

K. SUZUKI et al, *Int. J. PIXE* **18**, 39 (2008). DOI: 10.1142/S0129083508001326

APPLICATION OF MICRO-PIXE ANALYSIS FOR A MIGRATION HISTORY STUDY OF *HUCHO PERRYI* FOCUSED ON STRONTIUM DISTRIBUTION IN FISH SCALES

K. SUZUKI

□ Graduate course of Education, Tokyo Gakugei University, 4-1-1 Nukuikitamachi, Koganei, Tokyo 184-8501, Japan

T. YOSHITOMI

□ Corresponding author.

□ Field Studies Institute for Environmental Education, Tokyo Gakugei University, 4-1-1 Nukuikitamachi, Koganei, Tokyo 184-8501, Japan

Y. KAWAGUCHI

□ Watershed Management Laboratory Department of Urban and Environmental Engineering, Kyushu University, 744 Motoooka, Nishi-ku, Fukuoka, 819-0395, Japan

K. EDO

□ Monuments and Sites Division, Agency for Cultural Affairs, Marunouchi 2-5-1, Chiyoda-ku, Tokyo 100-8959, Japan

S. HOMMA-TAKEDA

□ National Institute of Radiological Sciences, 4-9-1 Anagawa, Inage-ku, Chiba 263-8555, Japan

T. ISHIKAWA

□ National Institute of Radiological Sciences, 4-9-1 Anagawa, Inage-ku, Chiba 263-8555, Japan

H. ISO

□ National Institute of Radiological Sciences, 4-9-1 Anagawa, Inage-ku, Chiba 263-8555, Japan

H. IMASEKI

□ National Institute of Radiological Sciences, 4-9-1 Anagawa, Inage-ku, Chiba 263-8555, Japan

Received: 10 February 2008

Revised: 16 May 2008

Sakhalin taimen, *Hucho perryi*, is one of the largest freshwater fish in Japan, where it is close to extinction because of indiscriminate fishing, water pollution, and river construction. Interpretable ecological information about the species, however, is scarce. We examined the migration history of *H. perryi* by analysis of strontium (Sr) content in fish scales using inductively coupled plasma mass spectrometry and Sr distributions associated with ridges (growth lines) in the scales, with micro-beam scanning PIXE (micro-PIXE) analyses. Sr levels in the scales of *H. perryi* collected along the Sarufutsu coast were higher than those of salmonid collected at Shumarinai, a freshwater lake. Micro-PIXE line analyses showed that the scale Sr values of the Shumarinai Lake samples remained consistently low from the edge toward the core of the scales. The Sr values from the Sarufutsu coast samples remained relatively high from the edge toward the core; Sr levels from second to fourth position from the edge were about ten times higher than the mean levels of Shumarinai Lake samples. These results suggested that *H. perryi* from the Sarufutsu Coast had experienced the marine environment.

Keywords: Micro-PIXE; *Hucho perryi* ; Sr ; scale; life history; migration

Cited by :