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$$\langle \mathcal{D} \rangle^{\mathfrak{b}} \cap \langle \mathcal{D} \rangle^{\mathfrak{d}} \triangleleft \mathcal{C}:$$

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መኖረላገ ደብዳቤዎችን መረጃ
ክፍል/ክፍሎችን የሚመለከቱትን ማረጋገጫ
መመሪያ
ፊርማ ለ ማረጋገጫ

የሚገኝ ማረጋገጫ

- a. ማረጋገጫው የሚገኝበት ማረጋገጫ ማረጋገጫውን፣ ማረጋገጫውን፣
ለሚገኝበት ማረጋገጫ ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን
- b. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

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1. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

a. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

- i. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

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- ማረጋገጫውን
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- ii. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

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b. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

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2. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

a. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

- i. ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን ማረጋገጫውን

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- ላይብስ ላይብስ፣ ላይብስ ላይብስ፣ ላይብስ ላይብስ



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POPULATION ASSESSMENT OF POLAR BEARS IN WESTERN HUDSON BAY

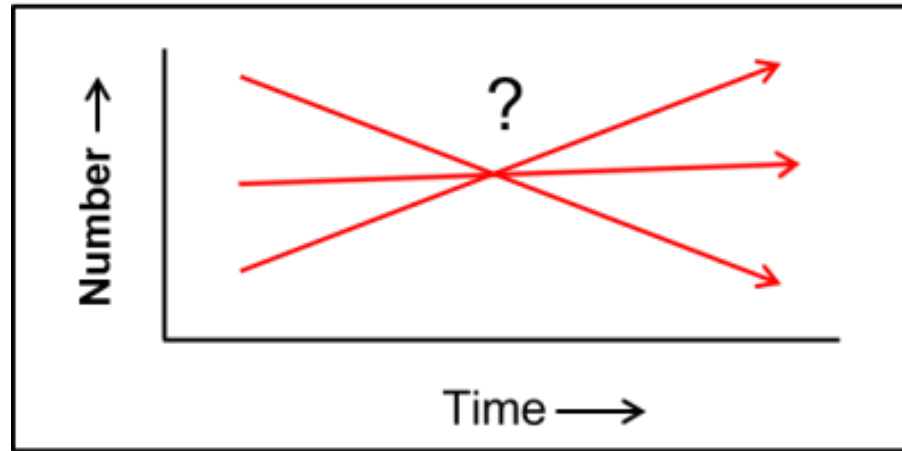
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2014

Rankin Inlet, Nunavut
2014

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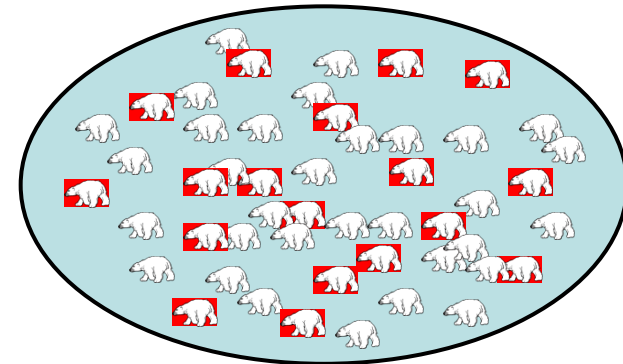
- Supports harvest management by answering:
 - how many bears are there?
 - is this number stable or changing?
 - what is the health of the population?

- [illegible]

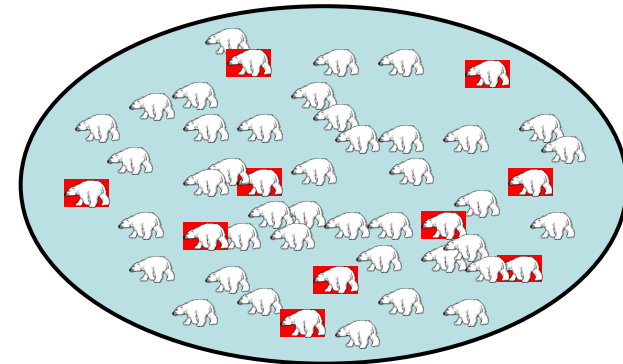
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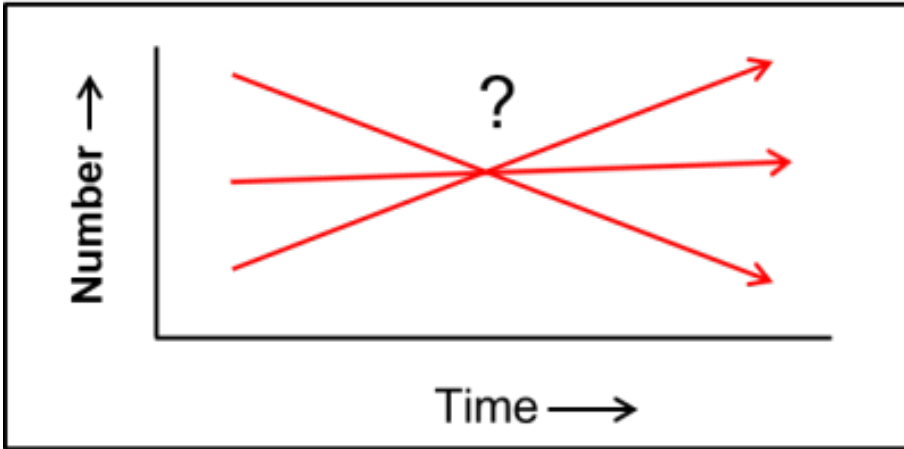
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- We used a new statistical approach to analyze the data from WH
- This approach allowed us to:
 - Include data for bears with different recapture probabilities;
 - Estimate survival for different age, sex, and reproductive classes;
 - Estimate population trend;
 - Estimate population size over time.



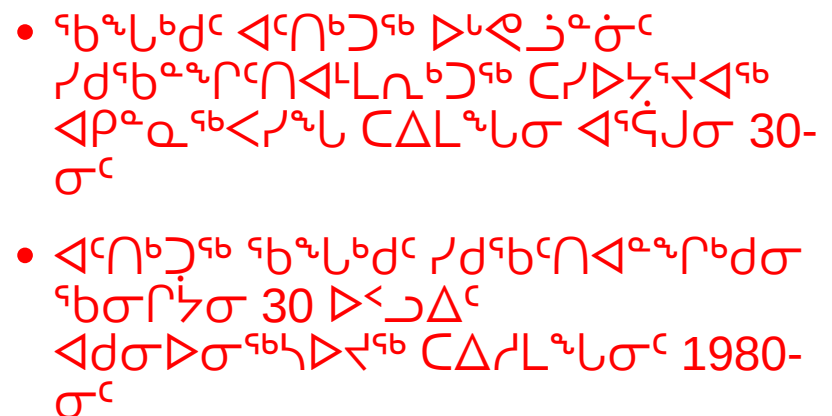
- [illegible]





- We estimated past population trends up to 2011
- Also projected what future population trends might be under differing sea ice conditions

- Period with low or no ice in western Hudson Bay has increased over last 30 years
- The low ice period is roughly 30 days longer than in the early 1980's

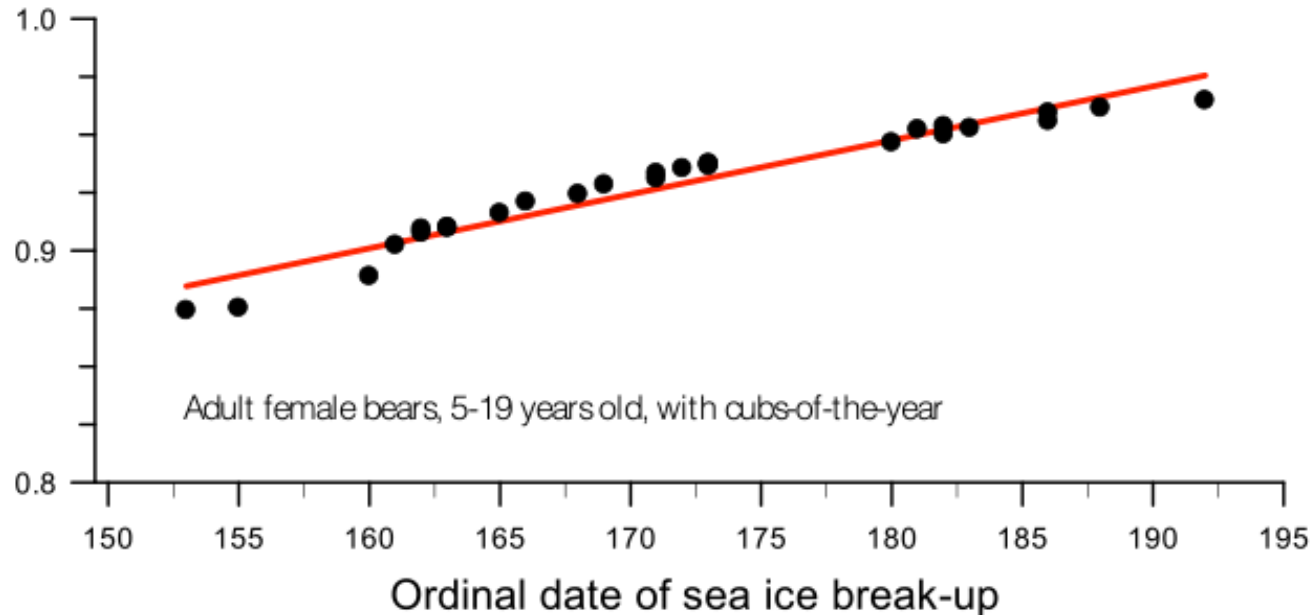


A photograph of a polar bear and its cub on a rocky, barren landscape. The adult bear is standing and facing right, with its mouth open as if eating or drinking. The cub is lying on the ground in front of the adult bear, also with its mouth open. The ground is covered in dark, jagged rocks and some low-lying vegetation. The sky is overcast and grey. In the bottom left corner, there is a yellow copyright notice: "© I. Stone".

A large polar bear is the central focus, sitting on a patch of green grass and brown earth. The bear is facing towards the right side of the frame, with its head turned slightly towards the viewer. Its mouth is wide open in a yawn, revealing a dark interior, sharp teeth, and a pink tongue. The bear's fur is a mix of white and light cream, with some darker patches visible on its side and legs. In the background, the legs and feet of several people are visible, suggesting a public display or zoo setting. The overall lighting is natural, and the image has a slightly grainy texture.

- Condition of bears when they come ashore is related to timing of break-up
- Earlier break-up: bears tend to be thinner when they come ashore
- Later break-up: bears tend to be fatter when they come ashore

- ንጹህ ስርዓተ ስራ ለማሳካት ያስፈልጋል፡ ማህበራዊ ጥራት ማረጋገጥ
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[illegible]

- Our analysis showed that with earlier the date of sea ice break-up, fewer bears survive through the year
- Sea ice affects survival of all age classes of female polar bears
- ᑭᐅᔨᓴ ᑭᐱᓯᓚᓂᕐ ᑕᑦᑎᑦᑎᓯᓚᓂᑦ ᓯᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦ, ᐱᓯᓯᓄᓯᓂᑦᑕᑦ ᐃᓂᑕᑦ ᓲᓚᑭᑦᑕᑦᑕᑦᑕᑦ
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- Survival of males was not affected by sea ice conditions
- Human-caused mortality had a greater impact on male survival
 - Likely the Nunavut harvest has the greatest effect



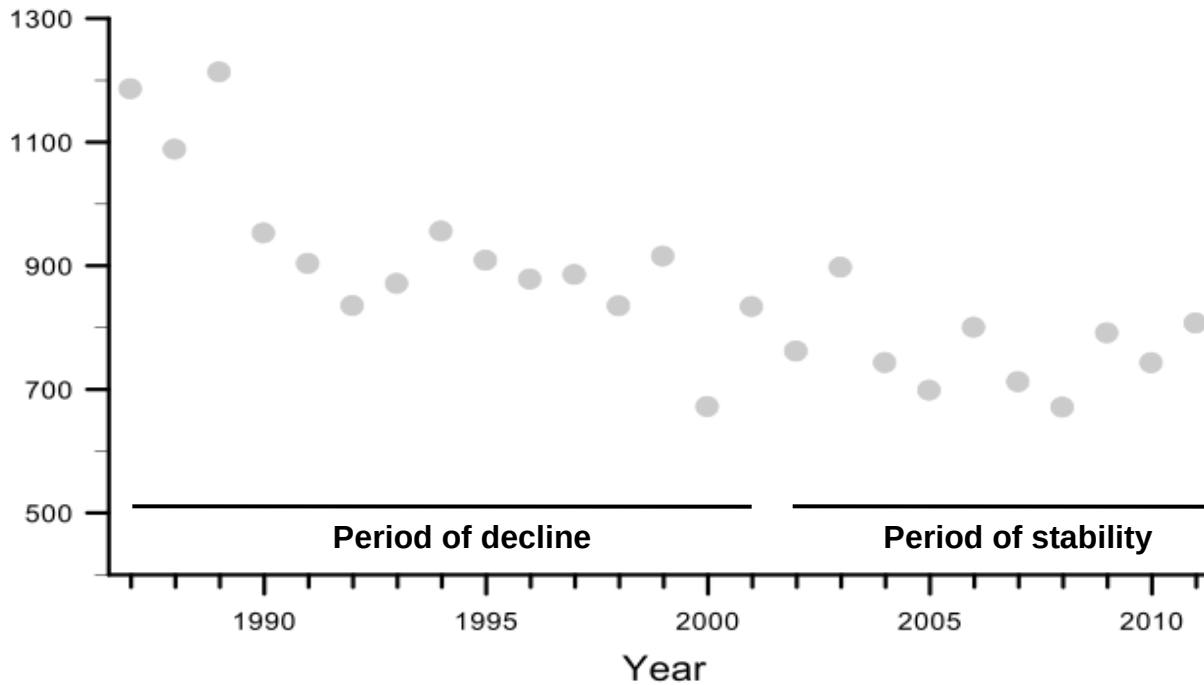
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၎င်းပုံသည် ဂဠုန် - ပုံစံတစ်ခု ဝေဖန်၍ ငါးမျိုးကို ငါးပုံအဖြစ် ဖော်ပြသည်။

- Our new analysis estimated 806 bears (95% confidence intervals = 653-984) in Fall 2011
- The aerial survey estimated 1,030 bears (95% confidence intervals = 715-1398)
- Despite different sampling methods, these estimates overlap

- [illegible]

$$\triangleright \sigma^a \mathcal{L} \triangleleft \mathcal{P}^b \mathcal{C}^b \mathcal{C}^a \mathcal{L} - \mathcal{C} \triangleright \mathcal{L}^b \triangleleft^b \mathcal{P}^a \mathcal{L}^b \triangleleft \sigma^a$$

$$\mathcal{L} \Delta^c$$


- Population has declined overall since the late 1980s
- However, it appears to have stabilized over last decade
- ▶ ႁႃႆႇႉ႐ ႁႃႏႋႅႀႃႈႊႎႍ ႘ႌႉ႐ ႘ႎႌႍ ႁႃႏႋႅႀႃ 1980-ႈ
- ႘ႎႌႍ ႁႎႊ႗ႎႉ႐႗, ႁႀႉႎ႐ႎႎႉႉ႐႗ ႁႃႏႋႅႀႃ ႎႉႎ႓ႈ ႉ႔ႀႈ႐

Λ⁴L_Λ▷^c◁_{Π⁶}◁^c▷_{LJΠ⁶}

- Survival of females is important in determining the WH population trend
- Population growth of female polar bears was likely stable over the past decade, 2001-2011 ($\lambda = 1.02$; 95%CI = 0.98-1.06)



- [illegible]



Sea Ice Condition Scenarios

- Under favourable sea ice conditions, the population would increase by about 2% per year
- Under less favourable sea ice conditions, the population would decline by about 4% per year

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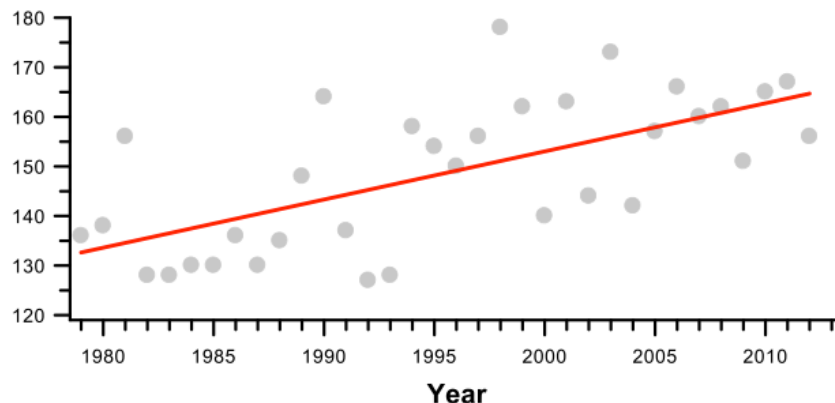


- Sea ice conditions were likely favourable over past decade
- But sea ice models predict continued decline over the longer-term
- It's important to know about trends in health of bears, as well as numbers

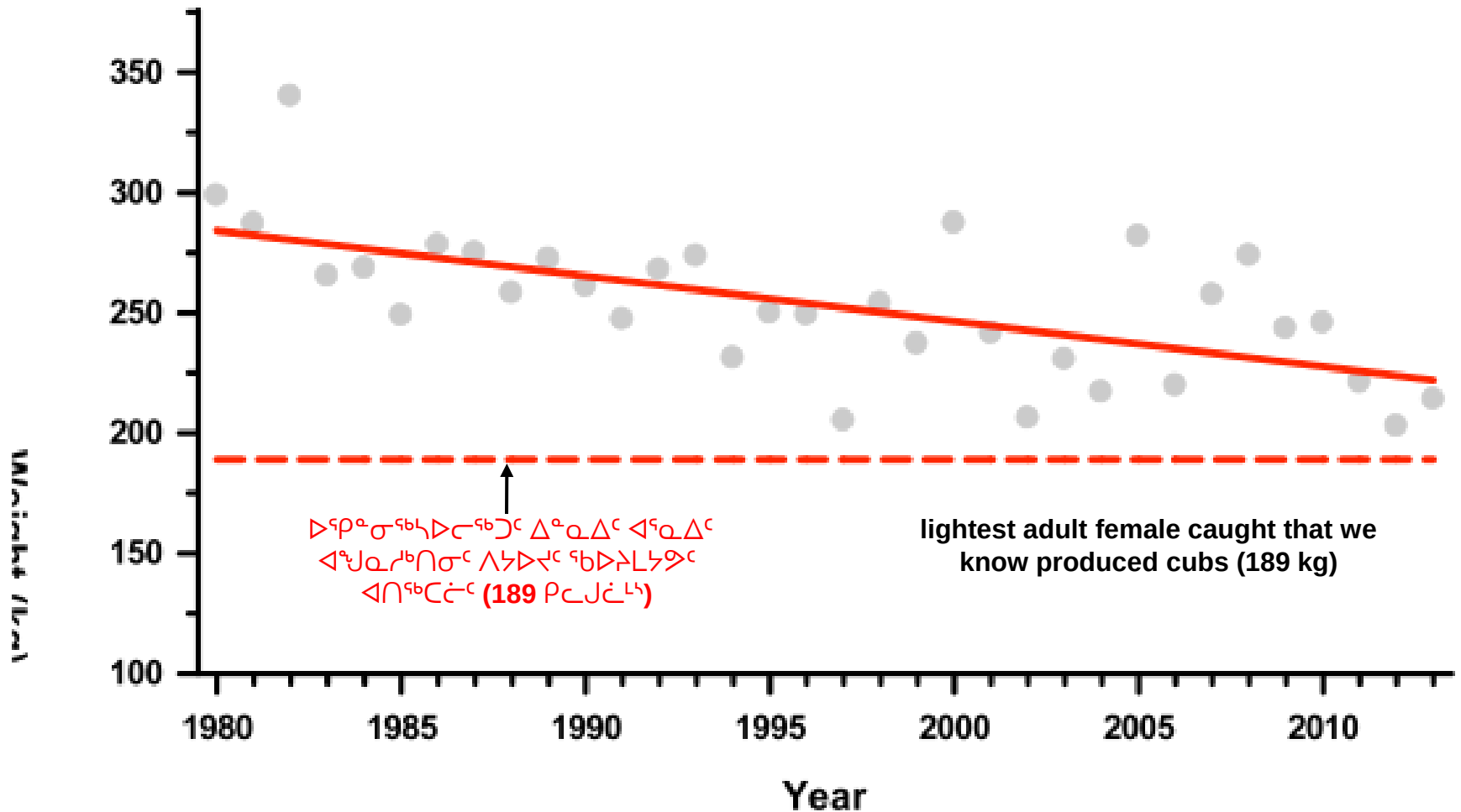
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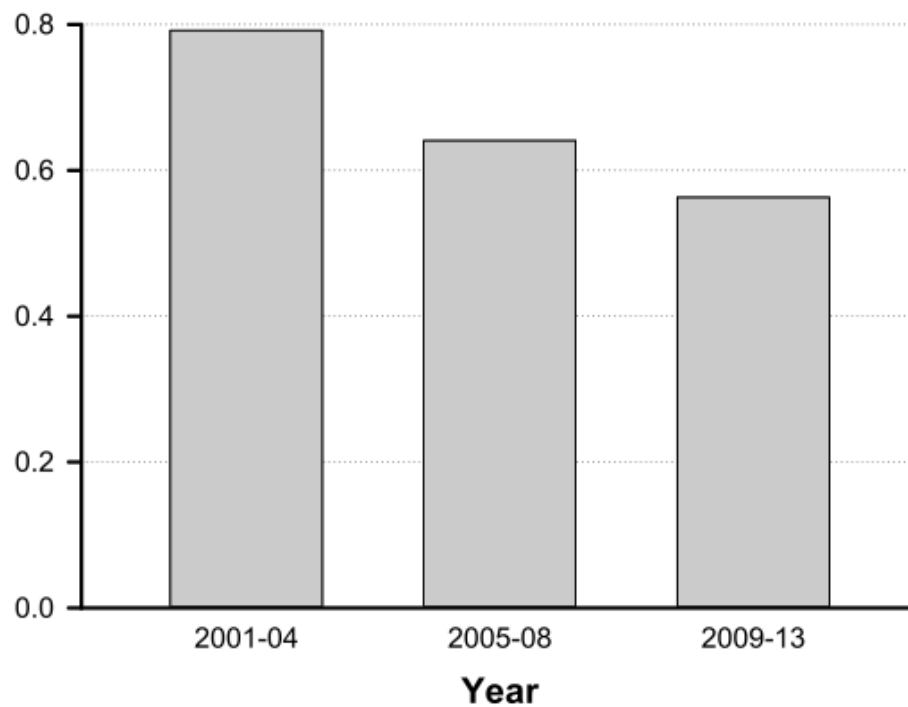
• የሕይወት ዕድል ለሕይወት የሚገኝ የሕይወት ልብረት

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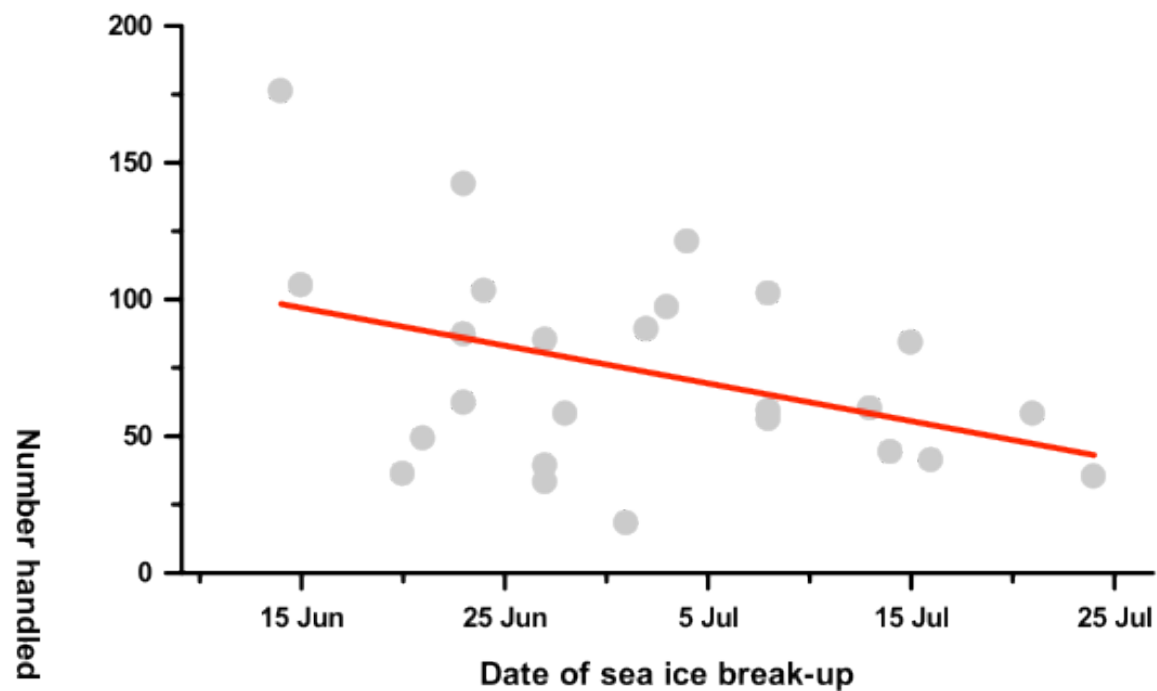


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$$\triangleleft \cap^{\mathfrak{b}} \mathbb{C} \dot{\subset}^{\mathfrak{c}} \triangleleft \supset \sigma \Delta^{\mathfrak{a}} \mathfrak{a} \Delta^{\mathfrak{c}} \triangleleft^{\mathfrak{f}} \mathfrak{a} \Delta \mathfrak{a} \mathfrak{a} \Delta^{\mathfrak{c}} \mathfrak{a} \mathfrak{y} \dot{<}^{\mathfrak{c}} \mathbb{C}^{\mathfrak{b}} \mathcal{P} \mathcal{L} \mathcal{N}^{\mathfrak{c}}$$


Canada



ዕልረት ምሥራቅ ጋዖሪታት

- Sea ice conditions affected the survival of female bears but not male bears
- WH population has declined since 1980s. but appears to have been stable over past decade
- While this should be considered good news, we need to think about future environmental conditions
- Under favourable sea ice conditions, WH population has potential to increase but, under less favourable sea ice conditions it would certainly decline
- ርኪታት ሥዕላዊ ምዕራባዊ ልብጋዊ ምሥራቅ ጋዖሪታት ልዩ ዕልረት ዕድል ሥጥረት ልማት ዕድል
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ԾԳԵԴՐԱՎԼՆՈՐ ՎԷԼՆ ՎԼԳԾՈՒՆՈՐ...



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