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Former HMCS Annapolis: artificial reef harbours many species

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NB: The Ocean Watch Howe Sound Edition (OWHS) 2017 Annapolis article incorrectly stated the length of this vessel as 370 metres long. It is in fact 371 feet, or 113 metres long.

What is happening?

In 2015, the Annapolis, a decommissioned naval ship, was sunk in Ch'á7elsm/Halkett Bay, on the south-east of Chá7elkwnech/Gambier Island to create an artificial reef. Due to historical log boom storage in this area, habitat potential was reduced compared to other nearby sites. The sinking of the Annapolis was thus designed to provide usable habitat to increase species abundance and diversity in the area, and is monitored by the Artificial Reef Society of BC (ARSBC) through their citizen science program, the Annapolis Biodiversity Index Study (ABIS) (see Resources). By early 2016, nearly 50 different marine species had made the Annapolis home (see Annapolis, Ocean Watch Howe Sound Edition [OWHS] 2017).

Marine organisms populating the Annapolis. (Credit: Lee Newman)

What is the current status?

Artificial reefs provide habitat that attracts sea life, from the smallest invertebrates to large fish. One important feature of the Annapolis is its similarity to habitat that attracts rockfish and lingcod, two groups of fish with low population numbers in Áthk̲a7tsem/Txwnéwu7ts/Howe Sound (see Critical Fish Stock, OWHS 2020). The number of rockfish species observed on the Annapolis has increased; however, yelloweye rockfish (*Sebastes ruberrimus*) have not yet been observed during 2019 dives (Table 1).

Table 1. Presence (+)/absence (–) of rockfish species observed during dives on the Annapolis between 2015 to 2019.

YEAR	COPPER	QUILLBACK	YELLOWTAIL	YELLOWEYE
2015 (from May 21)	+	+	–	–
2016	+	+	–	+
2017	+	+	+	+
2018	+	+	+	+
2019 (up to March 9)	+	+	+	–

The results of the ABIS project over the past few years are very promising, with some exciting discoveries such as lingcod (*Ophiodon elongatus*), yelloweye rockfish, gravid copper (*S. caurinus*) and quillback rockfish (*S. maliger*), and midshipman (*Porichthys notatus*), as well as many invertebrate discoveries. In the past four years, sponges and tunicates have begun to settle. Most recently, 161 species have been recorded as using the Annapolis for habitat. Most of these species are small invertebrates and algae. Two small species of encrusting sponge have been identified. However, the number of plant and moss animal species recorded during dives has decreased. It is unclear whether this is a natural fluctuation. All other animal groups have increased in abundance, with some more than doubling the number of species present, for example molluscs and echinoderms (Figure 1). Ongoing monitoring is necessary and continues via a BC Parks Enhancement Funding Grant to support the ABIS.

The ship has not been down long enough to suggest any trends of future settlement. However, early observations indicate that there are currently more marine species in the area inhabiting the Annapolis than there were before the ship was sunk.

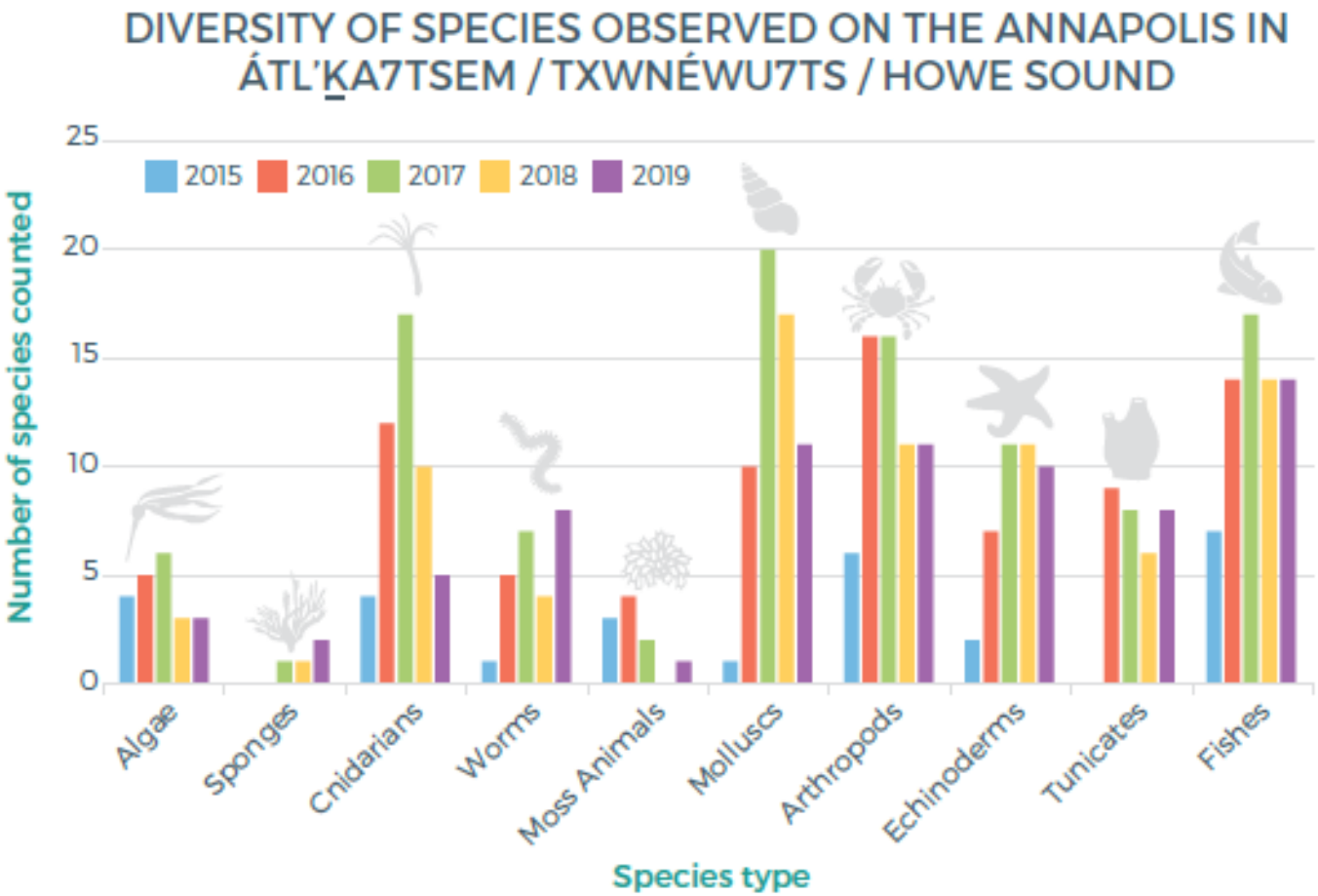

Figure 1. Number of species in different categories observed on the Annapolis since it was sunk in April 2015. Data for 2015 is from May 21. Data for 2019 includes dives conducted up to early March (the project completion date). All other years are full calendar years.

What are the potential impacts of climate change on the Annapolis?

Climate change impacts are unlikely to directly affect the Annapolis as an artificial reef. However, direct impacts may be seen on the species that use this habitat. Further details about climate change impacts on particular species can be found in the relevant articles (e.g., Critical Fish Stocks, OWHS 2020).

Divers on the Annapolis. (Credit: Diane Reid)

What has been done since 2017?

The table below reports on progress made on recommended actions from the previous 2017 article, where identified. Many of these require ongoing action.

2017 ACTION	ACTION TAKEN
GOVERNMENT ACTIONS AND POLICY	
Support citizen science efforts.	The 2018 (August) to 2019 (March) term for the ABIS project was funded by BC Parks.

What can you do?

A detailed overview of recommended actions relating to climate change is included in *The path to zero carbon municipalities* (OWHS 2020). In some cases, no progress was identified on previous recommended actions; these remain listed below. Additional actions marked as NEW also follow.

Individual and Organization Actions:

- Learn about the monitoring project through the ARSBC website.
- NEW If you are a diver, take the course offered by Ocean Wise to improve your identification skills (see Resources).

Government Actions and Policy:

- Monitor and assess the effectiveness of artificial reef habitat.

Methods

Data has been collected by voluntary divers as a part of the ARSBC's citizen science program, the ABIS.[1]

For the 2018/2019 term (August to March), ABIS was funded by BC Parks. A total of five dive trips involving 16 divers was possible in this time. The divers covered all exposed areas of the ship over the course of these dives, including port and starboard breezeways, hangar, antenna deck, flying bridge, foredeck and aft deck areas. Other areas explored and documented included some interior areas such as #1 Mess, forward Capstan Room, Halfdeck, Operations area, and Burma Road (the main corridor that runs through the interior of the ship from bow to stern). Some dives occurred around the circumference of the ship where the hull meets the bottom. Some areas below decks still require examination, e.g., the Cafeteria, Galley, Sick Bay and some of the Mess areas below Burma Road.

Divers are encouraged to record their marine life findings using video or photography, and report these to Donna Gibbs (donna.gibbs@ocean.org). Donna is a marine taxonomy specialist, who uses these images and videos to identify the species and/or groups (phyla) represented.

Resources

This list is not intended to be exhaustive. Omission of a resource does not preclude it from having value.

Marine Life Identification for Divers course
https://ocean.org/marine-life-identification-for-divers/

Artificial Reef Society of BC (ARSBC)
https://artificialreefsocietybc.ca/index.html

Annapolis Biodiversity Index Study (ABIS)
http://www.artificialreefsocietybc.ca/annapolis-project-abis.html

References

[1] Artificial Reef Society of British Columbia. Annapolis: Project ABIS [Internet]. 2019 [cited 2019 Aug 30]. Available from: http://www.artificialreefsocietybc.ca/annapolis-project-abis.html