

# Pinniped Predator Control

Fish farms represent a very attractive concentration of easy prey

## The issue

### Scottish Producers

500,000 salmon/year die directly from predators or indirectly due to stress



→ **£13**  
mill/year

### 22% of all escapes

Predators break nets allowing salmon to escape the cages and potentially affect wild population

## Methods of control

### Lethal control



- Permitted by most certifications as last resort
- US is banning trade with countries allowing lethal control. Scotland and Canada are banning this practice as result.



1,956

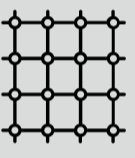
Seals shot since 2011



617

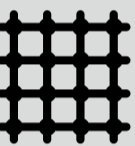
Mammals shot between 2010 and 2019

### Nets management



#### Traditional nets

Usually made of nylon. Increasing the tension by increasing weighting limits predator access.



#### Antipredator nets

Made of high density polyethylene (HDPE). Tougher and more rigid. Sufficient net tension must be created by weights. Must be checked regularly to prevent entanglement and drawing of predators.

### Acoustic Deterrent Devices (ADDs)



Creates a temporary noise barrier with the aim to create discomfort to approaching animals

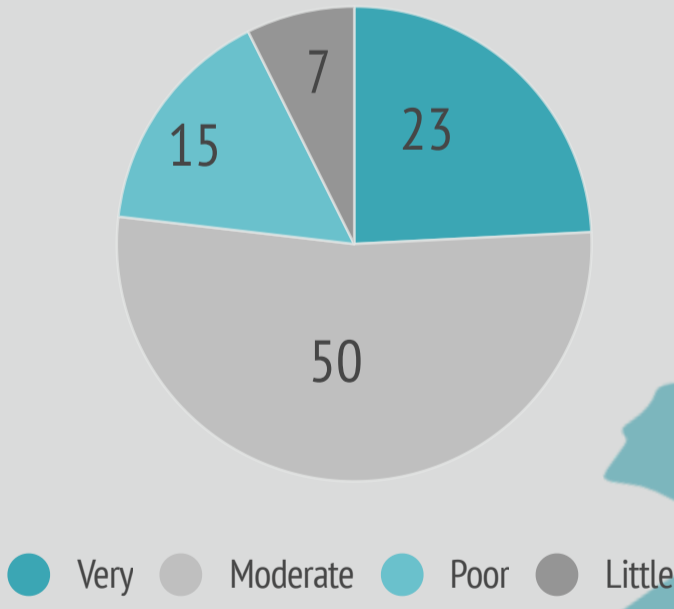
#### Negative effects

- Long-term damage to hearing of mammals.
- Habitat displacement.

#### Not effective

- Seals get used to the noise and are not always deterred.
- 'Dinner-bell' effect. The noise become a 'conditioned reinforcer'

% of farmers reporting level of effectiveness



### Startle ADD



#### Emerging technology

Triggers a startle reflex through a short onset sound in target species.

#### Positive early trials

- 91-97% fish loss reduction.
- Does not displace populations
- No habituation
- No harm

### Harassment techniques

- Noise deterrents  
airguns, predator vocalisations
- Visual deterrents  
models of predators
- Moving deterrents  
chasing with boat

#### No lasting effectiveness

- Rapid habituation of pinnipeds
- Still in trials

## Recommendation



Good net management



Only ADDs without proven adverse effects