Crab and lobster deaths along the North East coast – briefing document

March 2022

Summary of the investigation

- Dead and dying crabs and lobsters were washed ashore in unusually large numbers, along parts of the North East coast, between October and December 2021.
- Crabs and lobsters were the only species that appear to have been affected by the incident. Dying crabs and lobsters displayed characteristic 'twitching' and lethargic behaviour.
- An extensive range of testing was undertaken over several months by Defra group agencies. Evidence suggests that a harmful algal bloom was the most likely cause of this incident.
- Other potential causes including chemical contamination, dredging, and discharges, and disease were also investigated. These all proved to be highly improbable reasons for the event.
- Healthy crabs and lobsters are now being caught in the region and, while crab and lobster stocks will continue to be monitored, the investigation into the cause of the incident has been closed.

Next Steps

- We understand that fishermen in the area will continue to be impacted by this incident. Our focus will now be on supporting and monitoring the recovery of the shellfish fishery in the affected areas.
- Defra group agencies will now carry out a lessons learnt exercise in order to improve and enhance its ability to respond to similar incidents in the future.
- The public and local industry can continue to report any incidents of concern via the contact details below.
    - The public can contact the Environment Agency helpline on 0800 80 70 60
    - Industry in the local area should contact NE IFCA on:
        - 01482 393 515
        - ne-ifca@eastriding.gov.uk

Summary of findings

A range of testing and modelling was undertaken after the incident. The section below summarises the investigation's findings.

Likely cause

Algal bloom: A harmful algal bloom appeared to be of significance to the case. High levels of algal toxins were found in washed up dead crab and lobster tissue. The significance of these findings in the context of the mortality event is not fully understood but appears to be the most likely explanation.

Ruled out causes

Extensive testing was carried out as part of the investigation, with a wide range of possible causes ruled out. Given the concerns of the local industry, further detail specifically on chemical pollution and dredging is provided below.

Chemical Pollution: The Environment Agency (EA) collected samples from within the Tees Estuary and along the coast from the Tyne to Flamborough Head. It tested the water, sediments, biological samples, and industrial/sewerage permitted discharges for many types of chemicals, looking for evidence of a possible pollution event which could have caused this incident. None of the results from these tests showed levels of any contaminants that could have caused an event of this scale or duration.

Though elevated indicative levels of pyridine were detected in crab tissue samples, this could not be linked to any significant source of pyridine in the local environment. Pyridine was also detected in otherwise healthy crabs outside the impacted area of the incident. It is important to note that pollution events in exposed tidal/coastal areas such as this tend to be localised in effect and of short duration. This is due to the huge dilution effect of the sea. Indicative modelling undertaken by Cefas added further evidence which supported the conclusion made by the EA on pyridine.

The amount of chemical (be it pyridine or any other type) to cause a mortality event – which lasted for 8+ weeks and affected crab and lobsters from the Tees Estuary to Scarborough – would have had to be huge and could not have escaped detection in the sampling that was undertaken at the time.

Chemical pollution was therefore confidently ruled out as a likely cause for the incident.

Dredging: Marine Management Organisation (MMO) reviewed activity that had an MMO marine licence (or deemed licence) and is not aware of any dredging activity in the area which could have caused the incident.

All dredged material licensed for deposit at sea undergoes rigorous regulatory testing, in line with international guidance, to ensure that deposit of such material will not cause harm to marine life. Disposal of dredged material at sea can only be undertaken following significant testing of sediment samples for a suite of contaminants to ensure the material to be deposited meets these international guidelines.

Material from ongoing (year-round) dredging operations is deposited in the designated Inner and Outer Tees disposal grounds off Teesmouth and there is no evidence to suggest that these deposits did not meet the required standards. The contaminants screened by the EA included those that dredging material is tested for before sediment is licensed to be deposited at sea.

Cefas completed an indicative 2D tracking model of the potential sediment plume from the dredge disposal site. The model indicates that the plume extents are relatively confined along the tidal excursion at the disposal site and do not have the same geographic extent that would be consistent with the known mortalities.

Food Safety*:* The Food Standards Agency has advised that no food safety concerns were identified in association with this incident. This advice is based on the risk assessment of evidence gathered and made available to the FSA by several government departments and supporting agencies that carried out investigations into the potential microbiological and chemical contaminants incident. The Food Standards Agency continues to advise that it is unsafe to eat any dead or dying animals. It is the food businesses' responsibility to ensure that food placed on the market is safe to eat and meets the relevant requirements in relation to food safety and hygiene.

Frequently Asked Questions

Is this an ongoing issue? Should levels of catch, more instances of dead or dying shellfish, and other issues continue to be reported and how?

- Evidence suggests that dead and dying crabs and lobsters are no longer being found in significant numbers, but local industry and the public should continue to report anything they are concerned about.
    - The public can report via the EA phone line
    - Local industry can do this through the NEIFCA office.

Has dredging been ruled out as the cause? What testing has been done to reach this conclusion?

- Dredging has been ruled out as a likely cause. Samples of dredged material must meet the highest international standards protecting marine life before it is permitted to be disposed of at sea. If samples analysed for contaminants do not meet the standards, the disposal to sea of that material will not be licensed.

Will the disposal of dredged sediment be stopped?

- No. The MMO uses the best available evidence to inform its decision making. There is no evidence to suggest that the disposal of dredged sediment responsible for the crab and lobster mortality – this has been tested in accordance with international (OSPAR – Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)) obligations.

Has cyanide in the sediment/water been tested for?

- Sediment and water samples collected by the EA from the impacted area around Teesside in early October have now been screened for free cyanide. Results from these samples were below the detection limit of the test.

Are you sure that crabs and lobsters are safe to eat and sell? What about eating species which feed on crab/lobster?

- The Food Standards Agency has advised that no food safety concerns were identified in association with this incident. The Food Standards Agency continues to advise that it is unsafe to eat any dead or dying animals.

How are you sure that disease is not the cause?

- Cefas has taken samples from the area to investigate whether an aquatic animal disease was the cause of this incident. There is no evidence in the samples analysed that there is an infectious disease agent responsible for the mortalities.

What about compensation/support for the industry?

- The priority of the government is to monitor effected stocks and consider options to recover them if appropriate. Defra are not considering compensation as part of this but will support the industry to move forward.

What about the possibility of natural causes?

- Mass crustacean mortality events can occur from natural causes. For example, a mortality event was evident off the Kent coast in December 2011 that was linked to unseasonal low temperatures.
- As referenced above, a harmful algal bloom may have caused the incident, with lines of evidence pointing to this.

Were only crabs and lobsters affected? What about other species?

- The incident only appeared to have affected crabs and lobsters. Reports of other animals, including octopus, limpets and shrimp found dead in the area appeared to be unconnected and are more likely to be a result of storms and bad weather in the area.
- Please continue to report instances of dead or dying animals through the helpline or NEIFCA representative so we can investigate.

Are there links to seabird deaths reported earlier in the year?

- The seabird death incidents were during late August and September and cases have significantly reduced since then. Investigative work to understand the cause is ongoing.

What about dogs which were reported as falling ill?

- Earlier this year, there were reports of vomiting and diarrhoea in dogs in the Northeast, and across England. The University of Liverpool Small Animal Veterinary Surveillance Network (SAVSNET) have been investigating and found no link to the affected dogs and the incident. While they cannot definitively point to a common cause, they suggest this is a transmissible infection rather than contact with the beach area or sea water.

And seals?

- There is no evidence linking reports of dead seals to the investigation on crab and lobster deaths in the North East.
- If a member of the public observes a seal they deem in danger or distress, they should contact an appropriate helpline for advice and assistance (e.g. the RSPCA hotline in England and Wales; SSPCA hotline in Scotland; and USPCA in Northern Ireland, or the British Divers Marine Life Rescue on 01825 765546).
- The APHA Disease of Wildlife Scheme in conjunction with a network of collaborators from across GB undertake surveillance for new and emerging diseases in seals, however, large die-offs can occur for many reasons, including storm surges, food shortages, trauma, predation or disease outbreaks.
- The APHA Wildlife Expert group has commented that they have carried out post mortems on seal samples, taken from a range of sites in Great Britain, over the last year and not seen any evidence of an emerging disease.

How are you measuring the impact on shellfish stocks in the area?

- We will continue to work with fishers in the area. Any information provided – especially in comparison to previous years' catch – will help us get a better picture of the impact on stocks. Please report this via your NE IFCA representative.