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How 'wrong' could a research be?



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Spatial and temporal variation in size of polar bear (*Ursus maritimus*) sexual organs and its use in pollution and climate change studies

Christian Sonne^{a,*}, Rune Dietz^a, Erik W. Born^b, Frank F. Riget^a, Pall S. Leifsson^c,
Thea Ø. Bechshøft^a, Maja Kirkegaard^a

^a Department of Arctic Environment, National Environmental Research Institute, University of Aarhus, Frederiksborgvej 399, PO Box 358, DK-4000 Roskilde, Denmark

^b Greenland Institute of Natural Resources, PO Box 570, DK-3900 Nuuk, Greenland, Denmark

^c Department of Veterinary Pathobiology, Faculty of Life Sciences, University of Copenhagen, Bülowsvej 17, DK-1870 Frederiksberg, Denmark

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Abstract

Sexual organs and their development are susceptible to atmospheric transported environmental xenoendocrine pollutants and climate change (food availability). We therefore investigated sexual organs from 55 male and 44 female East Greenland polar bears (*Ursus maritimus*) to obtain information about growth/size and sexual maturity. Then, the genitalia size was compared with those previously reported from Canadian and Svalbard polar bears. Growth models showed that East Greenland male polar bears reached sexual maturity around 7 years of age and females around 4 years of age. When comparing East Greenland and Svalbard polar bears, the size of baculum and uterus were significantly lower in the East Greenland polar bears (ANOVA: all $p < 0.05$). Based on previously published baculum mean values from Canadian polar bears, a similar baculum pattern was found for East Greenland vs. Canadian polar bears. It is speculated whether this could be a result of the general high variation in polar bear body size, temporal distribution patterns of anthropogenic long-range transported persistent organic pollutants or climate change (decreasing food availability). The present investigation represents conservation and background data for future spatial and temporal assessments of hunting, pollution and climate change scenarios.

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Keywords: Baculum; Canada; Climate change; East Greenland; Growth; Maturity; Ovary; Polar bear; Pollution; Reproductive organs; Svalbard; Testes; *Ursus maritimus*; Uterus



General recommendation from the book

A good research practice shall:

1. Tell the truth about your research
2. Openly report your methods and results
3. Openly disclose any commercial interests and other ties
4. Consciously examine and present the basic assumptions underlying your studies
5. Do not steal research results from others (e.g. from younger colleagues)
6. Conduct your research in an orderly manner (e.g. by maintaining documentation and retaining data)
7. Do not conduct your research in a way that could harm other people (e.g. subjects)
8. Be fair in your assessment of other people's research

A research satisfying all above namely a good one?



- Value to a research:
 - Benefits / quality of life / society
 - Knowledge / understanding to natural phenomena
 - Pursuing new truth / process rather than result / value in itself
- One can argue:
 - If you have the energy and resource looking at polar bear's things, why don't you spend time solving some more practical problem, for example 'global warming' or 'eliminating poverty' ?
 - *Dear scientist, it might be the time to look into something more valuable.*



What goes 'wrong'?

- Similar dilemma to “DNA evidence fabrication”
 - *“evil mind creates evil idea”*
 - *Responsibility / accountability*
 - *Satisfactory ?*
- Evil at the first glance
 - The invention of “dynamite”
- No easy answer
 - Mass energy equation
 - Copenhagen, the play (*Niels Bohr and Werner Heisenberg*)
 - Climate change / global warming
 - “why should the industrialized/developed county ‘say no’ to other county from industrialization?”
 - (we save it to the last topic)



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