



SUMMARY OF PATHOGEN, PEST, AND/OR PARASITE RISKS FOR SPECIES THAT ARE PROHIBITED FOR USE AS LOBSTER AND CRAB BAIT

This document summarizes the potential risks for each species that has been prohibited for use as lobster or crab bait. **Beginning June 1, 2015**, it is illegal to sell or use any marine or freshwater organism as bait to fish for or take lobsters or crabs that is classified as “prohibited”, or that has not been reviewed by the Department of Marine Resources. **Individuals may apply for review of a non-listed bait source, or petition for use of a prohibited bait source by completing the “Lobster and Crab Bait Review Form”**. If you have questions regarding the use or sale of a bait source, contact Sarah Cotnoir, sarah.cotnoir@maine.gov or (207) 624-6596. Forms and additional information about the use of lobster and crab bait is available at <http://www.maine.gov/dmr/rm/lobster/index.htm> under “Commercial Lobster Fishery Management”.

Marine Species

Alfonsino (*Beryx decadactylus*) & Splendid Alfonsino (*B. splendens*) from New Zealand: There are published reports of the following myxosporean and nematode parasites in *Beryx* species: *Ceratomyxa maxima*, *Kudoa thyrsites*, and *Anisakis physeteris*. *Kudoa thyrsites*, also known by its common name of “soft flesh”, infects a wide range of fish hosts and lowers the quality of fish by causing a gel-like appearance in the muscle. This parasite is known to infect fish species that are present in the Gulf of Maine, including Atlantic Salmon.

Wild Bonito (*Sarda Chiliensis*) Heads from Panama: There is a lack of published data on this species in this region, but there is a considerable risk of introducing exotic pathogens and/or parasites from the eastern Pacific Ocean to the Gulf of Maine. Many viral and bacterial pathogens in fish are not killed by freezing, therefore allowing fish with an unknown disease status into our waters has the significant potential of causing negative impacts to the health of our local fish populations.

Cobia (*Rachycentron canadum*) from the South Atlantic Ocean and Panama West Coast: There are many published reports of viral and bacterial agents, as well as internal and external parasites in both wild and cultured Cobia that are exotic to Maine. Publications demonstrate that *Photobacterium* species are commonly isolated in Cobia, which may be an emerging opportunistic pathogen in lobsters, as it has been detected in stressed lobsters. Cobia also are susceptible hosts of Red Grouper Nervous Necrosis Virus, as well as Viral Nervous Necrosis Virus, a disease that can cause significant losses to marine fish populations. There is insufficient data on the disease status of Cobia from the South Atlantic.

Wild Nile Tilapia (*Oreochromis niloticus*) Heads from Panama: There are numerous published reports of significant finfish bacterial pathogens in Tilapia, including *Francisella* species and *Streptococcus* species. These bacterial pathogens are well preserved in frozen fish, even after extended periods of sub-zero temperatures. These bacterial species in previously frozen fish are viable and capable of infecting a wide range of finfish species, including species found in the Gulf of Maine.

Pacific Cod (*Gadus macrocephalus*) from the US and Canada West Coast: There are significant viral fish pathogens endemic to the US and Canadian West Coast that are not present in Maine and can be transmitted by Pacific Cod. The list includes Infectious Hematopoietic Necrosis Virus (IHNV), Viral Hemorrhagic Septicemia Virus (VHSV) strain IVa, Infectious Pancreatic Necrosis Virus (IPNV), and Viral Nervous Necrosis Virus (VNNV). All of these viruses have been detected in many species of fish in the North Pacific; these viruses all have a wide fish host range.

Flatfish from the Pacific Ocean: Pleuronectiform fish from the Pacific have the potential to be the reservoirs of multiple exotic pathogens and metazoan parasites. Exotic pathogens include two rhabdoviruses not known to occur in the Atlantic and an unknown virus causing skin tumors. There is insufficient data on the impacts that these pathogens may have on our native fish populations.

Hake (*Merluccius productus*) from the US West Coast: There are significant fish diseases endemic to the US West Coast that are not present in Maine. Research indicates that hake can be a carrier of VHSV, a disease that could cause high mortalities in a wide range of fish species in Maine, including Atlantic Salmon, Atlantic Cod, and Atlantic Herring. Hake from the Pacific is also reported to have two Kudoa species; this myxozoan parasite infects a wide range of fish hosts and lowers the quality of fish at market by causing a gel-like appearance in the muscle. This parasite is known to infect fish species that are present in the Gulf of Maine.

Horseshoe Crab (*Limulidae* species) from Asia: Horseshoe Crab species found on the Asian continent are at a high risk of harboring harmful invasive species, as well as pathogens and parasites that are likely to negatively impact American horseshoe crab populations. For example, there is a species of parasitic flatworm that lays eggs in durable cocoons on the shells of Asian horseshoe crabs. This parasite can easily survive and hatch even if the host crab is dead.

Alaska Pollock (*Theragra chalcogramma*) from the Pacific Ocean: There are published reports of bacterial, viral, and parasitic agents in this species. Pollock from the Pacific Ocean are from a region where significant fish diseases, not present in Maine, are endemic. Research indicates that this species can be a carrier of VHSV, a disease causing high mortalities in a wide range of fish species that are found in Maine.

Pacific Sardine (*Sardinops sagax caerulea*) from The US & Canadian West Coast: There are published reports of bacterial, viral, and parasitic agents carried by Pacific sardine. Research indicates that this species can be a carrier of VHSV, a disease causing high mortalities in a wide range of fish species that are found in Maine, including Atlantic Salmon, Atlantic Cod, and Atlantic Herring.

Species in the Genus *Sebastes* (Kinky, rockfish, long/short spinyhead, idiotfish) from the US West Coast & Canada West Coast that are unfrozen: This bait source is prohibited unless previously frozen. There are published reports of detections of significant disease causing bacterial agents in rockfish from the Pacific Ocean, such as the chlamydia-like bacteria that causes Epitheliocystis and Mycobacteria species. Long-term freezing (greater than 7 days at -4°F or below) can reduce the disease transmission risk as the cold temperatures may inactivate and/or kill some bacterial pathogens and parasites.

Species in the Genus *Sebastes* (Rockfish) from the US West Coast & Canada West Coast that are unfrozen: This bait source is prohibited unless previously frozen. There are published reports of detections of significant disease causing bacterial agents in rockfish from the Pacific Ocean, such as the chlamydia-like bacteria that causes Epitheliocystis and Mycobacteria species. Long-term freezing (greater than 7 days at -4°F or below) can reduce the disease transmission risk as the cold temperatures may inactivate and/or kill some bacterial pathogens and parasites.

Wild Snapper (*Lutjanus Colorado*) Heads from Panama: There is a lack of published data on this species in this region, but there is a considerable risk of introducing exotic pathogens and/or parasites from the eastern Pacific Ocean to the Gulf of Maine. Many viral and bacterial pathogens in fish are not killed by freezing, therefore allowing fish with an unknown disease status into our waters has the significant potential of causing negative impacts to the health of our local fish populations.

Freshwater Species

Carp (*Cyprinus carpio*) from Asia, United States, and Canada: There are published reports of significant bacterial, viral, and parasitic agents in Carp species from Asia, Canada, and the US, including Mycobacterium species, Asian Tapeworm, Spring Viremia of Carp Virus, and Koi Herpes Virus. There is insufficient data and research on the impacts that these pathogens may have on our native fish populations. Carp from the central US may carry VHSV, a disease causing high mortalities in a wide range of fish species that are found in Maine, including Atlantic Salmon, Atlantic Cod, and Atlantic Herring.

Catfish (Siluriformes), Walking Catfish (*Clarias batrachus*), Broadhead catfish (*C. macrocephalus*), and (African Sharptooth Catfish (*C. gariepinus*)) from Asia: Catfish species from the continent of Asia have a risk of harboring significant bacterial, viral, and parasitic agents, including Mycobacterium species, Aeromonas caviae-like bacterium, Channel Catfish Virus, and Red Grouper Nervous Necrosis Virus. There is insufficient data on the impacts that these pathogens may have on our native fish populations.

Mudshad - American Shad (*Alosa sapidissima*), American Gizzard Shad (*Dorosoma cepedianum*), and Hickory Shad (*A. mediocris*) from Central United States and Virginia: There are published reports of bacterial and parasitic agents in this species; however insufficient data exists on the disease status of Mudshad from the central US/Virginia region to allow its use as bait.

Northern Pike (*Esox Lucius*) from Central Canada: Northern Pike from the central Canada region are at a high risk of harboring the causative agent of bacterial kidney disease, *Renibacterium salmoninarum*, as well as VHSV, a disease causing high mortalities in a wide range of freshwater and marine fish species that are found in Maine.

Sheepshead/Freshwater Drum (*Aplodinotus grunniens*) from the Eastern and Central United States and Central Canada: There are multiple publications on VHSV being isolated in Sheepshead or Freshwater Drum from the Central US and Central Canada region. This virus causes high mortalities in a wide range of freshwater and marine fish species found in Maine.

Tilapia species from Vietnam: Tilapia sourced from Vietnam are at a risk of harboring harmful disease-causing agents, including bacteria such as *Streptococcus* and *Francisella* species, as well as trematode parasites that are infective to humans. There is a relative lack of published data on this species in this region, but many pathogens known to be in this area are exotic to Maine and their introduction could have significant negative impacts on our native fish populations.