United States Department of Agriculture

ANALYSIS OF U.S. IMPORTS/EXPORTS OF LIVE TILAPIA AND EGGS/MILT

January 2020

CURRENT SITUATION: National Veterinary Service Laboratories confirmed Tilapia Lake Virus (TiLV) in Nile tilapia (*Oreochromis niloticus*) on a farm in Idaho in March 2019. This was the first detection of TiLV in the United States. The infected premise was placed under quarantine on Monday, April 8, 2019 and an epidemiological investigation began on April11, 2019. Prior to the start of the investigation, the owner voluntarily depopulated fingerlings and potentially exposed species, and the tanks were cleaned and disinfected. To verify that the existing tilapia population on the premises was not infected with TiLV, testing was performed resulting in no additional detections for TiLV. The quarantine was released on May 2. Movement traces from the index premise resulted in two additional premises in Colorado and Wyoming which confirmed positive for TiLV. These premises were placed under hold movement restrictions. Premises plans were developed, agreed upon, and signed by state, federal, and public/private entities. Once the premise plans were completed, meeting all regulatory, sample testing, and biosecurity requirements, the hold movement was released on June 18, 2019 (Wyoming) and July 25, 2019 (Colorado).

As a result of these detections, USDA APHIS, with support from industry, imposed new import requirements for all live tilapia, fertilized eggs, and gametes of TiLV-susceptible species as of December 12, 2019. Consignments are required to be accompanied by a USDA APHIS Import Permit, a veterinary export health certificate issued in the country of origin, and undergo veterinary inspection at a Designated U.S. Port of Entry upon arrival. More information can be found on the USDA APHIS Live Fish Import website, including Federal Order DA-2019-01.

PURPOSE: Summarize import and export patterns of tilapia in the U.S. for the last 15 years

DATA SOURCE: USITC (United States International Trade Commission) Dataweb

Global production of tilapia is estimated at 6.4 million metric tons (MMT). Top producers of tilapia are: China (1.78 MMT), Indonesia (1.12 MMT), and Egypt (0.88 MT). Bangladesh, Vietnam, and the Philippines are other leading producers (Jansen and Mohan, 2017). It is difficult to estimate the imported volume of tilapia into the United States. The Harmonized Tariff Schedule (HTS) does not have a distinct commodity classification for live tilapia. Live tilapia falls within HTS code 030199 - “Other Live Fish”, which also includes big head carp, tench, and csheatfish. Presumably, this category includes fry and fingerlings, which are most susceptible to infection by TiLV. The specificity of the HTS category capturing import/export of milt and fertilized eggs from tilapia is less than the category for live tilapia; the closest HTS code is 051191 - “other fish” fertilized eggs and milt as well as other products of fish, crustaceans, etc., and dead animals of chapter 3.

Using available information (Tilapia Aquaculture Association of South Africa, 2018; OIE, 2018), we determined countries known to be affected with TiLV (Table 1). While not recognized by the World organisation for Animal Health (OIE), recent publications indicate that Tanzania and Uganda are affected, as the virus was sequenced from tilapia in Lake Victoria (Jansen et al.; Mugimba et al., 2018). A list of confirmed detections are available from the Tilapia Aquaculture Association of South Africa, and is used to supplement the list of affected countries. We also summarize countries at risk by tilapia lake virus (FAO, 2017), as the list may prove useful as TiLV spreads globally. For this analysis, we filtered the import records to the list of affected countries presented in Table 1.

Table 1. *List of countries known or believed to be at risk of tilapia production being infected by tilapia lake virus (TiLV).*

Status	*Countries*
Affected	Columbia , Ecuador, Egypt, India, Indonesia, Israel, Kenya, Malaysia, Mexico, Mozambique, Peru, Philippines, Taiwan, Tanzania, Thailand, Uganda
Believed to be "At Risk"	Algeria, Bahrain, Bangladesh, Belgium, Burundi, Canada, China, Congo, El- Salvador, Germany, Guatemala, Japan, Jordan, Laos, Myanmar, Nepal, Nigeria, Pakistan, Romania, Rwanda, Saudi Arabia, Singapore, South Africa, Sri Lanka, Switzerland, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, United Arab Emirate, United Kingdom, United States, Vietnam, and Zambia

IMPORTS

While it is unknown what proportion of HTS 030199 imports are tilapia, the major exporters to the U.S. from TiLV-affected countries are Ecuador, Israel, Taiwan, and Thailand (Figure 1).

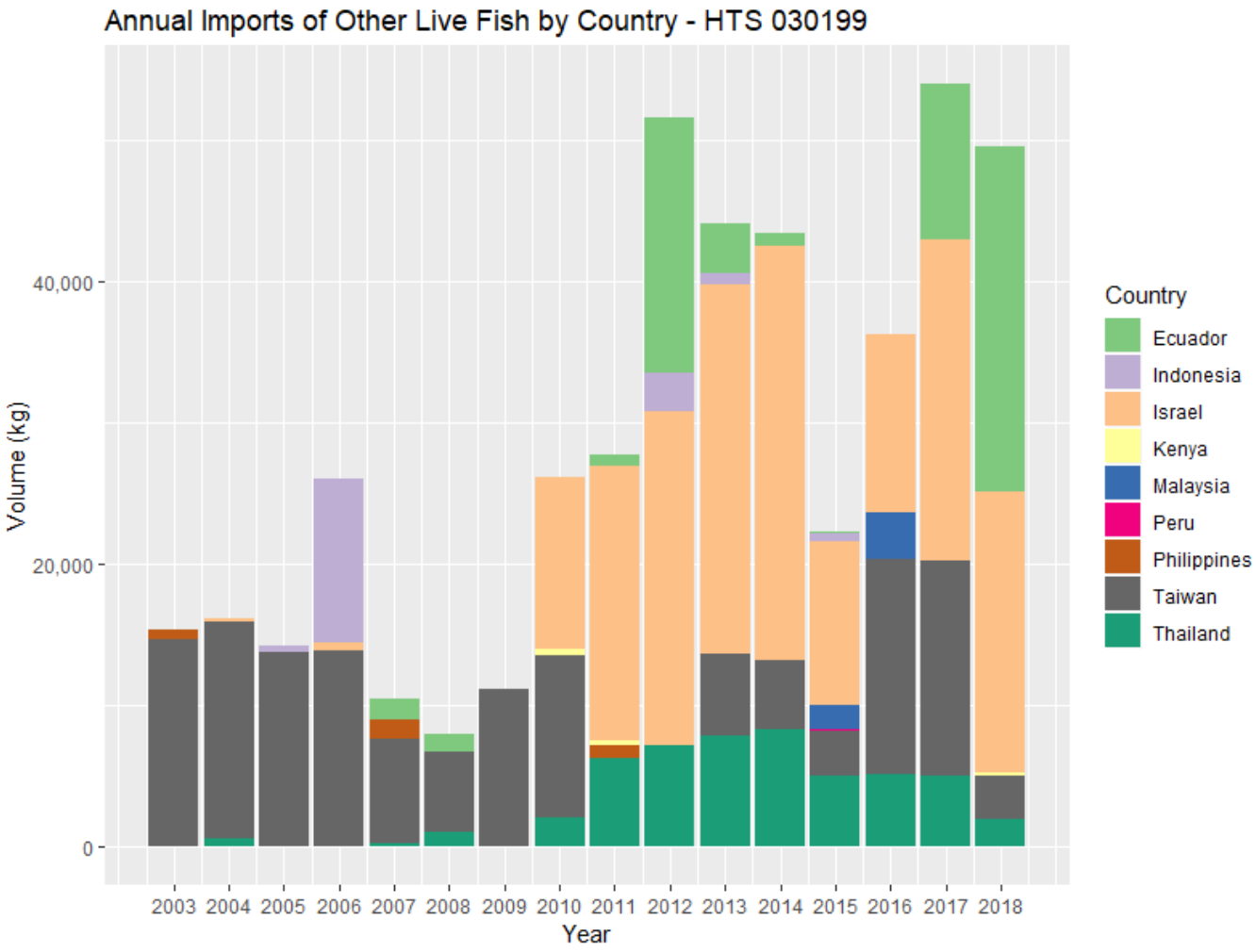

Figure 1. *Annual import of "other fish" from HTS category 030199, filtered by countries affected by tilapia lake virus.*

We evaluated the import volume from TiLV-affected countries relative to the total import volume for 2018 (Table 2) and found that each TiLV-affected country contributed less than 0.5% of the total import volume. Collectively, imports from all affected countries comprised 0.84% of the total import volume from 2018.

Table 2. *Summary of tilapia import volumes and percent of total volume from 2018, originating from TiLV-affected countries listed in Table 1. Sorted in descending order by volume.*

Country	*Import Volume (kg)*	*Percent of Total Import Volume*
Ecuador	24,379	0.42%
Israel	19,872	0.34%
Taiwan	3,115	0.05%
Thailand	1,948	0.03%
Kenya	175	0.00%

USDA|APHIS|VS|RIRA| 2

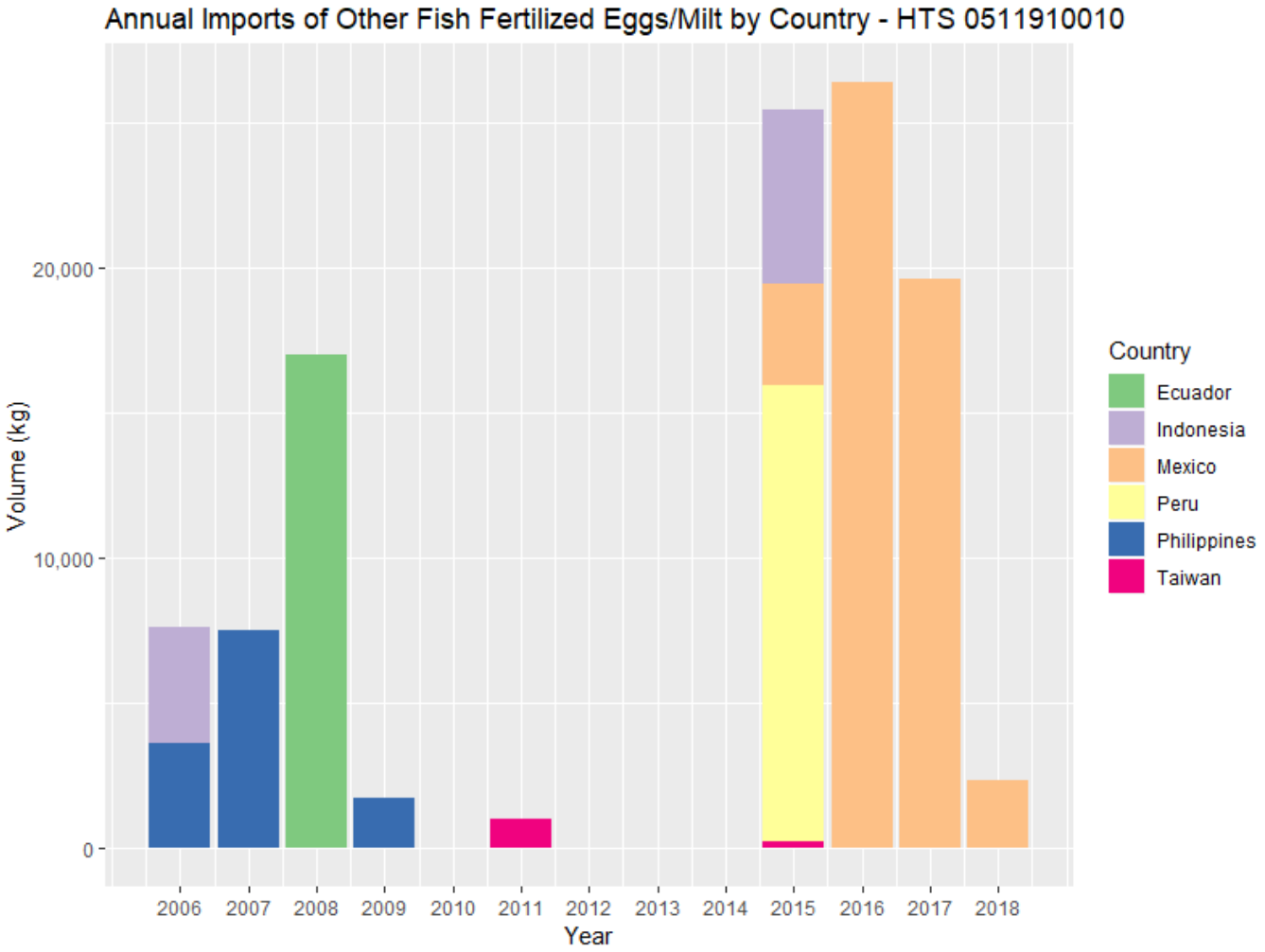

Figure 2. *Annual import of fertilized eggs and milt from fish or crustaceans, molluscs or other aquatic invertebrates (HTS category 0511910010), filtered by countries affected by tilapia lake virus.*

In Figure 2, we present the import of fertilized eggs and milt (i.e. seminal fluid) from all fish or crustaceans, molluscs or other aquatic invertebrates (HTS code 0511910010, which is inclusive of tilapia). The majority of egg/milt imports from TiLV-affected countries to the U.S. originated from Mexico in recent years, and overall shows that's a declining trend.

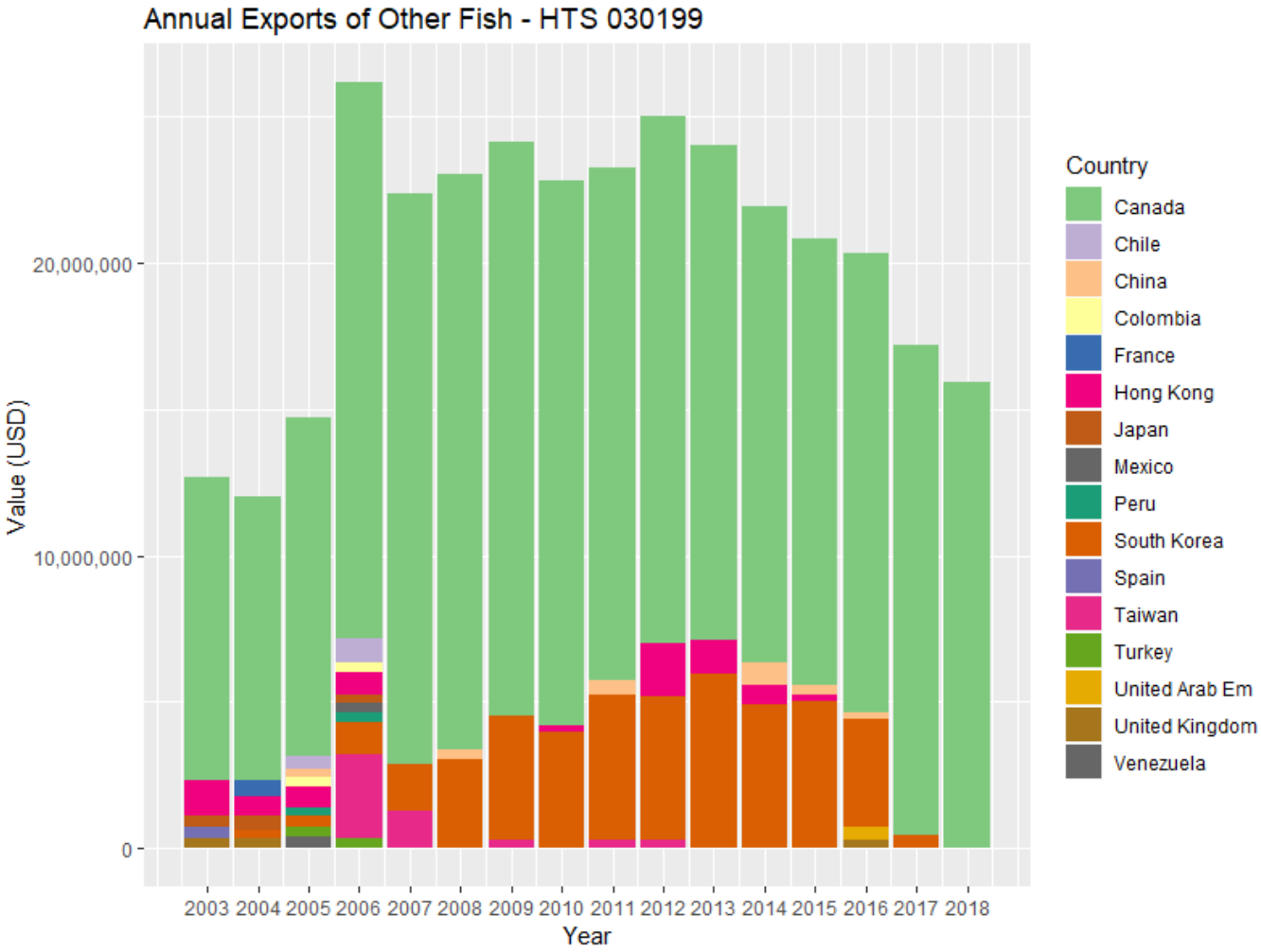

Figure 3. *Annual export of "other live fish" (HTS code 030199) by export value in U.S. dollars (USD). Figure depicts countries importing greater than $250,000 of tilapia and other live fish from the United States.*

EXPORTS

Export data for HTS codes 030199 and 051191 are reported in terms of value (U.S. dollars), because export volume in kilograms is not available from the USITC. In terms of export of "other live fish" to countries outside the U.S., we primarily export tilapia and other fish to Canada (Figure 3). However, another major destination for export of "other fish" in previous years is South Korea. In 2018, we exported almost $16 million USD worth of tilapia and other fish to Canada. All other countries accounted for less than 1% of U.S. exports each (Table 3).

Table 3. *Summary of tilapia and other fish (HTS code 030199) exported to other countries in 2018, reported in value of export (USD). Sorted in descending order by volume.*

Country	*Export Value (US dollars)*	*Percent of 2018 Total Export*
Canada	$15,914,828	94.11%
Netherlands	$149,488	0.88%
United Arab Emirates	$136,076	0.80%
China	$119,822	0.71%
United Kingdom	$114,273	0.68%
Trinidad and Tobago	$112,256	0.66%
Taiwan	$ 81,014	0.48%
Mexico	$ 59,843	0.35%
Korea, South	$ 58,359	0.35%
Hong Kong	$ 44,586	0.26%
Sint Maarten	$ 42,361	0.25%
Japan	$ 22,737	0.13%
Thailand	$ 14,099	0.08%
Brazil	$ 8,500	0.05%
Indonesia	$ 6,776	0.04%
Australia	$ 5,552	0.03%
France	$ 5,231	0.03%
Colombia	$ 5,100	0.03%
Germany	$ 5,000	0.03%
Singapore	$ 4,233	0.03%

The actual values over the past 10 years for the trade of live fish (HTS 030199) for countries with export markets identified that could be negatively affected (closed or restricted based on negotiated export protocols) by a detection of Title in the U.S. are presented in Table 4. Canada is the largest market with average annual trade value of $17 million and trade occurring annually. Peru represents the second highest average, valued at $152 thousand; however, trade occurred only in 2014. Mexico is the third highest, with the average annual trade value of $31 thousand, with trade occurring in all but two years. The remaining three countries purchased U.S. exports in two of the ten years and the exports were valued less than $10 thousand.

Table 4. *Summary of "other live fish" (HTS code 030199) U.S. exports to countries with TiLV trade restrictions, reported in value of export (USD) for 2008-2018, and the average for years with trade.*

	Canada	Costa Rica	El Salvador	Honduras	Mexico	Peru
2008	19,670,716	3,464	.	.	65,261	.
2009	19,642,373	.	.	.	19,450	.
2010	18,605,885	.	10,232	.	.	.
2011	17,548,607	.	8,395	.	4,500	.
2012	18,009,113	.	.	.	.	.
2013	16,912,201	.	.	.	5,930	.
2014	15,611,153	.	.	6,700	60,000	152,450
2015	15,244,755	.	.	5,250	.	.
2016	15,670,147	.	.	.	20,300	.
2017	16,765,945	4,363	.	.	14,143	.
2018	15,914,828	.	.	.	59,843	.
Average	17,235,975	3,914	9,314	5,975	31,178	152,450

The USITC export data does not report the 10-digit HTS code (0511910010) that was used in the import analysis. In the following section, we analyze the export of products of fish or crustaceans, molluscs or other aquatic invertebrates; dead animals of chapter 3 (HTS code 051191, which includes fertilized eggs and milt). The top five countries which receive from the U.S. fertilized eggs/milt and other aquatic products include Ecuador, India, Canada, Vietnam, and Indonesia (Table 5). Overall, the trend for export of these products to other countries (Figure 4) has been increasing in volume and diversity of partners. However, it is unknown what portion of these exports are fish eggs/milt.

Table 5. *Summary of tilapia and other fish eggs/milt exported to other countries in 2018, reported in value of export (USD). Limited to the top 13 countries of export (>2% of total export value) and sorted in descending order by volume.*

Country	*Export Value (US dollars)*	*Percent of 2018 Total Export*
Ecuador	$24,575,541	17.67%
India	$23,409,833	16.83%
Canada	$15,528,737	11.16%
Vietnam	$14,844,332	10.67%
Indonesia	$9,678,292	6.96%
Japan	$7,855,443	5.65%
Belgium	$6,384,728	4.59%
Turkey	$5,106,876	3.67%
Mexico	$3,050,078	2.19%
Peru	$3,034,768	2.18%
Netherlands	$2,935,992	2.11%
South Korea	$2,898,834	2.08%
Saudi Arabia	$2,897,073	2.08%

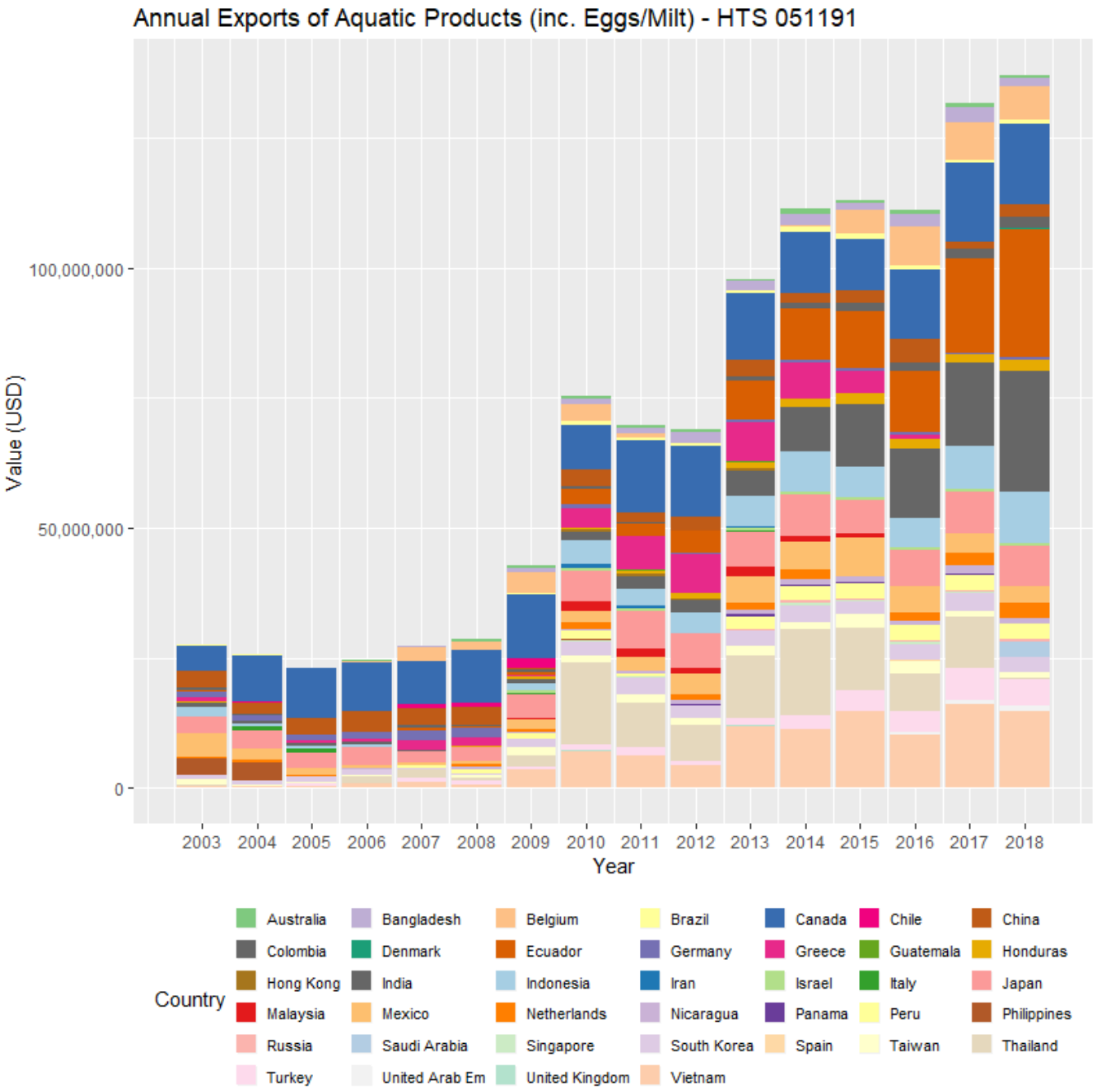

Figure 4. *Annual export of products of fish or crustaceans, molluscs or other aquatic invertebrates; dead animals of chapter 3 (HTS code 051191) by export value in U.S. dollars (USD), which is inclusive of fertilized eggs/milt. Figure depicts countries importing greater than $250,000 of aquatic products from the United States.*

The actual export values over the past 10 years for the trade of “other fish” fertilized eggs and milt as well as other products of fish, crustaceans, etc., and dead animals (HTS code 051191) for countries with markets identified that could be negatively affected (closed or restricted based on negotiated export protocols) by a detection of TiLV in the U.S. are presented in Table 6. Canada is the largest market with average annual trade value of $12 million. Mexico is the second highest with average annual trade value of $4 million. Peru is the third highest with the average annual trade value of $2 million. The remaining countries annual export values are: Honduras with 1.2 million, Costa Rica with 120 thousand, and El Salvador with 28 thousand; however, El Salvador only received U.S. exports in 2015.

Table 6. *Summary of U.S. exports of products of fish or crustaceans, molluscs or other aquatic invertebrates; dead animals (HTS code 051191) to countries with TiLV trade restrictions, reported in value of export (USD) for 20082018 and the average for years with trade.*

	Canada	*Costa Rica*	*El Salvador*	*Honduras*	*Mexico*	*Peru*
2008	10,165,010	35,889	.	348,531	572,672	839,484
2009	12,299,702	52,379	.	423,388	1,911,863	1,098,290
2010	8,451,547	45,720	.	385,539	2,179,610	1,423,143
2011	13,864,306	20,790	.	330,647	2,563,462	455,388
2012	13,568,378	28,184	.	1,147,352	3,868,376	7,438
2013	12,854,223	166,990	.	1,144,402	5,158,607	2,373,097
2014	11,680,777	201,466	.	1,511,504	5,597,767	2,644,926
2015	9,965,258	155,435	28,000	2,059,335	7,422,951	2,735,435
2016	13,301,323	129,416	.	1,920,633	5,120,935	2,934,037
2017	15,202,713	244,681	.	1,588,866	3,962,911	2,870,595
2018	15,528,737	243,504	.	2,157,224	3,050,078	3,034,768
Average	12,443,816	120,405	28,000	1,183,402	3,764,476	1,856,055

CITATIONS

FAO, 2017. Urgent update on possible worldwide spread of tilapia lake virus (TiLV).

Jansen, M.D., Dong, H.T., Mohan, C.V., Tilapia lake virus: a threat to the global tilapia industry? Reviews in Aquaculture 11: 725-739, doi:10.1111/raq.12254.

Jansen, M.D., Mohan, C.V., 2017. Tilapia Lake Virus (TiLV): Literature Review, https://enaca.org/?id=914&title=tilapia-lake-virus-tilv-literature-review, Accessed April 10, 2019.

Mugimba, K.K., Chengula, A.A., Wamala, S., Mwega, E.D., Kasanga, C.J., Byarugaba, D.K., Mdegela, R.H., Tal, S., Bornstein, B., Dishon, A., Mutoloki, S., David, L., Evensen, Ø., Munang'andu, H.M., 2018. Detection of tilapia lake virus (TiLV) infection by PCR in farmed and wild Nile tilapia (Oreochromis niloticus) from Lake Victoria. Journal of Fish Diseases 41, 1181-1189.

OIE, 2018. Tilapia Lake Virus (TiLV) - A Novel Orthomyxo-like Virus. OIE Technical Disease Card, https://www.oie.int/fileadmin/Home/eng/Internationa_Standard_Setting/docs/pdf/Aquatic_Commission/A_TiLV_disease_card.pdf, Accessed April 10, 2019.

Tilapia Aquaculture Association of South Africa, 2018. Confirmed TiLV outbreaks as of August 2018, https://www.thetilapiasite.co.za/article-44-confirmed-tilv-outbreaks-as-of-august-2018.html, Accessed April 10, 2019.