



HOKKAIDO UNIVERSITY

Title	Pattern of geographic variation in small odontocetes and affecting environmental factors
Author(s)	AMANO, Masao
Citation	Japanese Journal of Veterinary Research, 45(4), 240-240
Issue Date	1998-02-27
Doc URL	https://hdl.handle.net/2115/2632
Type	departmental bulletin paper
File Information	KJ00002398599.pdf



Pattern of geographic variation in small odontocetes and
affecting environmental factors

Masao Amano

*Otsuchi Marine Research Center
Ocean Research Institute, University of Tokyo
Otsuchi, Iwate 028-11, Japan*

There seems to be no effective barrier to promote differentiation among populations of cetaceans in the open ocean. However, we can recognize identities of populations and geographic variation among them. Eight breeding grounds of Dall's porpoises have been suggested in their range and they correspond with the distribution of gyres and current systems. Two populations of short-finned pilot whales are segregated in the Kuroshio current and in the north of the Kuroshio front. These suggest that it is not easy for small cetaceans to migrate beyond the front of different water masses, even if they are not so conspicuous, and they function as effective barriers.

Several factors, such as thermoregulation, intra- and interspecific competition, size of prey, productivity have been suggested affecting the geographic variation in size of mammals. Body and skull size of Dall's porpoises shows a clinal geographic pattern, which corresponds well with distribution of primary reproduction of the ocean. Short-finned pilot whales of the northern population are larger than those of the southern population. This has been considered the result of adaptation to the colder environment which acquired during the invasion into the higher

latitude.

Secondary sexual characters appear in adult male Dall's porpoise. Degree of development of these traits shows subtle geographic variation in which porpoises from the offshore Eastern Pacific show less development. Worse food supply may be affected on the growth of these characters, which must require extra energy to develop. The pattern of sexual dimorphism in short-finned pilot whales off Japan is curious. Sexual difference in body and skull size is larger in northern form, while sexual dimorphism in head and skull shape is conspicuous in southern form. I consider the latter dimorphism is due to difference in mating system brought by different thermocondition.

References

- 1) Amano, M. and Miyazaki, N. 1992. *Marine Mammal Science*, 8 : 240-261.
- 2) Amano, M. and Miyazaki, N. 1993. *Can. J. Zool.*, 71 : 1124-1130.
- 3) Kasuya, T. and Tai, T. 1993. *Rep. int. Whal. Commn.*, Special Issue 14 : 439-473.
- 4) Miyazaki, N. and Amano, M. 1994. *Rep. int. Whal. Commn.*, 44 : 499-508.