



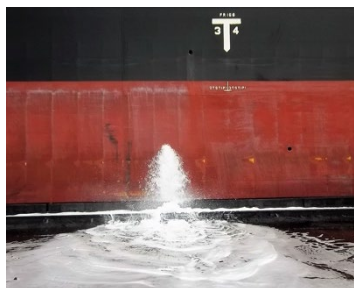
VESSEL VECTORS OF NON-INDIGENOUS SPECIES

What are Nonindigenous Species (NIS)?

NIS are organisms that are intentionally or unintentionally transported through human activities to new habitats such as California's marine, estuarine, and freshwater environments. NIS threaten human health, the economy, and the environment. A NIS is considered an invasive species once it is moved, becomes established in a new geographic location, and causes impacts.

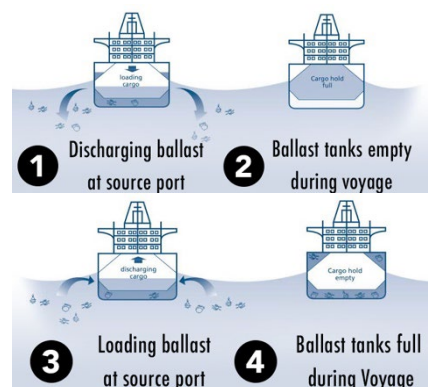


NIS Shipping Pathway Vectors



In coastal aquatic habitats, vessel ballast water and biofouling are two of the most significant NIS vectors. Prevention of species introductions through vector management is considered the most effective way to address invasive species because, once established, attempts to eradicate invasive species are often unsuccessful and costly.

Ballast Water: As vessels move throughout the world, they can discharge ballast water and introduce NIS. It is estimated that un-managed ballast water moves more than 7,000 species around the world on a daily basis, with a single vessel ballast water discharge having the potential to release over 21.2 million individual planktonic animals.



Vessel Biofouling: Vessel biofouling is an organism, or a community of organisms, that are attached to or associated with a vessel's hard surfaces that are wet or underwater. Vessel biofouling includes attached organisms (e.g., barnacles, algae, and mussels) and organisms that associate with the attached organisms (e.g., worms, crabs, and small shrimp-like animals). As vessels move throughout the world organisms can be carried and introduced when they spawn (reproduce) or fall off a vessel.