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Invasive Species and the Nicaragua Canal: Considerations for a More Proactive U.S. Approach

By Erica Chung, HSSAI HS-STEM intern

After analyzing current United States policy toward invasive species at U.S. maritime ports of entry, interviewing U.S. Department of Agriculture (USDA), U.S. Fish and Wildlife Service (FWL), and Customs and Border Protection (CBP) personnel, and using the Nicaragua Canal as a case study for why the United States should have a more proactive approach, I made the following findings:

There are four points of concern along a shipping route for hitchhiking of invasive species onto a cargo ship. The four points are initial docking, mid-transport through the ocean, mid-transport at port stops, and final docking. The risk factors for all the points include size of ship, size of ballast tank, length of journey, number of port stops, type of packaging material, whether packaging material is treated with heat or chemicals, type of goods, and country of origin.

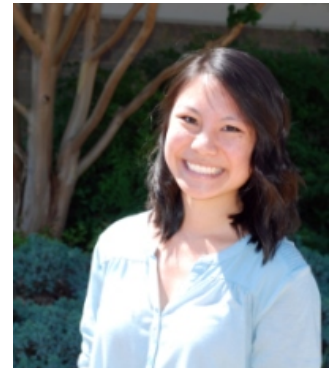
The countries of concern to the United States upon completion of the Nicaragua Canal are China, Japan, Germany, and Nicaragua. These countries were identified by looking at the top importers to the United States, as well as the top users of the Panama Canal. As the Nicaragua Canal offers an alternative shipping route, it is likely that many current users of the Panama Canal will use the Nicaragua Canal once it becomes operational.

The potential [invasive species](http://www.fws.gov/invasives/) coming to the United States from these countries were identified using the [Global Invasive Species Database](http://www.issg.org/database/welcome/). More than thirty potential invasive species were identified and the list included the [Ghost Ant](http://www.issg.org/database/species/ecology.asp?si=959&fr=1&sts=sss&lang=EN), [Red Algae](http://www.issg.org/database/species/ecology.asp?si=645&fr=1&sts=sss&lang=EN), [Brown Rat](http://www.issg.org/database/species/ecology.asp?si=159&fr=1&sts=sss&lang=EN), and [Wireweed](http://www.issg.org/database/species/ecology.asp?si=727&fr=1&sts=sss&lang=EN). The impact of these invasive species on the environment, the economy, and the public health of the United States was compiled into separate tables for each country.

RECOMMENDATIONS

The data collected was analyzed and the following recommendations were made to create the most proactive U.S. policy for invasive species at U.S. maritime ports of entry:

- Streamline inspection process between USDA and CBP to increase efficiency at U.S. maritime ports of entry.
- Have USDA and FWL work together to create a single invasive species list that prioritizes species concern.
- Modify current CBP policy on optional job aids and trainings and make them mandatory to increase the ability of CBP agriculture specialists to identify invasive species in cargo .
- Increase communication and involvement of CBP.
- Increase speed at which species are added to list.
- Enact federal regulations concerning cleaning of hulls of cargo as shipping industries spend an additional \$36 billion annually in fuel usage because invasive species cling to the hull of cargo ships and create drag on the ship.
- Increase ability to predict future invasive species by encouraging collaboration between federal agencies and departments when it comes to pathway analysis and risk assessment of potential invasive species.



Erica Chung is a rising junior at the [University of Minnesota Twin Cities](https://twin-cities.umn.edu/) (<https://twin-cities.umn.edu/>), studying microbiology and food science. As an undergraduate researcher in a phytochemicals and food biochemistry lab at the university, she studied the chemical properties of acid whey and recently published an [editorial in the *Journal of Nutritional Disorders and Therapy*](http://www.omicsonline.org/open-access/no-longer-a-game-of-chance-playing-the-cards-of-genetics-with-nutrition-2161-0509-4-151.php?aid=31592) (<http://www.omicsonline.org/open-access/no-longer-a-game-of-chance-playing-the-cards-of-genetics-with-nutrition-2161-0509-4-151.php?aid=31592>). She was recently elected president of [Emergency USA](http://www.emergencyusa.org/) (<http://www.emergencyusa.org/>), a public health group on campus, and is a member of the College of Biological Sciences Student Ambassadors Program. In addition, she participated in a Central Intelligence Agency mentorship program for the past year.

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