Differentiation of chum salmon populations in the Russian Far East with use of DNA (microsatellite) markers

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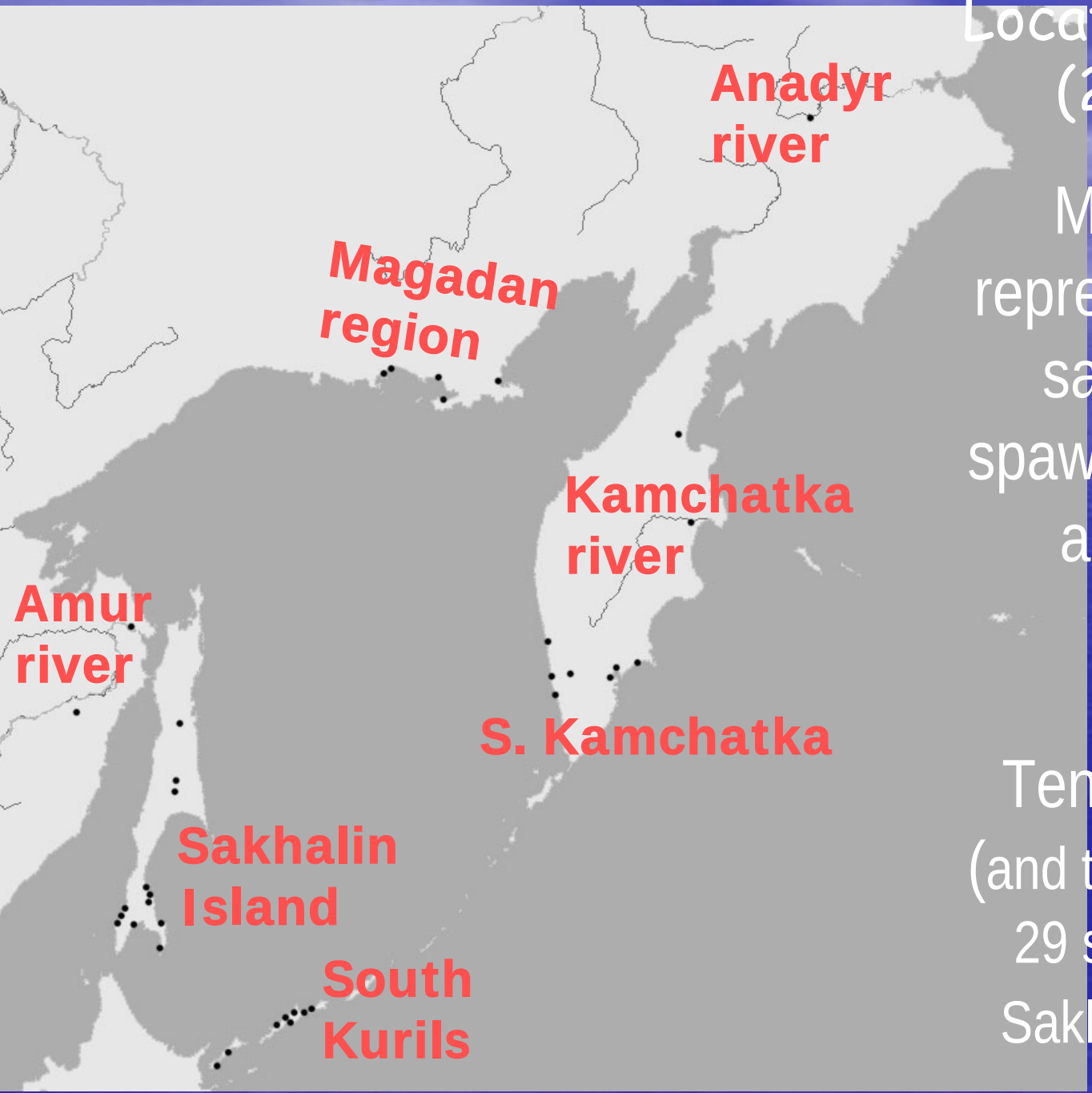


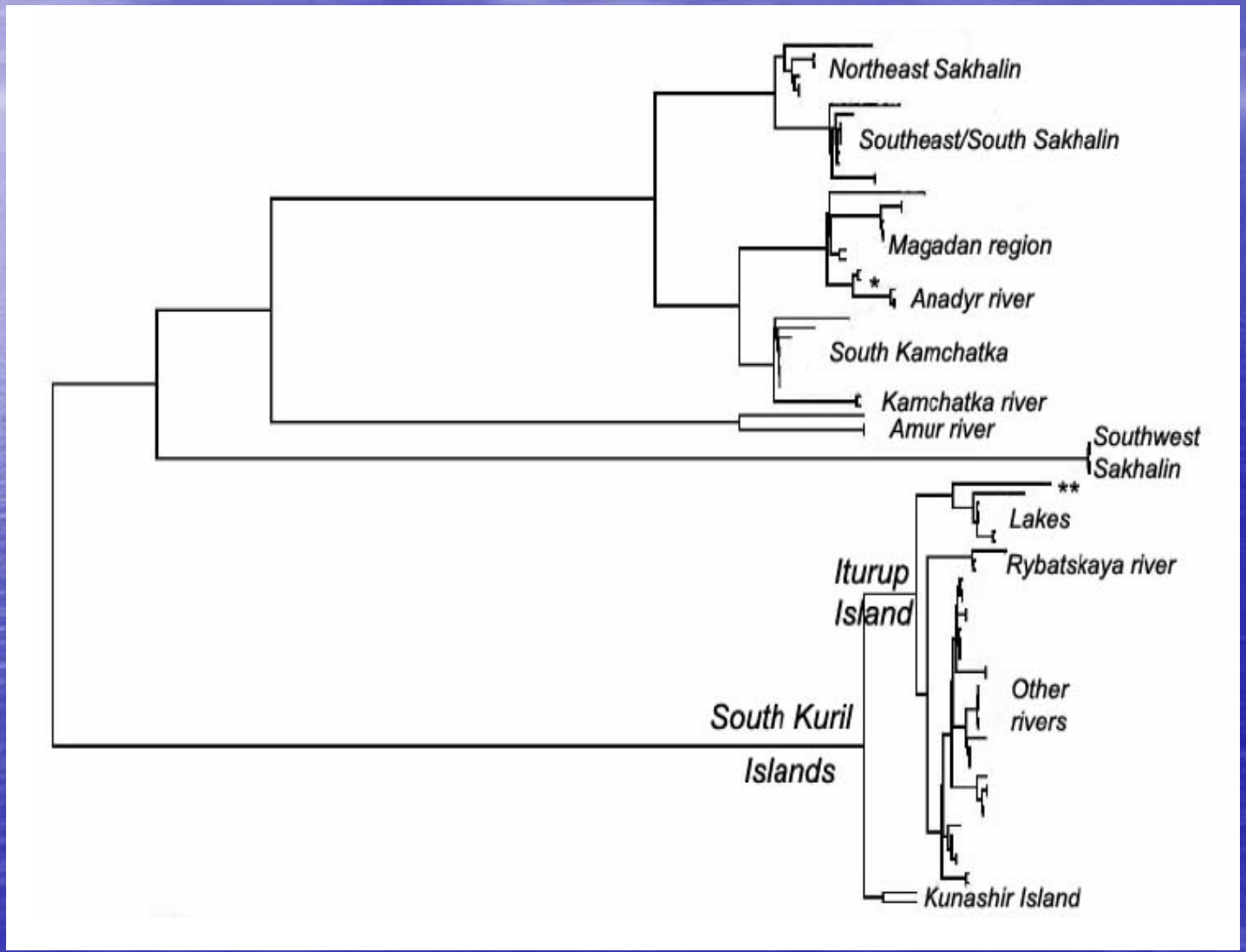
Location of samples (2003-2007)

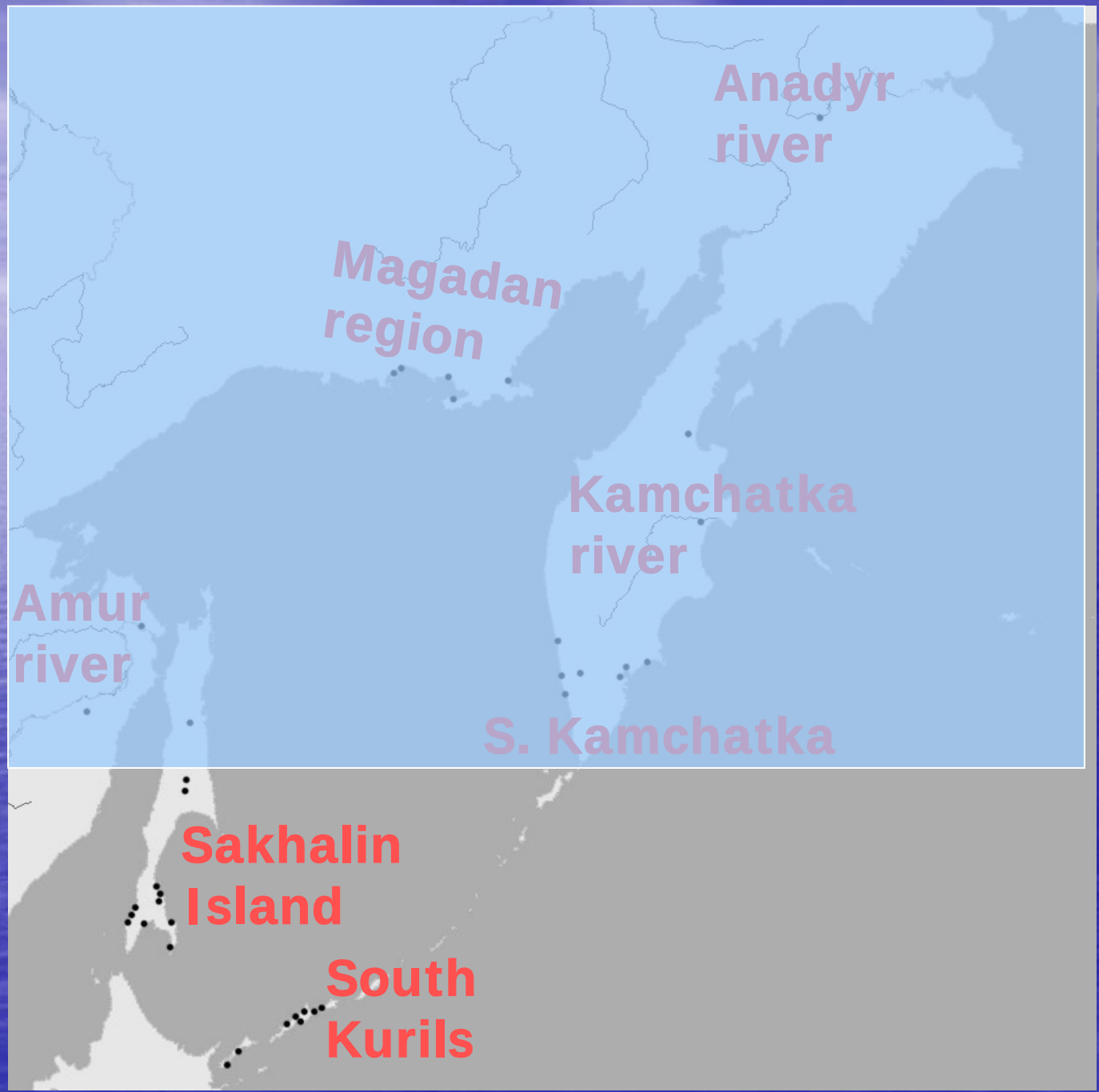
Many sites are represented by a few samples (within spawning runs and/or across years).

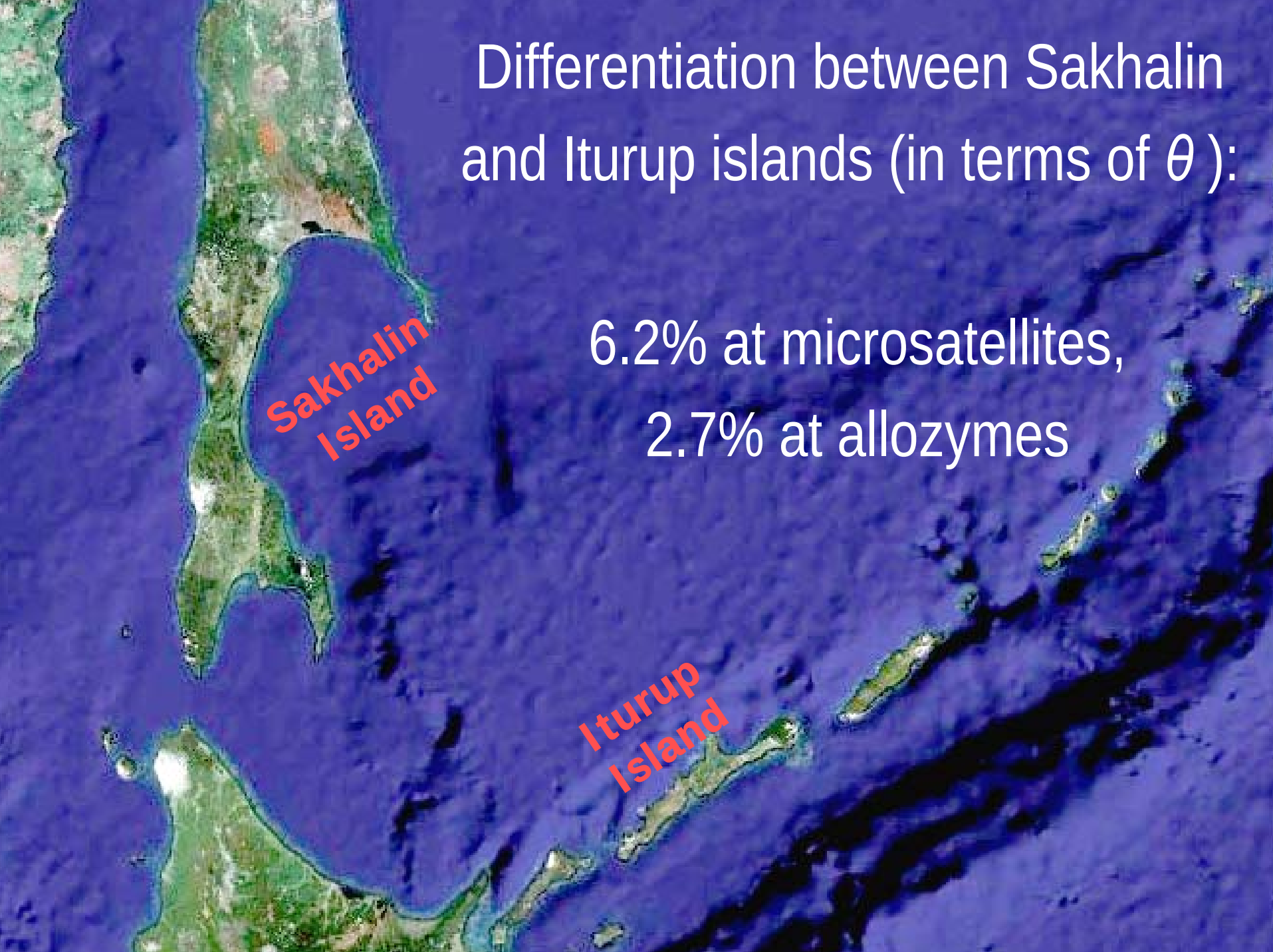
Markers

Ten microsatellites (and twelve allozymes in 29 samples from the Sakhalin-Kuril region)

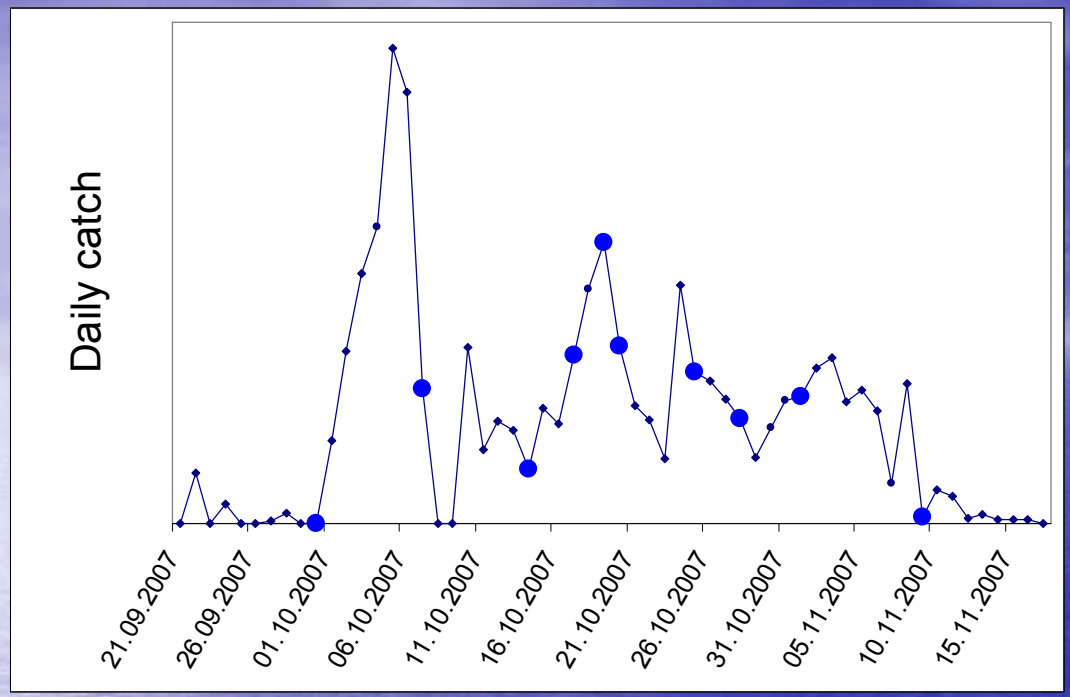
Unrooted tree of samples based on microsatellite markers (constructed by software GDA)

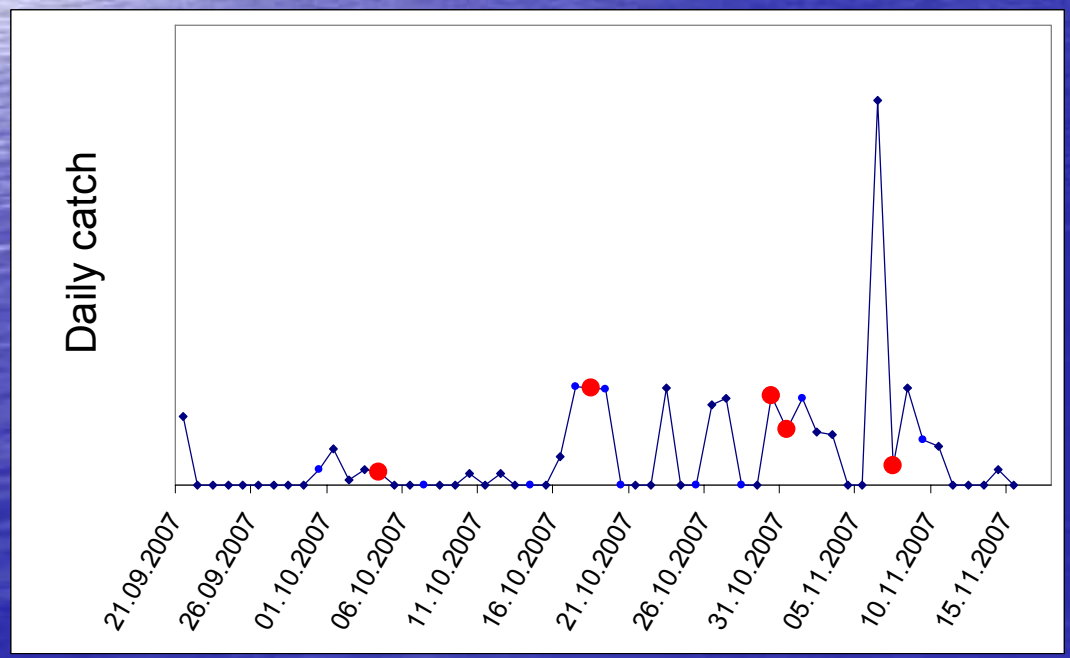



Anadyr river
Magadan region
Kamchatka river
Amur river
S. Kamchatka
Sakhalin Island
South Kurils


Differentiation between Sakhalin and Iturup islands (in terms of θ):
6.2% at microsatellites,
2.7% at allozymes
Sakhalin Island
Iturup Island

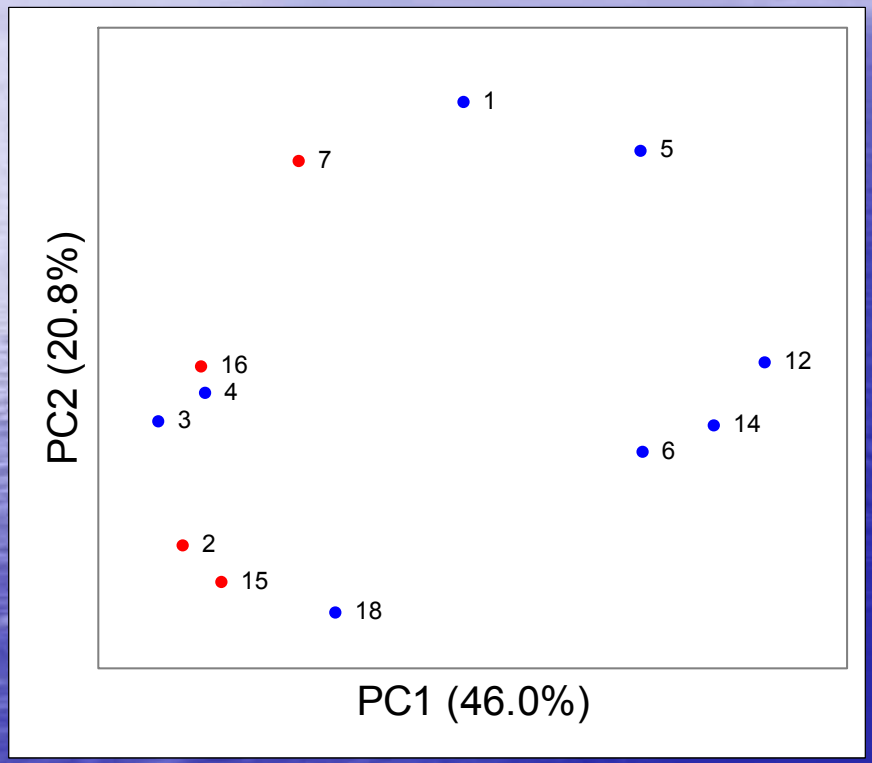
Sampling from the hatcheries' chum salmon stocks during the spawning run in 2006



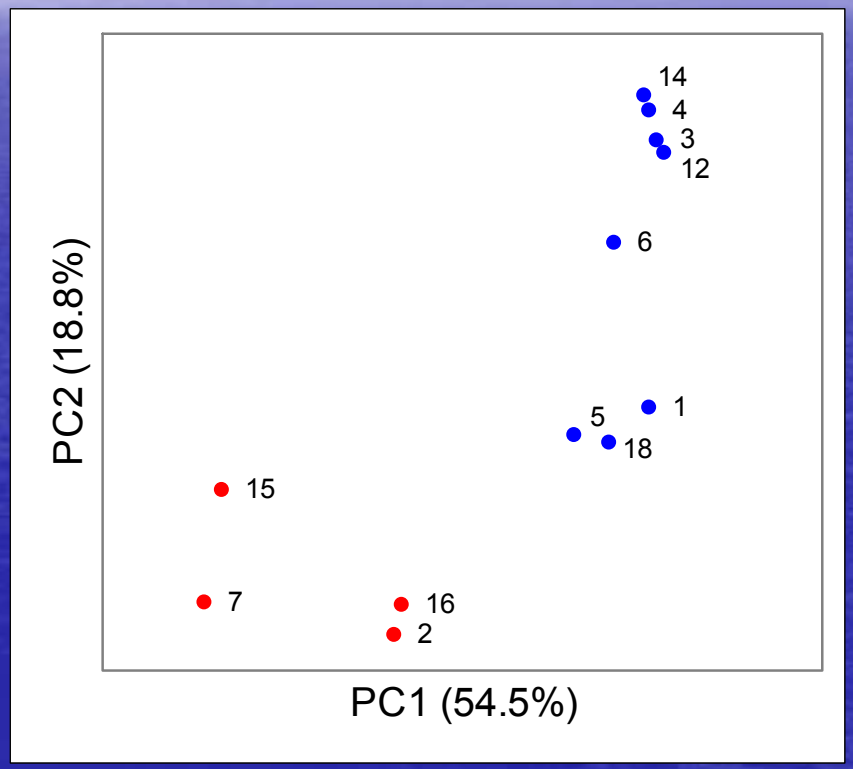


Finer differentiation of the hatcheries' chum salmon stocks using microsatellite markers compared to allozymes

(across twelve samples analyzed with both microsatellites and allozymes)



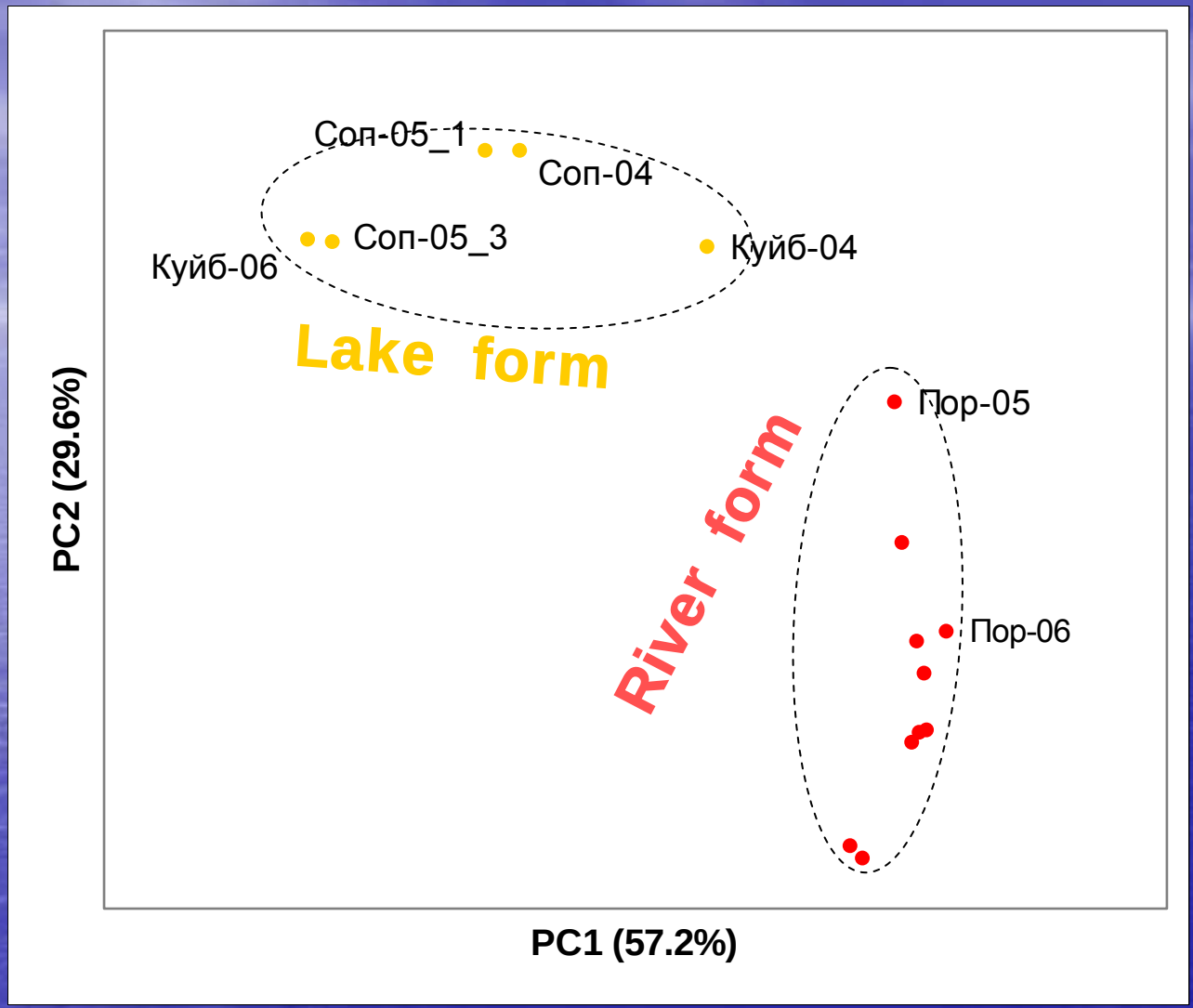
Allozymes



Microsatellites


Iturup Island
Sopochnoe
Lake

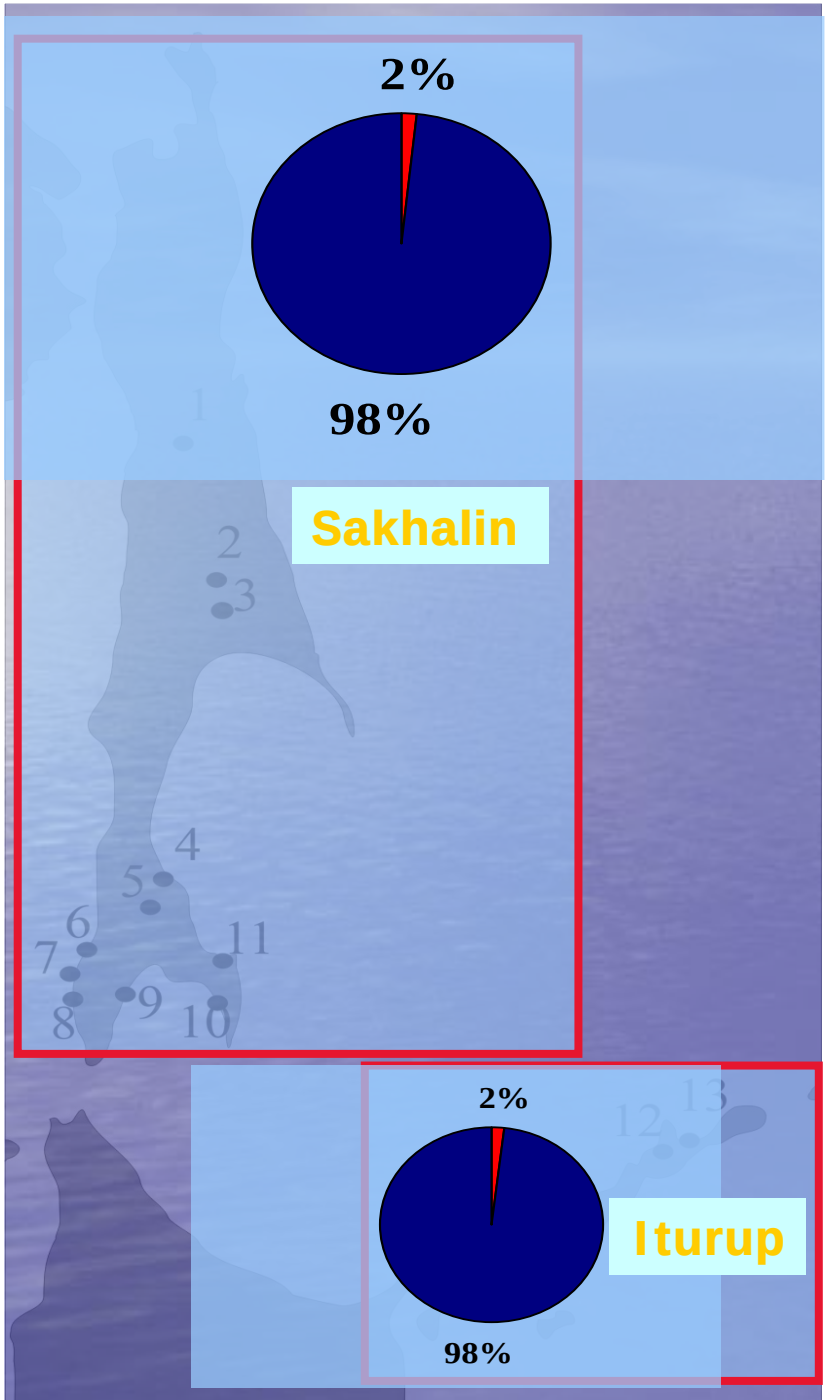

Lake form
River form
Porozhisty Crick



Samples of lake and river forms across locations and years

Fish Identification

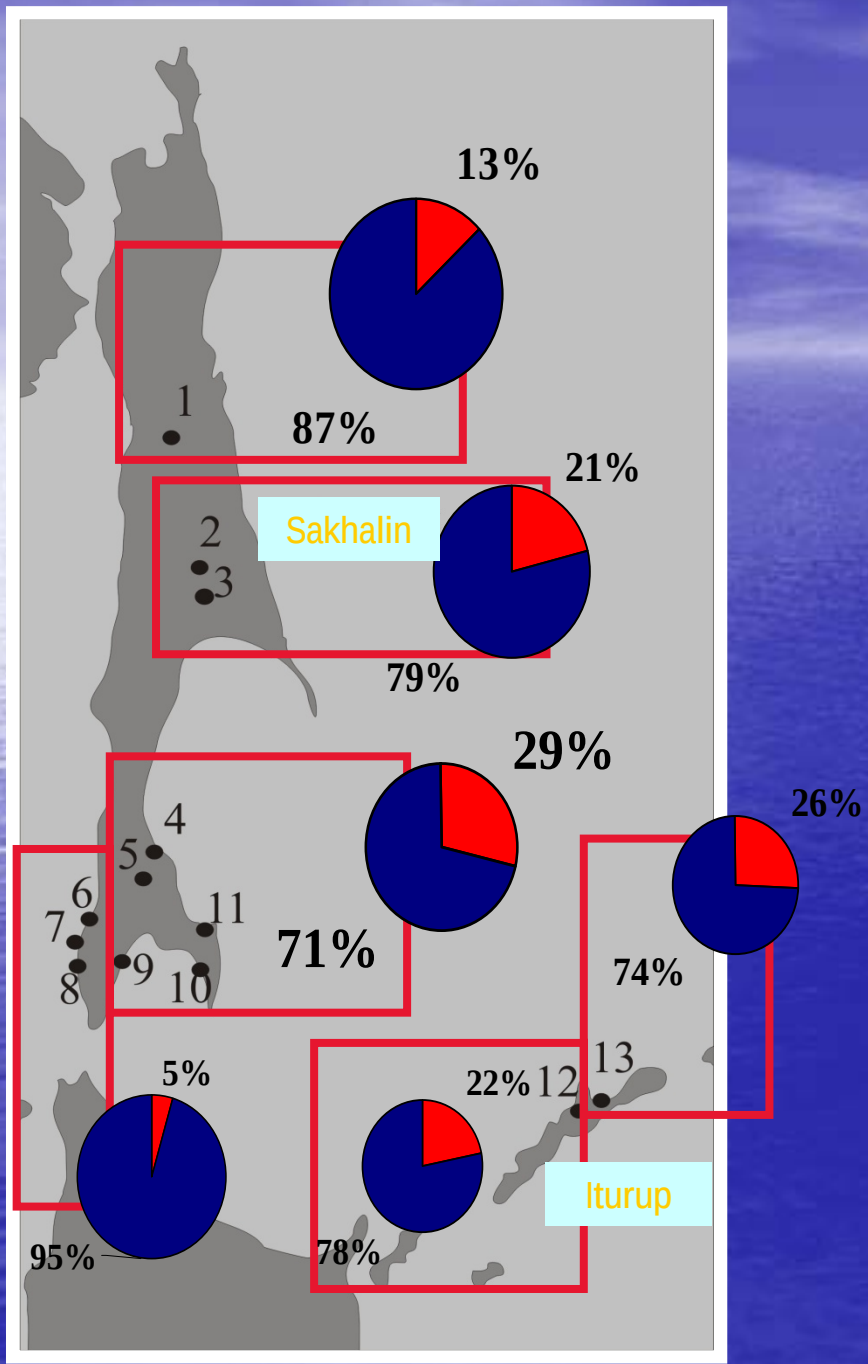
(an example from Sakhalin-South Kurils chum salmon)



Fish identification based on the ten macrosatellites: Sakhalin *vs* S.Kurils

Blue is a fraction of fish identified correctly (i.e., those having genetic profiles that are probabilistically closer to the 'home' one).

Red is a fraction of fish identified incorrectly (i.e. those having the genetic profiles closer to that for chum of the other island)



Fish identification between localities within Sakhalin and South Kurils

Blue is a fraction of fish identified correctly.

Red is a fraction of fish identified incorrectly.

Summary

- Chum salmon populations of the Russian Far East show significant genetic differentiation at many levels (between-regional, local, ecological, etc.) with using microsatellite markers.
- This provides a basis for genetic management, identification, and sertification for this species.
- Strength of differentiation varies across the habitat, and probably, depends on histories of natural straying, population size, ecology, between-hatchery transfer, etc.