

# SINK or swim

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## Summary:

Artificial reefs are defined as 'submerged structures placed on the seabed deliberately, to mimic some characteristics of natural reefs,' and the materials they are made out of vary across the globe (Pickering et al, 1998).

## Executive Summary:

The sinking of ships is a very complicated issue, and all implications of it must be analyzed. Coral reefs are in a state of decline, and management strategies must be implemented immediately. Sunken ships attract not only an array of marine species, but also recreational divers, which in turn attract business to the local economy. Potential harmful pollutants may be managed with quality governance and surveillance, but more research into what pollutants are out there, and whether a ship is the best structure for a reef system is drastically needed.

## Intro:

Coral reefs worldwide are in a state of decline, and much of the damage is human caused. This damage is a result of coastal development, ship grounding, destructive fishing and pollution (Spieler et al, 2001). Artificial reefs provide a restoration to a habitat that can take decades to rehabilitate naturally, as well as a physical deterrent to trawling (Pickering et al, 1998). Artificial reefs can be made out of concrete, rock and sunken man made objects such as ships (Pickering et al, 1998). Sinking ships is an alternative use for decommissioned ships that are otherwise recycled or scrapped, or being disposed on land (EPA, 2012). There is presently no solid evidence that the use of a ship has more benefits for marine species than that of a concrete or rocky artificial reef, as with the rocky and concrete reefs can be made with shelves and chambers for creatures to establish and hide (Spieler et al, 2001).

## Recommendations:

**1)** Actively investigate potential pollutants aboard each ship, and enforce laws that ensure the ships are clean of pollutants.

**implication:** If the sinking of ships is not actively regulated, ships that have not fully passed environmental standards may be sunk, resulting in potentially massive increases in marine pollution.

**2)** Ensure that area is suitable: Large enough area, previously damaged reefs structure, will not harm sediment or sediment has been previously harmed.

**implication:** Criteria may make the sinking of ships too restricted, but it will ensure that the area chosen suits the needs of the marine life, and the people who use the area.

**3)** Promote reef rehabilitation with alternative structures as well; using rocks/ concrete to promote increase in biodiversity.

**implication:** Can be expensive, and may not generate the same public interest as a sunken ship, but benefits the marine biodiversity.

## Body:

A movement allowing for the sinking of ships to create artificial reefs must be implemented with tremendous caution. Artificial reefs made by sunken ships increase biodiversity of marine life, as well as increase recreational diving, and commercial fisheries, both benefitting the local economy and relieving diving pressure on natural reefs (Leeworthy et al, 2006). Sunken ships can be sunk onto sediment beds damaged by human influence. This also repurposes the ship, saving the cost of using new supplies to build an artificial reef. Along with this though comes the cost of stripping the ship of all its harmful toxins. Ships are coated and lined with harmful chemicals in the form of fuels and oils, asbestos, polychlorinated biphenyls (PCBs), paint, debris and other materials (mercury, refrigerants) (EPA, 2012). Each ship is different and each case of ship sinking must be treated individually.

### PROS: (OF SINKING SHIPS)

- Re-use of old material
- Save money on new material
- No land based recycling required
- Attracts divers
- Creates a new marine area, attracting more species
- Ultimately benefits economy
- Physical block to destructive trawling

### CONS: (OF SINKING SHIPS)

- Potentially harmful material can leak
- May not be the best artificial reef material
- Could potentially recycle/re-use the material found
- Could disrupt sediment/ harm the bottom
- Could be dangerous to passing ships if not sunk deep enough

### OVERALL:

If Environment Canada allows for the sinking of ships to create artificial reefs, many requirements must be met to ensure the safety of the environment and those who use the waterways. Ships must be stripped of all harmful material to ensure there is no pollution leaking into the water and the ship must be sunk in a large enough body of water. A concern is that the area chosen may not always be deep enough to allow for boats to safely pass the sunken ship overhead. Also, that the attraction of a sunken ship will increase traffic of tourist and recreational divers, and the area must be large enough to accommodate this increase in traffic. Each new case of sinking a ship must be judged individually, as each ship is unique and brings its own difficulties.

## References:

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