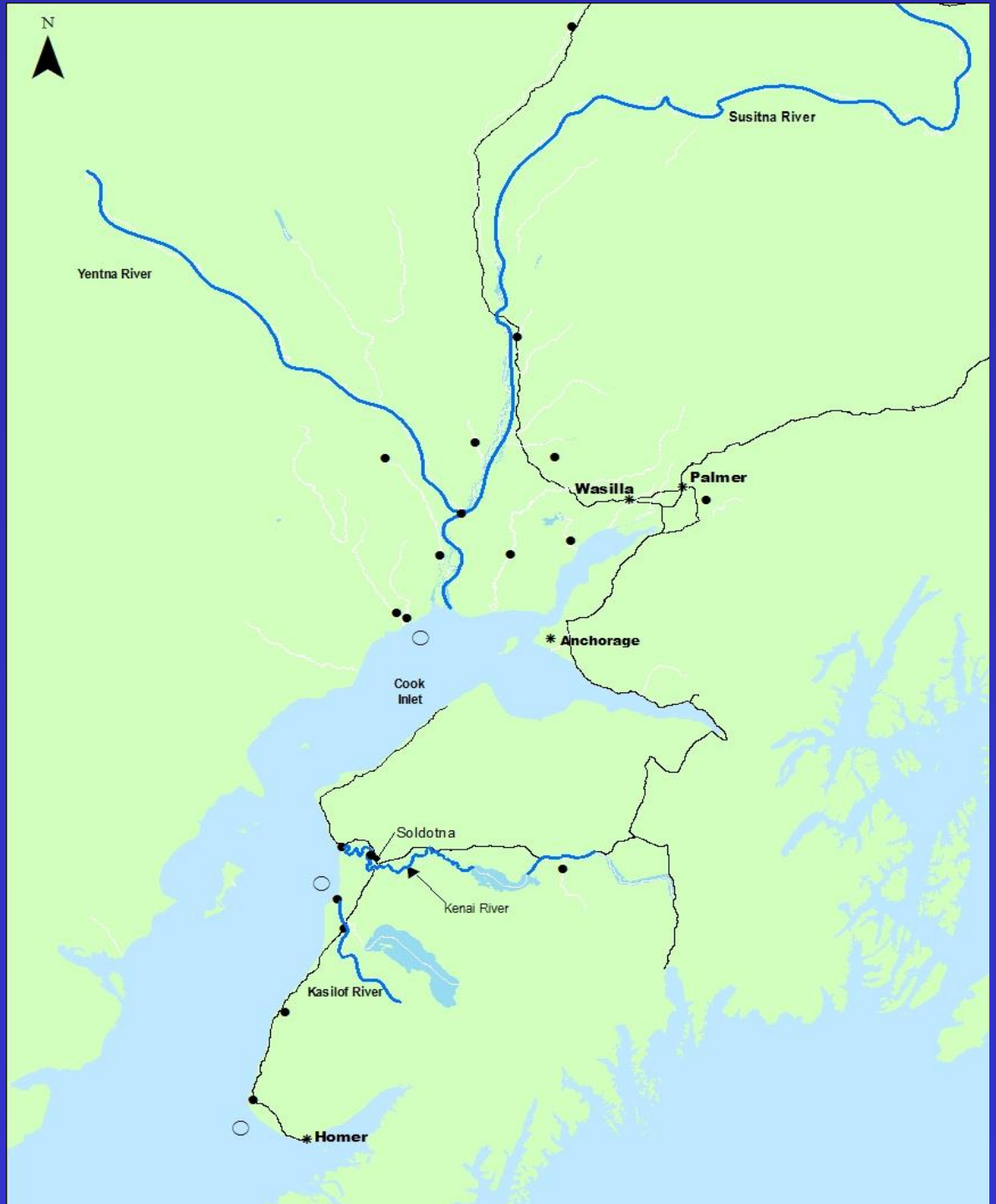
- Dual-frequency identification sonar
- Multi-beam sonar
- output – video feed showing fish moving across field of view



Bendix to DIDSON Replacement

River/Bank	Ratio (DIDSON/Bendix)
Copper River North Bank	1.55
Copper River South Bank	1.00
Kasilof River North Bank	1.13
Kasilof River South Bank	1.07
Kenai River North Bank	1.59
Kenai River South Bank	1.25
Yentna River North Bank	1.53
Yentna River South Bank	1.77
Nushagak River Left Bank Nearshore	1.13
Nushagak River Right Bank Nearshore	1.08
Nushagak River Left Bank Offshore	1.55
Nushagak River Right Bank Offshore	5.40

Additional Sport Fishery Research Projects



Long Standing Escapement Monitoring Projects

- Anchor R. Chinook Weir.
- Ninilchik R. Chinook Weir & Brood Stock collection.
- Crooked Cr. Chinook Weir & Brood Stock collection.
- Kenai R. Sonar/Creel/Netting – early & late run.
- Russian R. Sockeye Weir – early & late run.
- Jim Cr. Coho Foot Survey.
- Fish Cr. Sockeye and Coho Weir.
- Little Susitna R. Chinook & Coho Weir – RM 71 to RM 32 (2012).
- Deshka R. Chinook and Coho Weir.
- Deception Cr. Chinook Weir & Brood Stock collection.

Recent Monitoring Projects

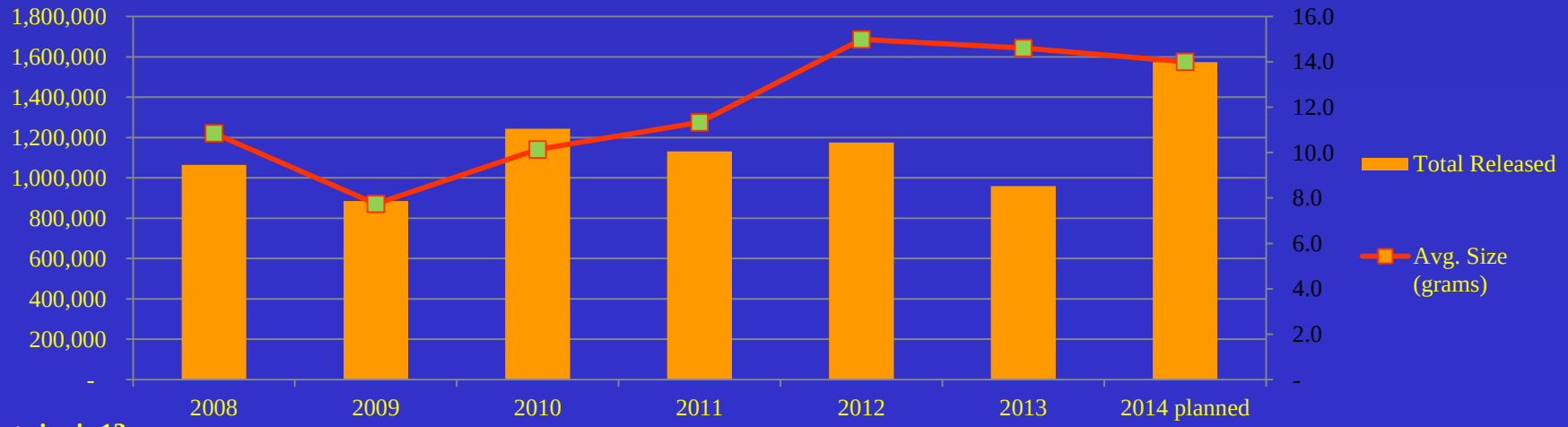
- Lewis & Theodore Chinook & Coho Weirs (2012 AKSSF).
- Susitna R. Chinook & Coho Mark-Recapture (2013 AEA).*
  - Montana Cr. Weir
  - Chulitna R. Sonar
- Alexander Cr. Pike Control/Chinook & Coho Weir (2014 Leg Increment).
- Marine Chinook Harvest GSI Sampling & Stock Apportionment.*
- Kenai R. Chinook Sonar & Escapement Transition (CIP 2013).*
- * Chinook Salmon Research Initiative Projects.

Kenai River Sonar and Escapement Transition

Chinook Enhancement

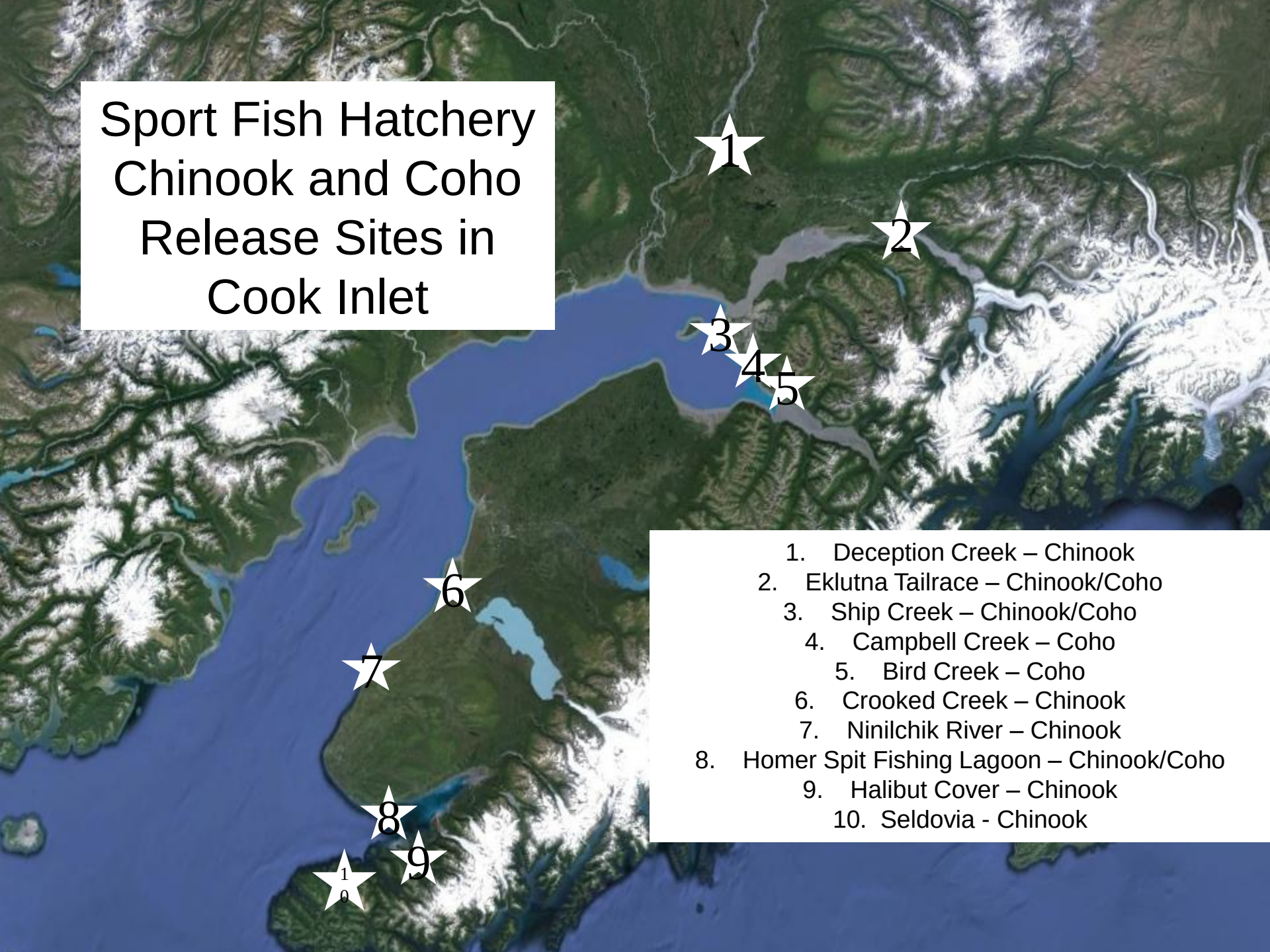
Location	2012 Stocking	2013 Stocking	Projected Stocking 2014
Deception Creek	151,220	149,041	211,995
Eklutna Tailrace	160,347	94,609	423,989
Ship Creek	329,082	324,145	364,781
Crooked Creek	52,759	-	140,501
Ninilchik	54,780	50,315	50,000
Homer Spit	221,547	216,292	191,000
Halibut Cove	110,253	60,666	95,452
Seldovia	95,800	63,311	95,452
Total Releases	**1,175,788**	**958,379**	**1,573,170**

Cook Inlet Sport Fish Chinook Smolt Production



- Target size is 13 grams

Sport Fish Hatchery Chinook and Coho Release Sites in Cook Inlet



1. Deception Creek – Chinook
2. Eklutna Tailrace – Chinook/Coho
3. Ship Creek – Chinook/Coho
4. Campbell Creek – Coho
5. Bird Creek – Coho
6. Crooked Creek – Chinook
7. Ninilchik River – Chinook
8. Homer Spit Fishing Lagoon – Chinook/Coho
9. Halibut Cover – Chinook
10. Seldovia - Chinook

QUESTIONS?