

Plastic ingestion in seabirds and its potential impact

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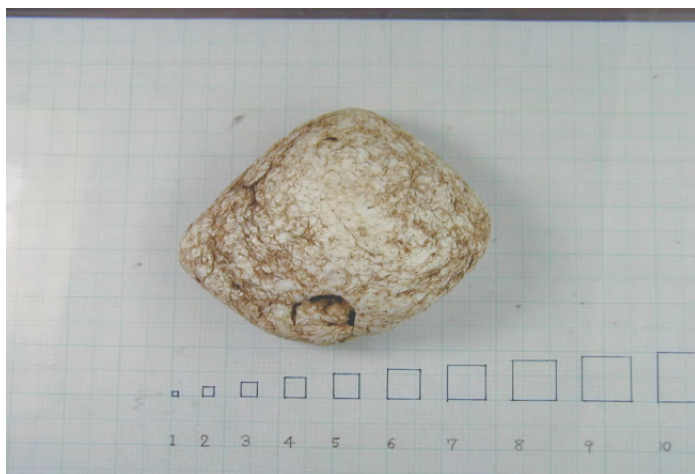
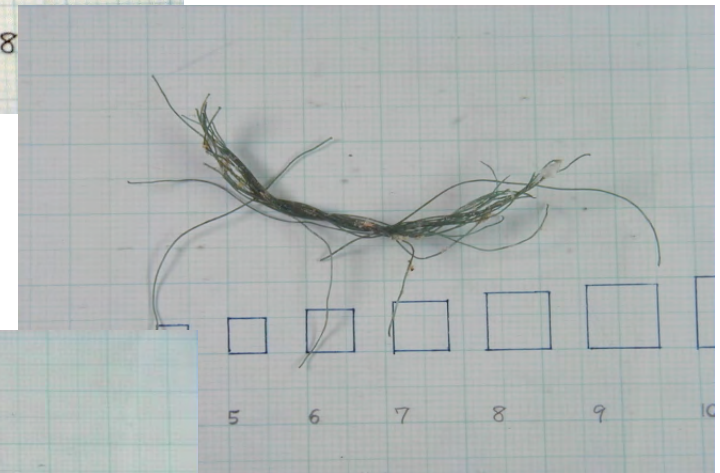
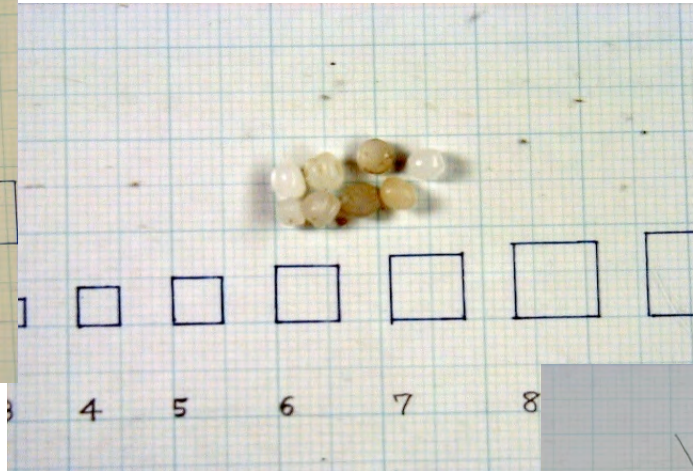
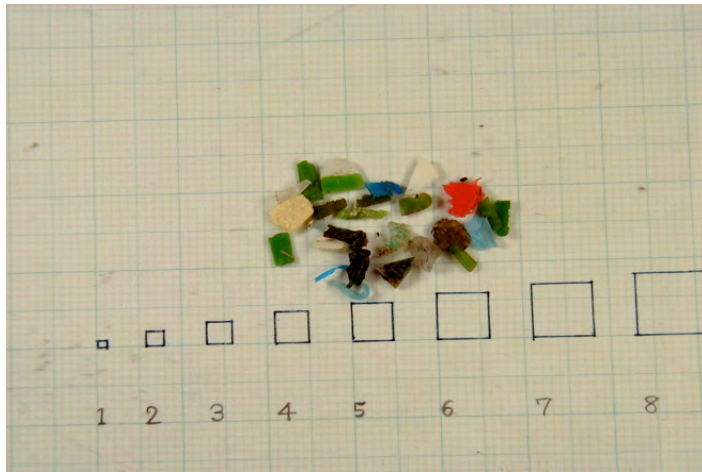
Topics

- Plastics in the surface of the sea
- Seabirds ingest plastics
- Potential effects of plastics on seabirds



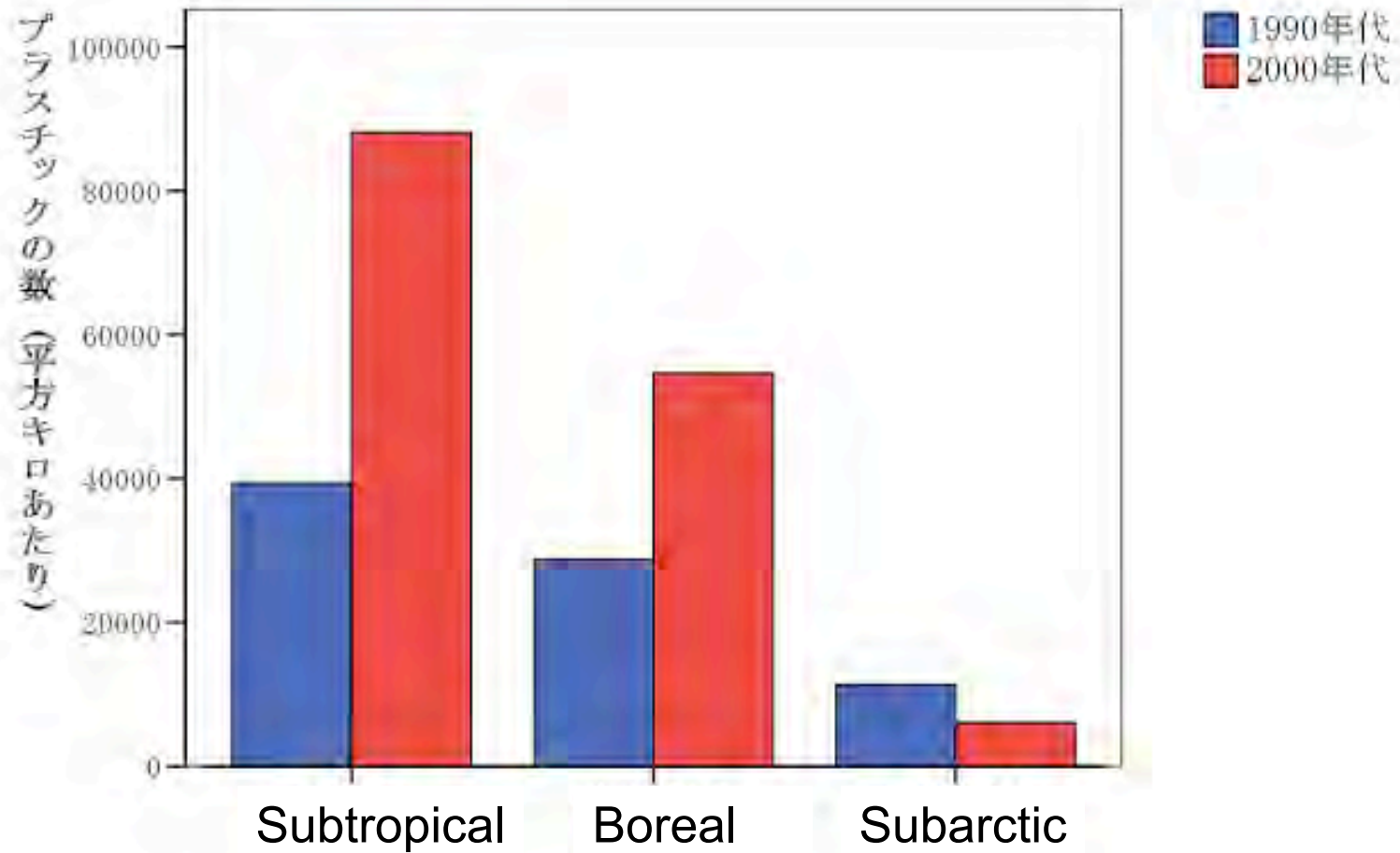
Sampling plastic particles on the sea surface

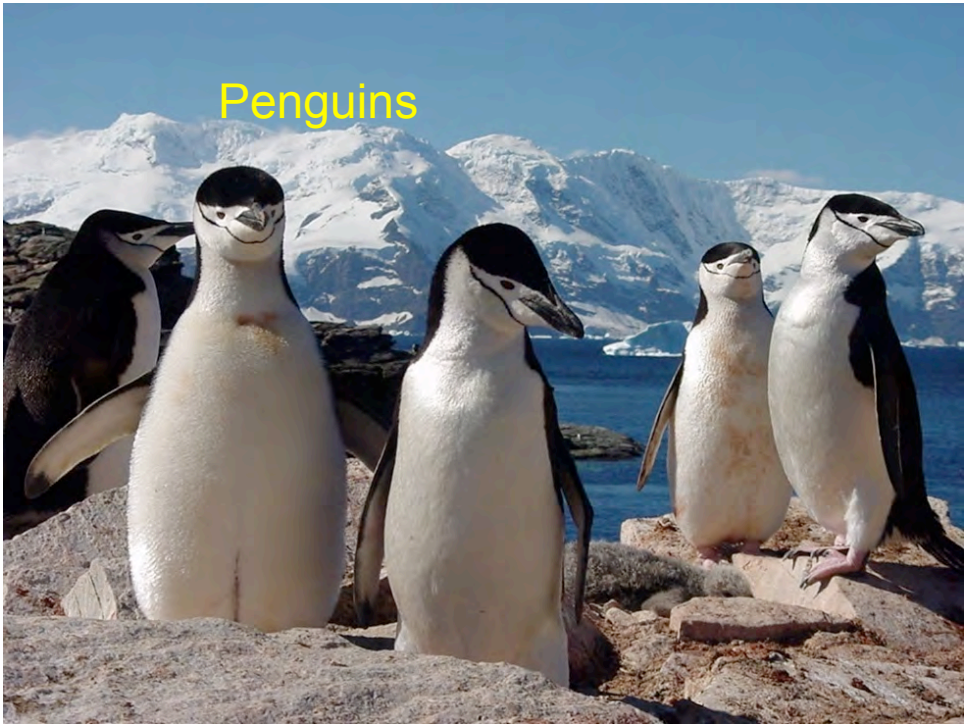
Types of plastics on the sea surface



No. of plastic particles on sea surface in 1990's (blue) and 2000's (red) in North Pacific

Reviewed by Yamashita 2008





Penguins



Shearwaters



Pelicans and cormorants



Auks

Occurrence of plastics in stomachs of seabirds collected in northern North Pacific by research gill-net fisheries

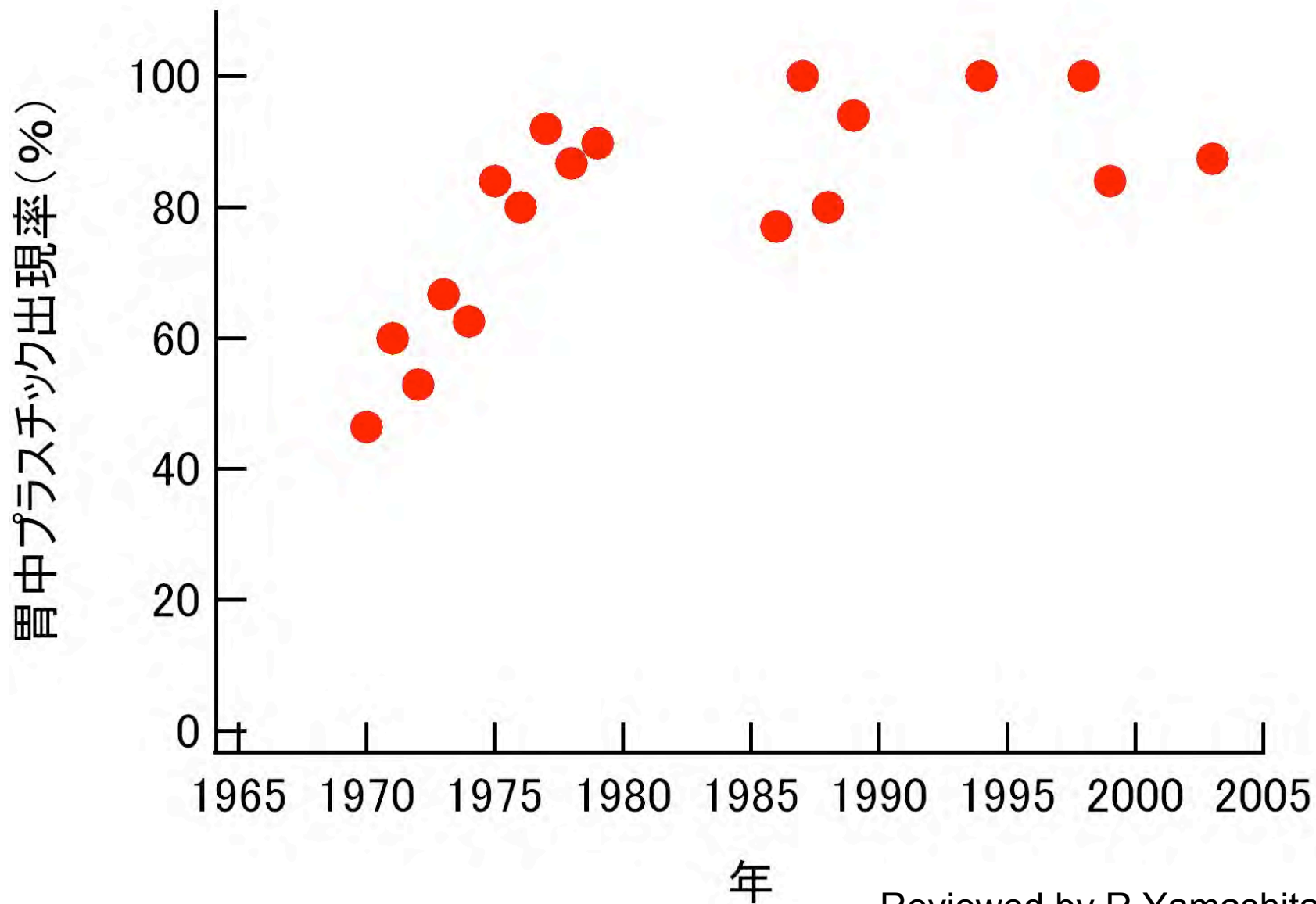
R Yamashita 2008, A Yamashita 2012

Species	No. birds	No. with plastics(%)
Thick-billed Murre	13	3 (23%)
Tufted Puffin	12	7(58%)
Horned Puffin	20	5(25%)
Fulmar	9	7(78%)
Sooty Shearwater	11	10(91%)
Short-tailed Shearwater	124	110(89%)

Plastics found in the gizzard of Short-tailed shearwater



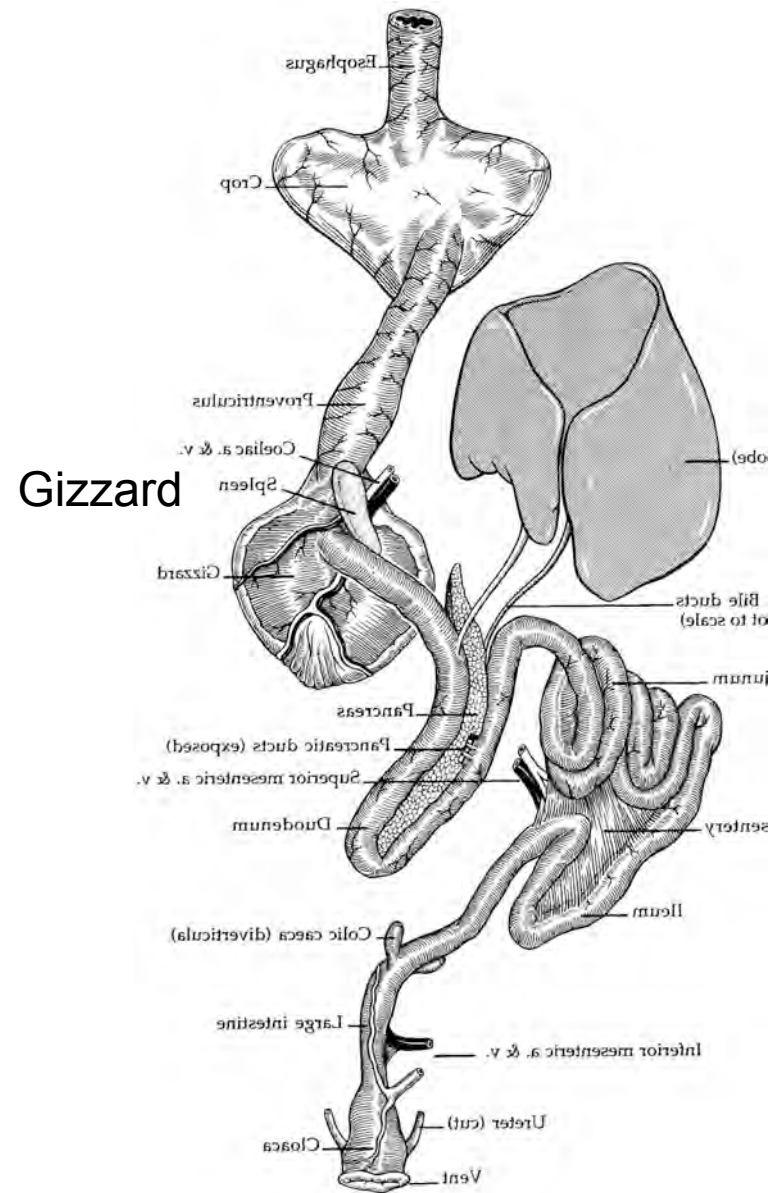
Interannual trend of the occurrence of plastics in the stomach of short-tailed shearwater collected in northern North Pacific



Reviewed by R Yamashita 2008

Plastic cap found in the gizzard of a fulmar

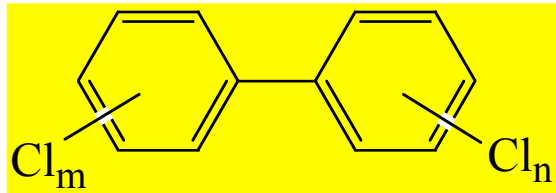
Cap block the pylorus



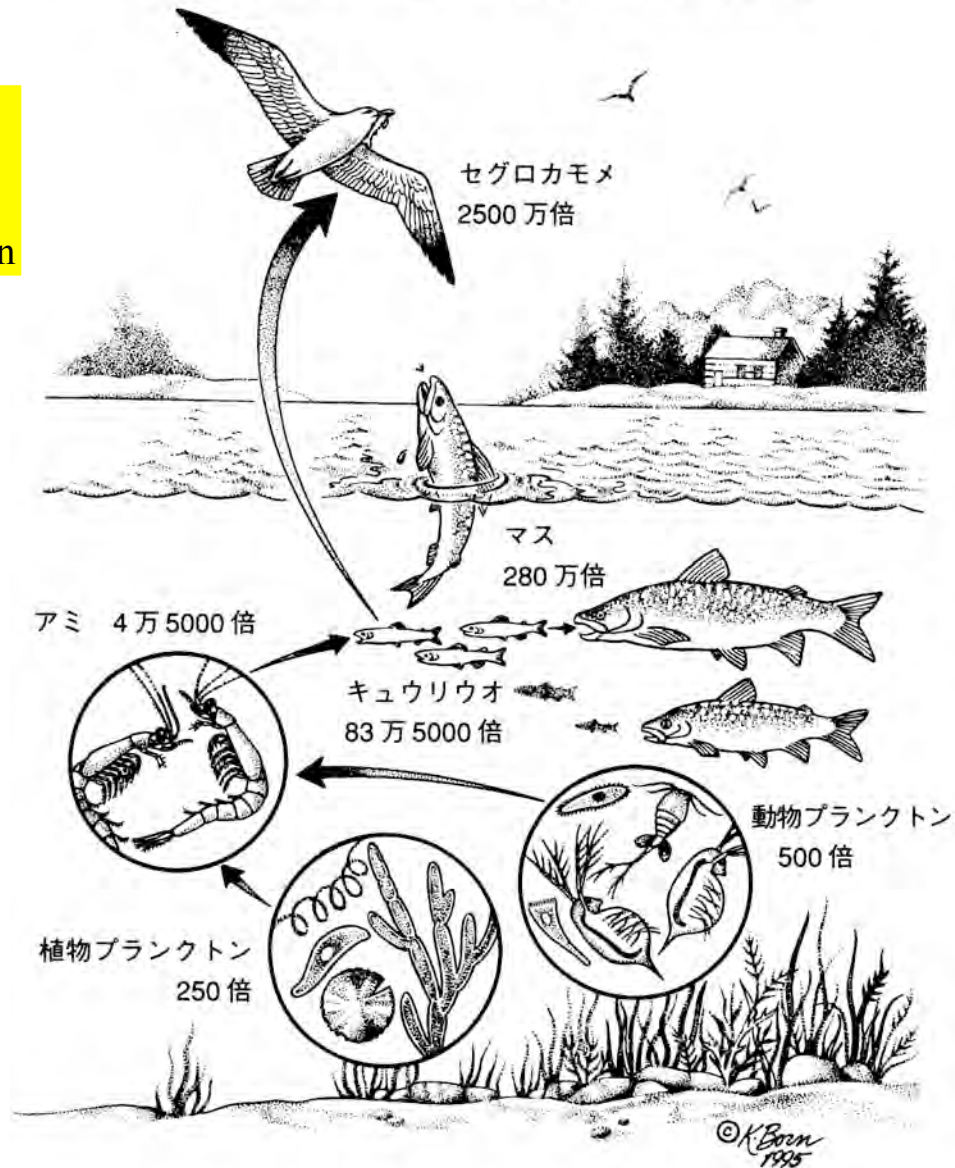
Pierce et al. 2004

Bio-magnification of POPs in seabirds

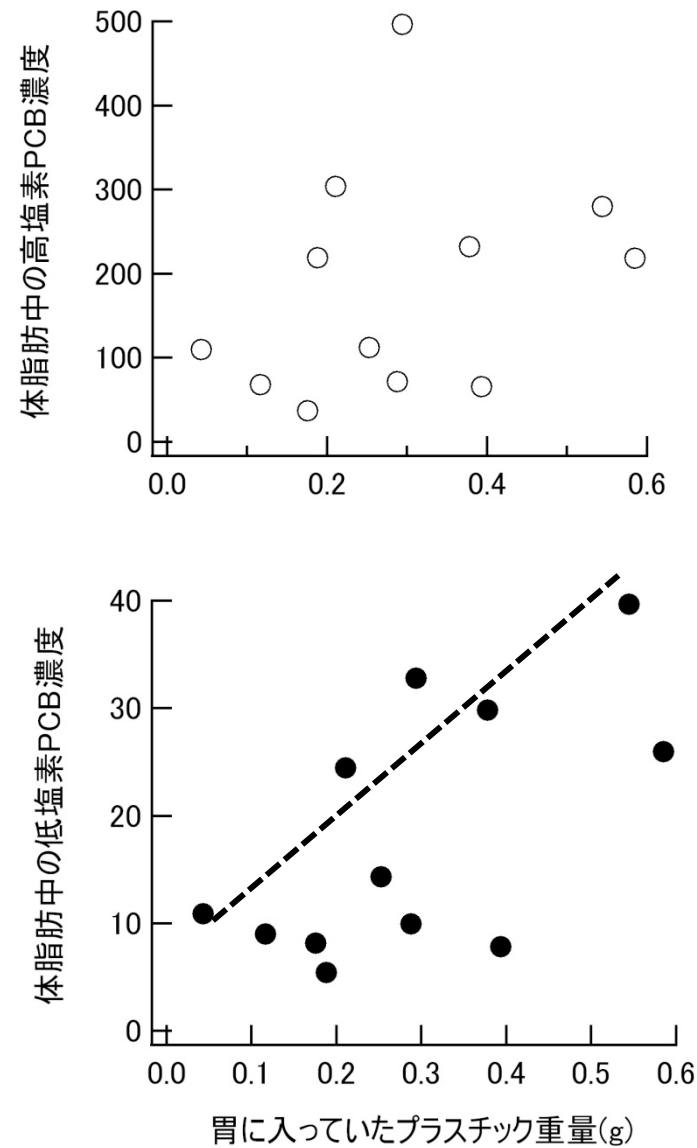
PCB



オンタリオ湖におけるPCBの生物濃縮



Relationships between the total mass of plastics in the stomach and the PCB density (top, lower PCB: bottom, higher PCB) in subcutaneous fat of short-tailed shearwaters



Yamashita et al. 2012

Summary

- 1) Number of plastics on the sea surface is increasing
- 2) Seabirds ingest various types of plastics at sea and its occurrence is increasing
- 3) Plastic ingestion may influence seabirds