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An overview of lactation strategies in different phocid species



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Seal maternal strategy is shaped by duality of marine food supplies and sites where parturition and nursing occurs (terrestrial haul-outs or ice platform).

Maternal body size and phylogeny are considered to be important factors in determining the lactation strategy exhibited by a species.

Major patterns:

➤ Foraging strategy (income breeders)

- Otariids

- AND smaller phocids!

➤ Fasting strategy (capital breeders)

-Phocids



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Lactating strategy

Foraging cycle

- Moderate maternal energy stores used to sustain a short perinatal fast
- Feeding trips at sea altering with visits to land (ice) to nurse pups
- A long lactation period (4 month-2 years)
- Milk is relatively low in fat (19-50%)
- Slow rates of mass gain in pups



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Lactating strategy

Fasting strategy

- Maternal arrival to breeding site with large energy stores in the form of blubber to support maintenance and lactation costs
- A short lactation period (4-50 days)
- Extremely high-fat milk (40-60%)
- Rapid fattening of pups

Plus: intermediate form

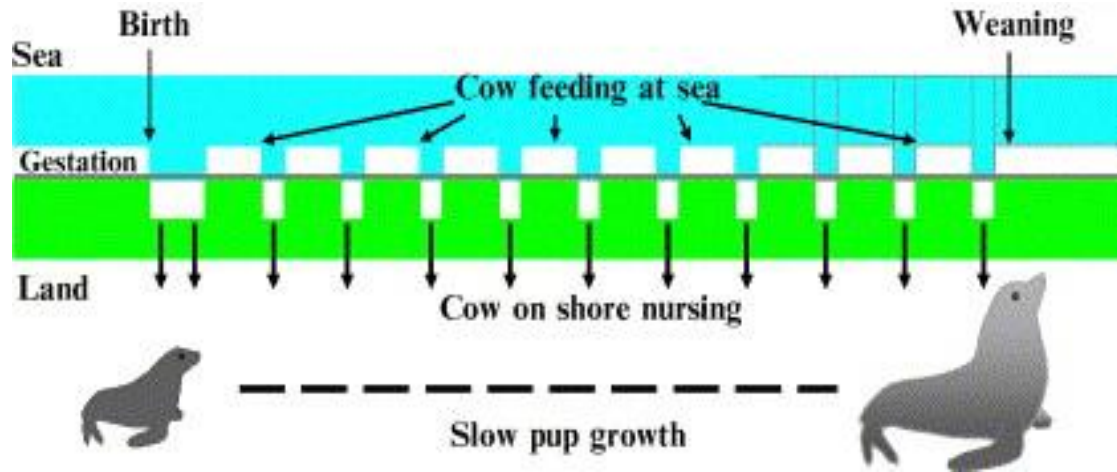
- Relatively short lactation period BUT foraging trips! (in smaller phocids)



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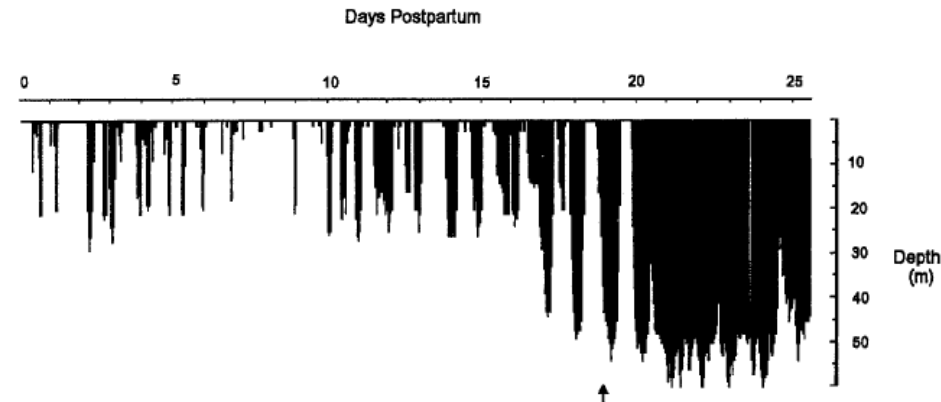
Foraging strategy



(Schatten et al., 2006)

Dive depth in females harbour seals

In phocids first shown for
harbour seals (Boness et al., 1994)





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Nursing patterns in different income breeders phocid species

➤ **Ringed seal (*Pusa hispida*)**

- Give birth in undersnow lairs (hummocked shore fast ice or lake ice)
- Yellowish or brownish lanugo coat
- Approx 6 weeks of nursing, 12-22 kg weaning weight (depending on subspecies).
- TDRs placed on ringed seal pups indicated that they spend 50 % of their time hauled out on the ice
- Pups are attended on the ice by their mothers approximately 18% of the time and they are nursed about 3 times per day

*Similar to: Baikal seal (*Phoca sibirica*)*



Photo above: Bjørn Frantzen





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Nursing patterns in different income breeders phocid species

➤ **Caspian seal (*Pusa caspica*)**

- Pups are born on stable pack ice (among ice features)
- Yellowish lanugo coat
- 5-6 weeks of nursing
- Pups tend to avoid water until molted (approx 3 weeks old)
- 38-45% of pups were seen without their mother nearby.

*Similar to: harp seal (*Pagophilus groenlandicus*), ribbon seal (*Histiophoca fasciata*), spotted seal (*Phoca largha*)*





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Nursing patterns in different income breeders phocid species

➤ **Bearded seal (*Erignathus barbatus*)**

- Pups are born on floe ice semi- or fully molted, actively enter water
- Approx 3-4 weeks of nursing
- Pups spend 53% of their time in the water
- Pups are attended on the ice by their mothers approximately 16% of the time



➤ **Grey seal (*Halichoerus grypus*)**

- Land breeding and ice breeding subspecies
- White coat pups are thought to enter water
- 2 weeks of intense nursing, 75% of time pups are attended by mothers





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Nursing patterns in different income breeders phocid species

➤ **Harbour seals (*Phoca vitulina*)**

- Land breeding and ice breeding subspecies
- Approx 3-4 weeks of nursing, 20-25kg weaning weight
- Pups are well-developed at birth. Their eyes are open, lanugo coat is molted and they can swim and follow their mothers.
- Pups spend from 49 to 60% of the time hauling out.





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Thanks for your attention!



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References

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