

Current status of hatchery and naturally spawning chum salmon in Hokkaido



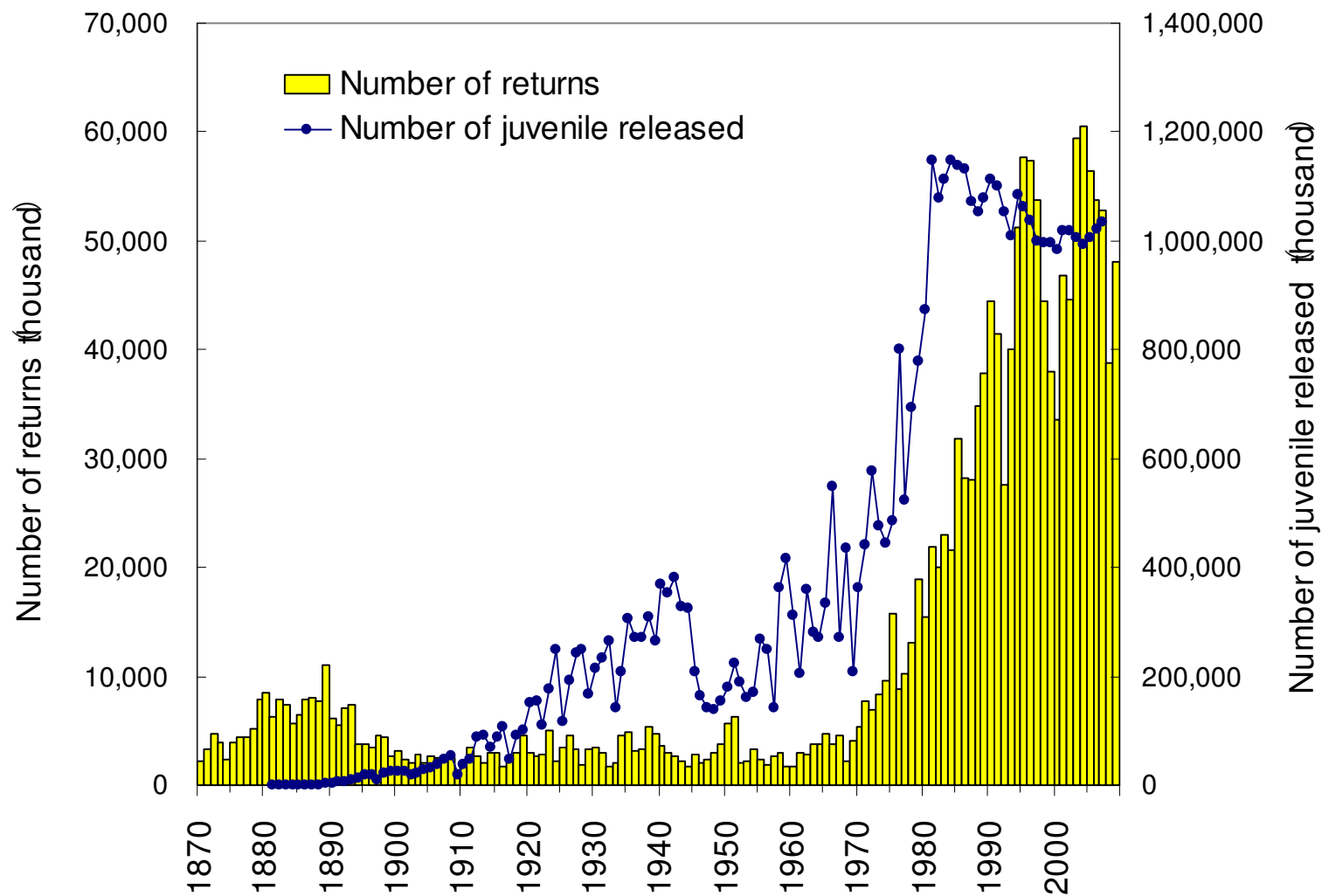
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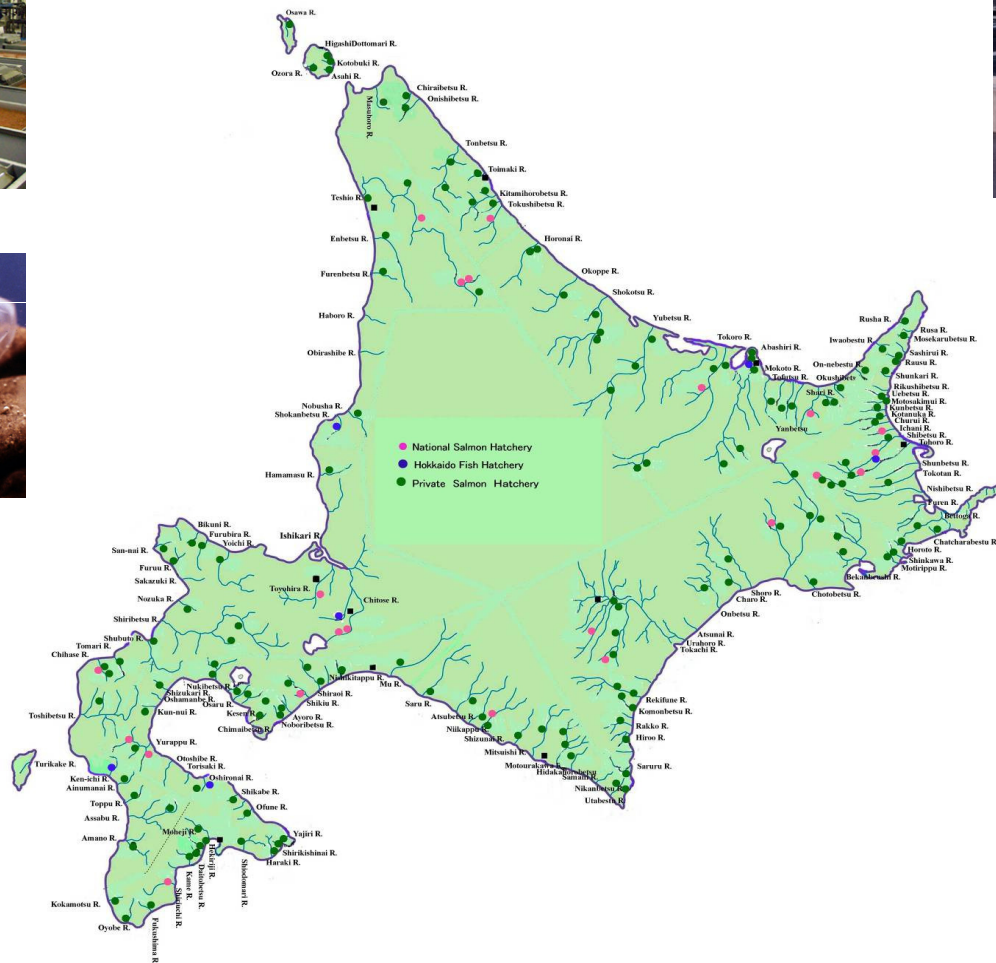
Number of hatchery-reared fish released and returning fish in Hokkaido



Locations of salmon hatcheries

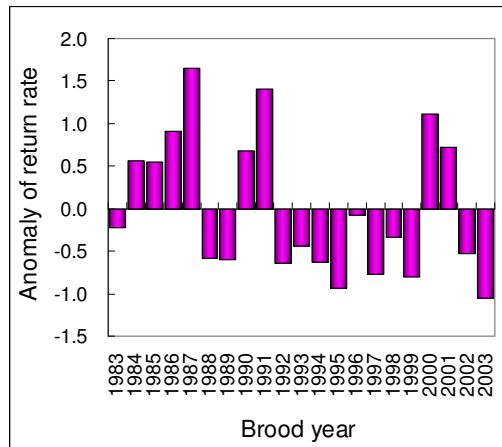
A total of one billion fry are reared at 114 hatcheries and released in spring

Hatchery-reared juveniles are released from 140 rivers and 70 fishing ports.

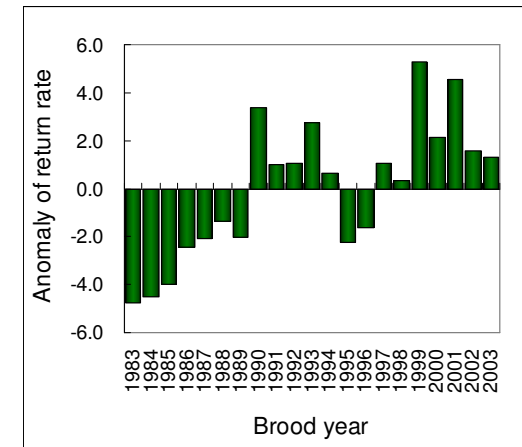


1983-2003 anomaly time series of chum salmon return rates in five coastal regions in Hokkaido

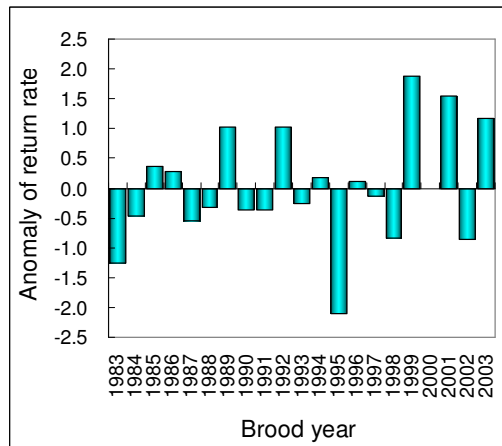
Sea of Japan



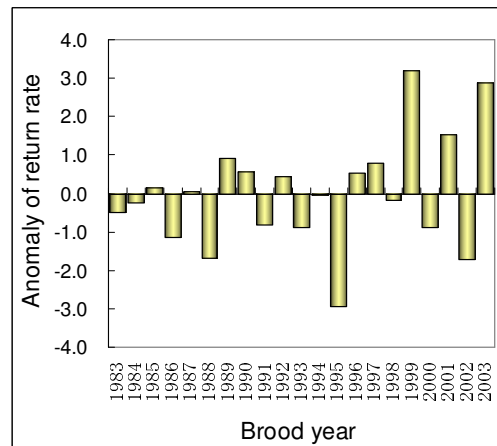
Okhotsk Sea



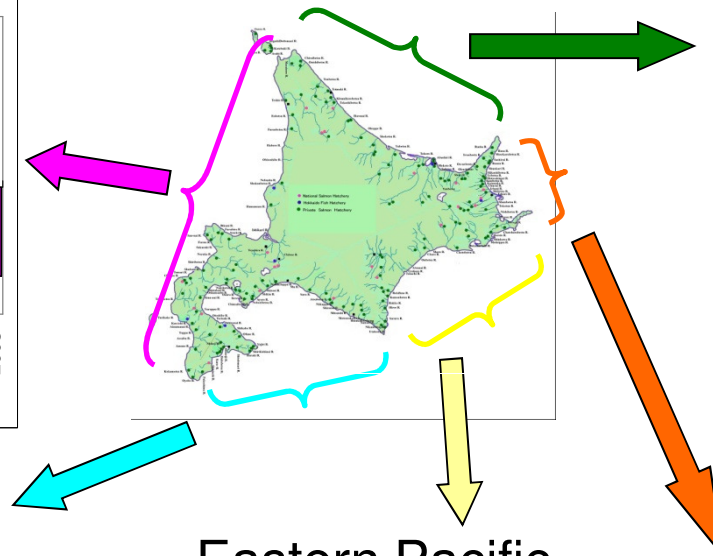
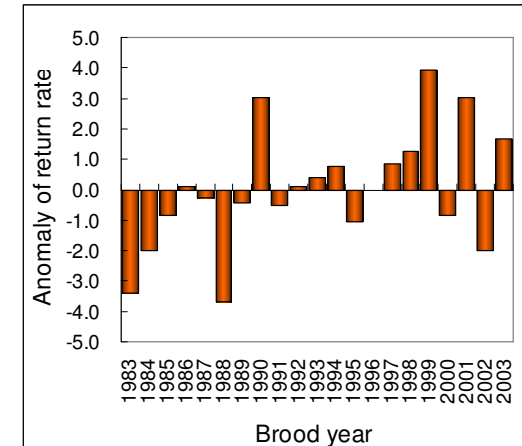
Western Pacific



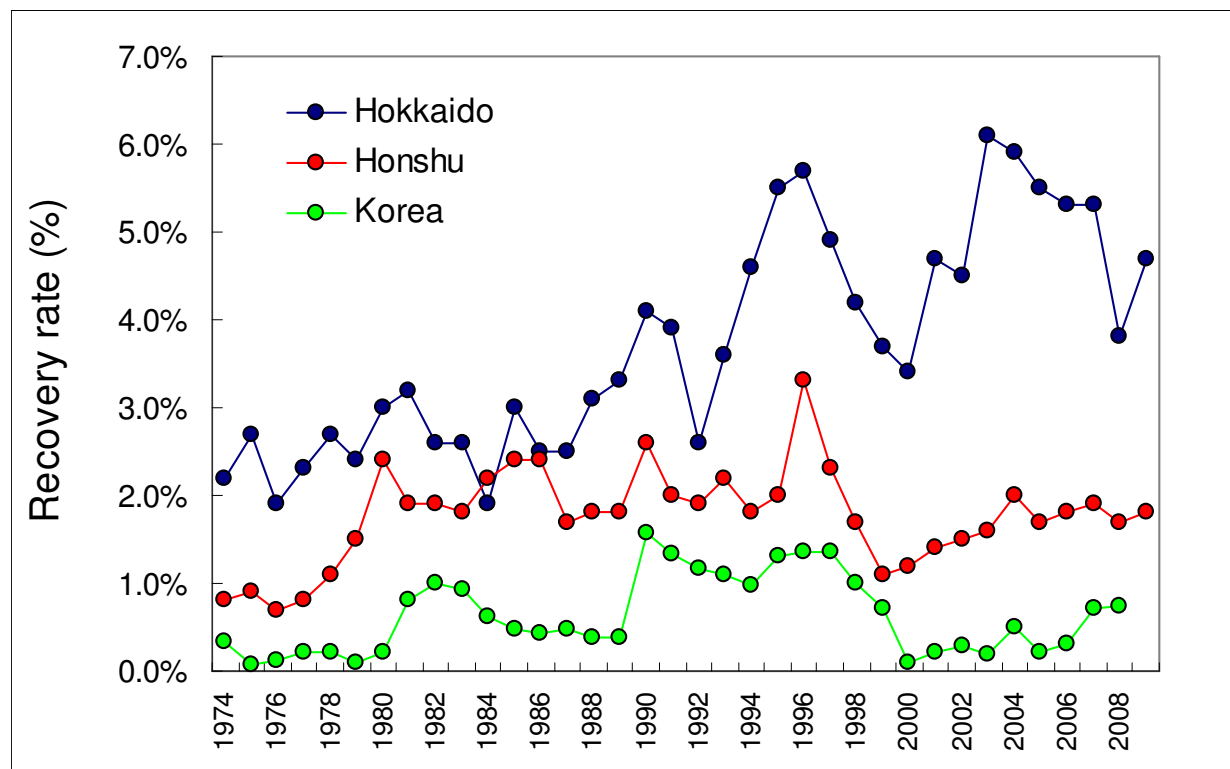
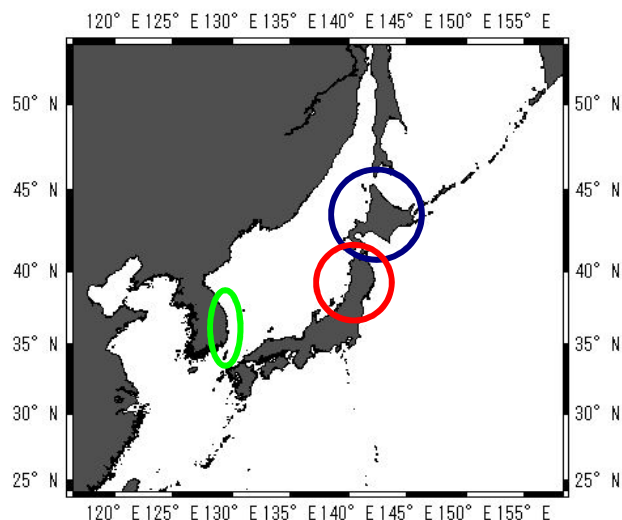
Eastern Pacific



Nemuro



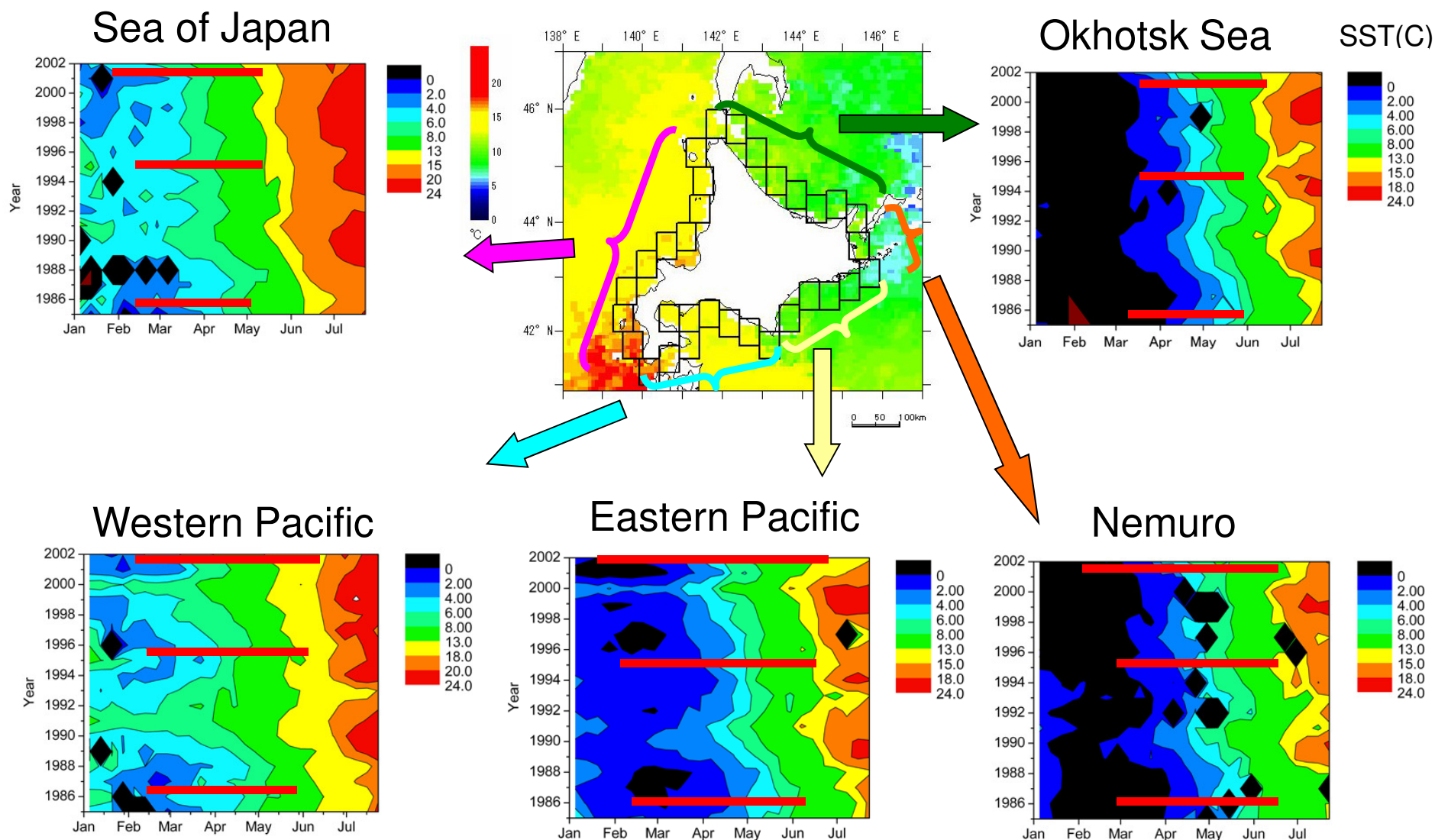
Return rate of chum salmon released from Hokkaido, Honshu*, and Korea



* Return rates were estimated by number of returns divided by number of fish released 4 years ago.

* Data resource: National Salmon Resources Center (<http://salmon.fra.affrc.go.jp>)

Recent shift of spring SST in coastal area of Hokkaido and release timing from hatcheries (—)

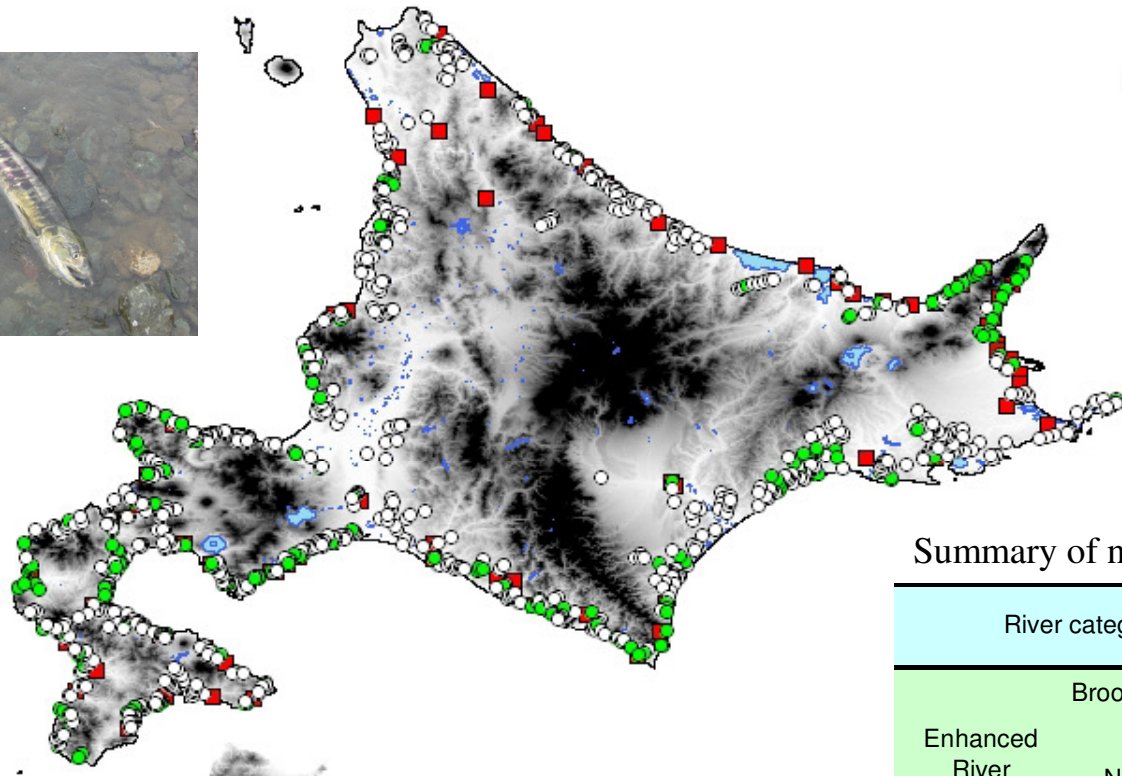


Assessment of naturally spawning chum salmon populations (2008~)



Izari River

A photograph of a rainbow trout lying on a rocky riverbed. The fish has a white tag in its mouth and a white tag on its tail. The tag on the tail has the number '2' on it. The fish is surrounded by dark, wet rocks and some green algae.

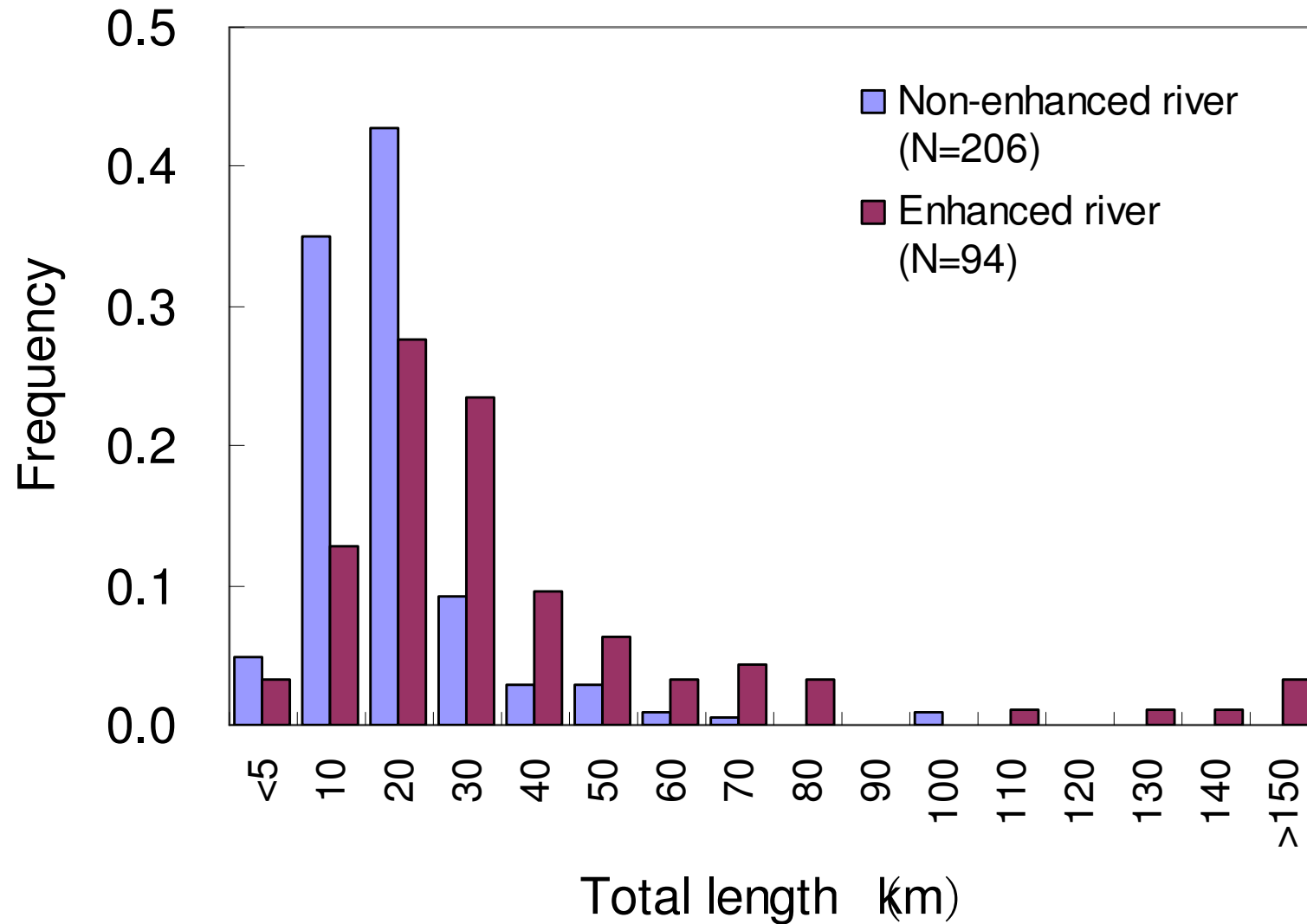


- Spawning fish present
- Spawning fish absent
- Weir or adult capture site

River category		Number of rivers	Natural spawning	
			Present	Absent
Brood stock collection				
Enhanced River	Conducted	39	31	8
	Not-conducted	55	46	9
	Total	94	77	17
Hatchery release history				
Non-enhanced River	Present *1	53	22	31
	Absent *2	153	43	110
	Total	206	65	141
Total		300	142	158

*2 Hatchery fish have never been stocked

Comparison of lengths of enhanced- and non-enhanced rivers



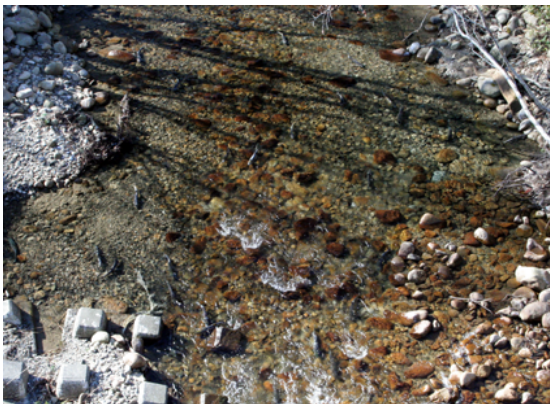
Rivers where naturally spawning chum salmon were observed



Kerimai River



Abeyaki River



Horoman River



Rivers where naturally spawning chum salmon were not observed



Hae River



Kenomai River



Gabari River



Porosanushibetsu River



Unbe
River



Summary

Hatchery Program

- Hokkaido chum salmon stocks are supported by intensive hatchery programs.
- Numbers of chum salmon returns have increased, but a large difference in return rates has been observed among regions.
- The different fluctuation pattern of return rate may be related to coastal environment.

Naturally spawning populations

- ✚ Naturally spawning chum salmon were observed in 65 rivers where hatchery fish are not stocked.
- ✚ Strategies to conserve healthy and diverse populations are necessary in Hokkaido.