



Common seal pup 'mouth rot' investigation

Data collection form and Sampling Protocol

This form is an essential part of the data collection process for an ongoing investigation into a disease outbreak in common seal (*Phoca vitulina*) pups. The disease, nick-named 'mouth rot', presents in newly weaned common seal pups and is characterised by muzzle swelling, facial wounds, and oral ulcerations. The lesions can be extremely severe and have the potential to cause tremendous suffering.

In the event of a common seal pup presenting with the following signs, we would greatly appreciate your assistance in completing and returning this form (including any photos taken).

Signs of mouth rot:

- Swollen muzzle
- Wounds (infected or not) around the lips/muzzle
- Lesions in the mouth (particularly on the roof of the mouth)

Further information for veterinary surgeons (including case management and the sampling protocol) can be found at the end of this document

Section A: Rescue information (to be completed by BDMLR/other rescue organisation or vet)

Research Accession Number: (Please contact the BDMLR call coordinator for a number)	
Date of rescue:	
Rescue location (include W3W if possible):	
Sex:	Male <input type="checkbox"/> Female <input type="checkbox"/>
Demeanour on beach:	Bright, alert, responsive <input type="checkbox"/> Quiet, alert, responsive <input type="checkbox"/> Lethargic, less responsive <input type="checkbox"/> Unresponsive (flat) <input type="checkbox"/>
Body condition:	Very good <input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor <input type="checkbox"/> Very poor <input type="checkbox"/>
Breathing rate (taken over 2 mins) on beach:	
Pup's hydration status:	Well hydrated <input type="checkbox"/> Moderately hydrated <input type="checkbox"/> Poorly hydrated <input type="checkbox"/>
Temperature of seal on beach:	
Body weight and body length (tip of nose to tip of tail):	Weight is kg Body length is cm
Photos checklist:	Whole body (side on) <input type="checkbox"/> Whole body (from above) <input type="checkbox"/> Facial/oral lesions (as detailed as possible) <input type="checkbox"/>

Section B: Clinical examination findings (to be completed by examining vet)

Name of Veterinary Surgeon:	
Name of Veterinary Practice:	
Confirm pup's weight on arrival:	kg

BEFORE HANDLING	
<i>Demeanour:</i>	
<i>Hydration (look for wet patches around the eyes):</i>	
<i>Respiratory rate (take over 2 minutes):</i> <i>Normal: 5-15 bpm</i>	
<i>Respiratory pattern (continuous or intermittent?):</i>	
<i>Any coughing/sneezing?</i>	

WHEN HANDLING	
<i>Confirm sex:</i>	Male: Female:
<i>Temperature (push thermometer 2 inches in for accurate reading):</i> <i>Normal: 36.2-37.5 °C</i>	
<i>Is there an umbilical remnant/ signs of omphalitis:</i>	
<i>Lung auscultation:</i>	
<i>Heart murmur detected?</i>	
<i>Any nasal discharge?</i>	
<i>Any aural discharge?</i>	
<i>Left eye (check with fluorescein)</i>	
<i>Right eye (check with fluorescein)</i>	
<i>Mucous membrane colour and CRT:</i>	
<i>Note any muzzle swelling, facial wounds, oral soft tissue ulceration (particularly the hard palate):</i>	
<i>Please describe any other injuries the pup has on the rest of its body</i>	

<i>Describe any faeces passed</i>	
<i>Please note if any parasitic worms are observed (gastrointestinal or lungworm)</i>	
<i>Any other observations?</i>	
<i>If not already obtained, please take photos:</i>	Whole body (side on) <input type="checkbox"/> Whole body (from above) <input type="checkbox"/> Facial/oral lesions <input type="checkbox"/>

A cover letter providing further information for veterinary surgeons (including case management and the sampling protocol) can be found at the end of this document

Section C: Outcome and sampling

<i>Outcome for pup after assessment:</i>	Sent for rehabilitation <input type="checkbox"/> Euthanased <input type="checkbox"/> Died <input type="checkbox"/> Other (please detail) <input type="checkbox"/>
<i>If sent for rehabilitation, which facility were they sent to?:</i>	
<i>If the pup was euthanased/died, were samples collected?</i>	Biopsies in formalin <input type="checkbox"/> Biopsies in alcohol <input type="checkbox"/> Plain swab <input type="checkbox"/> No samples collected <input type="checkbox"/>
<i>If the pup was euthanased/died, were radiographs of the head obtained?</i>	Yes- views taken included: DV skull <input type="checkbox"/> Right lateral skull <input type="checkbox"/> Left lateral skull <input type="checkbox"/> Intraoral projection of nasal cavity <input type="checkbox"/>

*****Please send all completed forms and photos/radiographs to mouthrotproject@bdmlr.org.uk*****

What to do with packaged samples

Once samples have been packaged and *labelled* (details in sampling protocol below), please send via Royal Mail Special Delivery (guaranteed delivery by 1pm) to the address below:

Common seal project
105 Davison Road
Darlington
County Durham
DL1 3DS

OR

If your practice is in Yorkshire or Lincolnshire please contact Em Mayman at em.mayman@bdmlr.org.uk or if you are near Darlington please contact Devon Lycette at dklycette@gmail.com to arrange a collection from your practice.

Help/support:

Thank you for supporting this important project. If any assistance is required with the completion of this form, please contact your BDMLR Call Coordinator (01825 76 55 46) who will be able to put you in touch with the investigation team.

Further information for veterinary surgeons

Who are BDMLR?

British Divers Marine Life Rescue is a national charity which responds to marine wildlife in distress through a large network of volunteer 'Marine Mammal Medics'. They are the largest marine life rescue charity in the UK and respond to many hundreds of calls each year to seal pups.

What is the purpose of this investigation?

To investigate the rise in the number of cases of weaned common seal pups presenting with 'mouth rot'.

'Mouth rot' (associated signs including muzzle swelling, facial wounds, and oral ulcerations, particularly of the hard palate) has been recorded for many years in common seals. However, over the last few years BDMLR started to observe a significant rise in the number of these cases. Starting treatment in the early stages can lead to a successful clinical resolution. However, during later stages the pup's welfare is often seriously compromised (with hard palate ulceration becoming so severe that there is extensive palatine bone exposure and eventual osteomyelitis/bone necrosis/oronasal fistulae formation/sepsis/death). In these advanced stages, euthanasia is often selected to avoid further suffering and due to the poor-grave prognosis. As well as being a valid welfare concern, there is potential for this disease to also be of concern to conservation efforts, particularly as it seems to mostly impact pups.

What are the findings of the investigation so far?

Results so far point towards a complex viral and bacterial complement underlying the cause for 'mouth rot', but further sampling and analysis is required to narrow down the key pathogens. Before this investigation began it was mostly assumed that these cases were caused by a primary trauma (as a result of newly weaned pups learning to feed themselves and mouthing inappropriate objects) with secondary infections then occurring, and of course this may still play a role in the condition we are seeing.

How can you help?

If you are presented with a pup with clinical signs of mouth rot, we would be very grateful if you could complete sections B and C of this form. If you haven't assessed a seal pup before, section B will help to guide you through a physical exam.

Below is some information on how to manage these cases, and when to consider euthanasia. If the pup dies or is euthanased, we would greatly appreciate it if you could collect some tissue samples for the investigation (sampling protocol below). These samples are extremely valuable (particularly the samples in alcohol).

Case management for veterinary surgeons

We can attempt to medically manage pups in the earlier stages of the disease.

Management would include:

- Clindamycin: 5.5mg/kg p.o. q12h or 11mg/kg q24h
- NSAID (unless pup very dehydrated):
 - Meloxicam 0.2mg/kg IM on day 1, subsequent days 0.1mg/kg OR
 - Carprofen 4mg/kg IM
- Flushing the oral lesions with a chlorhexidine based oral rinse

This is in addition to oral rehydration with an electrolyte-based solution (such as Lectade or Royal Canin Rehydration Solution) and treatment of any other conditions identified (e.g. correcting hypothermia, cleaning wounds etc).

We typically recommend euthanasing pups which present with bone exposure (and certainly in the case of oronasal fistula), due to their poor welfare state and guarded prognosis.

If you would like any advice on case management then please do not hesitate to contact BDMLR head office (01825 765546) and they will be able to put you in contact with one of our experienced veterinary team.

Sampling protocol for veterinary surgeons

Which pups are suitable for sampling?

Currently we are only sampling deceased pups, no samples are required from live pups.

Sampled pups should be recently deceased (e.g. have just died or been euthanased, not found deceased on a beach and recovered).

What sampling is requested?

- Biopsies for histopathology (stored in formalin)
- **Biopsies for molecular diagnostics (stored in ethanol)- these are the most important, please prioritise!**
- Plain swab (this must be in addition to, not instead of, the biopsies above)

**PLEASE NOTE: IT IS ESSENTIAL
THAT SAMPLES ARE LABELLED
APPROPRIATELY AS INSTRUCTED
IN THE SAMPLING PROTOCOL**

How to take and store samples

Biopsies (stored in formalin)

- Please take tissue samples from the affected areas (facial/oral lesions), these should be around the size of the end of your little finger (approx. 10mg in weight). Include a margin of healthy tissue where possible.
- Place tissues in cassettes (preferably in separate ones but can go in the same one where required) and place cassettes into a 50ml formalin pot (can go in the same pot, ensuring a 1:10 ratio between tissue and fluid). Label cassettes with the research accession number.
- Label the formalin pot with the research accession number and sample sites.
- Store at room temperature until ready for transport.
- Package for transport wrapped in enough absorbent material to absorb the liquid contents if the container should open. Place in a plastic zip lock bag (labelled with rescue date, location and research accession number). The zip lock bag should be placed in a padded rigid container (padded cardboard box).

- Labelling- mark the outer packing with 'Biological Substance, Category B, UN3373', the diamond shaped mark illustrated here MUST be displayed adjacent to this.



**BIOLOGICAL SUBSTANCE
CATEGORY B**

*Biopsies (stored in ethanol)- **these are the most important, please prioritise!***

- Take further tissue samples from the affected areas, these should be around the size of the end of your little finger. DO NOT include a margin of healthy tissue, take diseased tissue only.
- Take as many samples as you wish, but these must be stored separately.
- Each sample must be placed in its own 2ml screw top tube filled with 96-99% ethanol. The sample should be fully submerged in ethanol.
- Label each tube with the research accession number and sampling site.
- Tubes must be stored in a freezer until ready for transport.
- Package for transport wrapped in enough absorbent material to absorb the liquid contents if the container should open. Place in a plastic zip lock bag (labelled with rescue date, location and research accession number). The zip lock bag should be placed in a padded rigid container (padded cardboard box).
- Labelling- mark the outer packing with 'Biological Substance, Category B, UN3373', the diamond shaped mark illustrated below MUST be displayed adjacent to this.

Plain swab

- Swab the affected tissues with a plain swab
- The swab must be submitted in addition to the biopsies, not instead of them
- Package and label as for the biopsies above

Thank you!

Thank you for supporting this important project. We are aware of the time constraints many veterinary practices are under at the moment and we are hugely grateful for your efforts. If you have any questions, please contact BDMLR Head Office on 01825 76 55 46 to be put in touch with a member of the investigation team.

Additional information

Radiographs

Although not a requirement of the study at this stage, radiographs of the head would still prove very useful. If the practice has time, please take the following views, and send them to (mouthrotproject@bdmlr.org.uk).

- DV skull
- Right lateral skull
- Left lateral skull
- DV Intraoral projection of nasal cavity