



## A comparison of two commonly fed diets used for hand-reared harbour seals (*Phoca vitulina*)

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### Background

- Hundreds of orphaned and injured harbour seal pups (*Phoca vitulina*) are brought to wildlife rescue centres every summer.
- Typical hand-rearing diets include artificial milk-replacers and diets based on macerated fish.
- Weight gains for these animals are low and mortality rates can be high.

### Objectives

To evaluate the effect of an artificial milk-replacer diet and a fish formula diet on weight gains and mortality of hand-reared harbour seal pups.

### Methods

- In 2007 (n=145) and 2008 (n=101) pups were randomly assigned to either a milk-replacer or a fish diet.
- Pups were fed assigned diet 4 times per day in 2007 and 5 times per day in 2008 until weaning.
- Pups were fed 70-110 ml/kg/day (~8% of their body weight) in 2007 and 80-140 ml/kg/day (~11%) in 2008.
- Daily weight gain and mortality were compared.



**Milk-replacer**  
 – 1.0 kg Zoologic® 30/55 Milk Matrix  
 – 0.8 L salmon oil  
 – 2.5 L H<sub>2</sub>O  
 – 4 Mazuri Maz® Vita-Zu tablets  
**7.6 cal/g (DM basis)**



**Fish formula**  
 – 1.5 kg herring  
 – 0.8 L salmon oil  
 – 2.0 L H<sub>2</sub>O  
 – 4 Mazuri Maz® Vita-Zu tablets  
**7.4 cal/g (DM basis)**



### Results and Discussion

- In 2007, pups fed milk-replacer gained more than those fed fish formula ( $p < 0.01$ , Mann-Whitney *U* Test. Fig. 1).
- In 2008, with higher daily intake levels, weight gain was improved for both diets but remained higher for seals on milk-replacer ( $p < 0.01$ . Fig. 1).
- In 2007, survival to weaning was twice as high with milk-replacer diet compared to fish formula diet ( $p < 0.05$ ,  $\chi^2$  analysis. Fig. 2).
- In 2008, with greater intakes, fewer seals died on either treatment (Fig. 3).

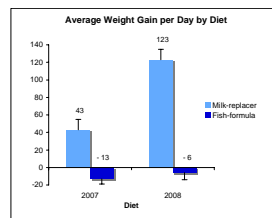


Fig. 1

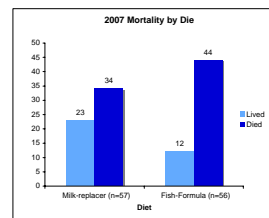


Fig. 2

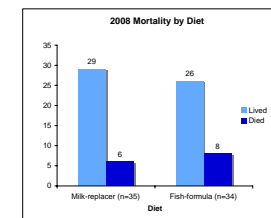


Fig. 3

- The greater weight gains and survival on milk-replacer may be attributed to the digestibility and slightly higher caloric value of this diet (7.6 cal/g DM) compared to the fish formula diet (7.4 cal/g DM).
- Improved survival and weight gains in 2008 were likely due to the increase in feeding level and frequency.

### Conclusion

- **Pups fed the milk-replacer gained more weight and had better survival rates than those fed fish formula.**
- **Survival and weight gain were better with higher feeding level and frequency.**
- **More work is needed to achieve higher survival and more natural weight gains.**