

# **Interim Environmental Review**

## **United States-Thailand Free Trade Agreement**

**Office of the U.S. Trade Representative**

**November 2005**

## **Executive Summary**

Pursuant to authority delegated by the President in Executive Order 13277 (67 *Fed. Reg.* 70305) and consistent with Executive Order 13141 (64 *Fed. Reg.* 63169) and its guidelines (65 *Fed. Reg.* 79442), the Office of the United States Trade Representative (USTR) submits this Interim Environmental Review of the United States-Thailand Free Trade Agreement (FTA), as provided for under section 2102(c)(4) of the Trade Act of 2002 (Trade Act).

On February 12, 2004, in accordance with section 2104(a) of the Trade Act, U.S. Trade Representative Robert B. Zoellick notified the Congress of the President's intent to enter into negotiations for a FTA with Thailand. The formal launch of negotiations took place on June 28, 2004. As of the date of this Interim Review, five rounds have taken place and additional rounds are scheduled. A trade capacity building group has been meeting in parallel with the negotiating groups. The negotiations are expected to conclude in the spring of 2006.

The environmental review process examines possible environmental effects that may be associated with the FTA. In identifying and examining these possible effects, the Administration drew on public comments submitted in response to a notice in the *Federal Register* (69 *Fed. Reg.* 19263) and a variety of sources of published information. The Trade Policy Staff Committee (TPSC) invited the public (69 *Fed. Reg.* 9419) to provide written comments and/or oral testimony at a public hearing, which took place on March 30, 2004, to assist USTR in amplifying and clarifying negotiating objectives for the proposed FTA and to provide advice on how specific goods and services and other matters should be treated under the proposed agreement. The review also draws on the environmental and economic expertise of federal agencies. Consistent with Executive Order 13141 and its Guidelines, the focus of the review is on potential impacts in the United States. Additionally, this review includes consideration of global and transboundary effects.

This interim review provides provisional conclusions and identifies areas for further attention in the course of the ongoing negotiations and in the review of the final agreement. The Administration welcomes public comment on these preliminary conclusions:

- Based on existing patterns of trade and changes likely to result from provisions of the United States-Thailand FTA, the impact on total U.S. production through changes in U.S. exports appears likely to be very small. As a result, the United States-Thailand FTA is not expected to have significant direct effects on the U.S. environment through changes in production. However, specific issues identified for further analysis include the potential for increased trade to contribute to localized environmental impacts at selected U.S. maritime ports and the potential for increased risk of introduction of invasive alien species. In both cases, the likelihood and magnitude of these effects and increased risks, while difficult to quantify, appear to be small.

- Based on an analysis of comparable provisions of previous FTAs, the United States-Thailand FTA is not expected to have a negative impact on the ability of U.S. government authorities to enforce or maintain U.S. environmental laws or regulations.
- As compared to its effect in the United States, the United States-Thailand FTA appears likely to have relatively greater effects on the economy of Thailand. Although net changes in Thailand's production and trade are difficult to predict, the importance of trade to the Thai economy and the importance of the United States as a trading partner suggest that there may be economically driven environmental effects of the FTA in Thailand. The Administration has examined a variety of transboundary and global issues to identify possible environmental concerns to be discussed in the course of negotiations, as well as areas for possible priority attention in bilateral and regional cooperation.
- The United States-Thailand FTA may have positive environmental consequences in Thailand by reinforcing efforts to effectively enforce environmental laws, accelerating economic growth and development through trade and investment and disseminating environmentally beneficial technologies.
- The United States-Thailand FTA provides a context for enhancing cooperation activities to address both trade-related and other environmental issues. Potential topics for cooperation activities include wildlife trade, invasive alien species, environmental technology and small and medium-sized enterprises (SMEs), and enforcement of environmental laws.

**Interim Environmental Review of the United States-Thailand Free Trade Agreement**

<b>Executive Summary .....</b>	<b>i</b>
<b>I.      LEGAL AND POLICY FRAMEWORK.....</b>	<b>1</b>
A.    The Trade Act of 2002.....	1
B.    The Environmental Review Process .....	2
<b>II.     BACKGROUND .....</b>	<b>3</b>
A.    Economy in Thailand.....	3
B.    Environment in Thailand .....	4
C.    United States – Thailand Goods Trade .....	11
D.    U.S. Objectives in the Proposed Free Trade Agreement .....	12
<b>III.    SCOPE OF THE ENVIRONMENTAL REVIEW .....</b>	<b>17</b>
A.    Public Outreach and Comments.....	17
B.    Potential Economically Driven Environmental Impacts .....	18
C.    Transboundary and Global Issues.....	21
1.    Economically Driven Environmental Effects in Thailand.....	21
2.    Wildlife Trade.....	21
3.    Coastal Habitats and Marine Migratory Species .....	23
4.    Shrimp/Turtle.....	24
5.    Environmental Goods and Services .....	25
D.    Potential Regulatory Impacts.....	26
<b>IV.    ENVIRONMENTAL COOPERATION.....</b>	<b>27</b>
<b>Annex I:    Organizations Providing Comments .....</b>	<b>29</b>
<b>Annex II:   Selected Recent Environmental Cooperation Activities with Thailand .....</b>	<b>30</b>
<b>Annex III: Thailand’s Primary Environmental Legislation and Responsible Ministries...</b>	<b>34</b>
<b>Annex IV: Environmental Issues at U.S. Ports.....</b>	<b>36</b>
<b>Annex V:   Invasive Alien Species.....</b>	<b>39</b>
<b>Annex VI: Wildlife Trade Information for Thailand.....</b>	<b>45</b>
<b>Annex VII: Data Tables .....</b>	<b>47</b>

## **I. LEGAL AND POLICY FRAMEWORK**

### **A. The Trade Act of 2002**

The Trade Act of 2002 (Trade Act) establishes a number of negotiating objectives and other priorities relating to the environment. As relevant here, the Trade Act contains three sets of objectives: (i) overall trade negotiating objectives; (ii) principal trade negotiating objectives; and (iii) promotion of certain priorities, including associated requirements to report to Congress.

Overall environment-related trade negotiating objectives include:

- (1) ensuring that trade and environmental policies are mutually supportive and to seek to protect and preserve the environment and enhance the international means of doing so, while optimizing the use of the world's resources (section 2102(a)(5)); and
- (2) seeking provisions in trade agreements under which parties to those agreements strive to ensure that they do not weaken or reduce the protections afforded in domestic environmental and labor laws as an encouragement for trade (section 2102(a)(7)).

In addition, the Trade Act establishes the following environment-related principal trade negotiating objectives:

- (1) ensuring that a party to a trade agreement with the United States does not fail to effectively enforce its environmental laws, through a sustained or recurring course of action or inaction, in a manner affecting trade between the parties, while recognizing a party's right to exercise discretion with respect to investigatory, prosecutorial, regulatory, and compliance matters and to prioritize allocation of resources for environmental law enforcement (sections 2102(b)(11)(A)&(B));
- (2) strengthening the capacity of U.S. trading partners to protect the environment through the promotion of sustainable development (section 2102(b)(11)(D));
- (3) reducing or eliminating government practices or policies that unduly threaten sustainable development (section 2102(b)(11)(E));
- (4) seeking market access, through the elimination of tariffs and nontariff barriers, for U.S. environmental technologies, goods and services (section 2102(b)(11)(F)); and
- (5) ensuring that environmental, health or safety policies and practices of parties to trade agreements with the United States do not arbitrarily or unjustifiably discriminate against U.S. exports or serve as disguised barriers to trade (section 2102(b)(11)(G)).

The Trade Act also provides for the promotion of certain environment-related priorities and associated reporting requirements, including:

- (1) seeking to establish consultative mechanisms among parties to trade agreements to strengthen the capacity of U.S. trading partners to develop and implement standards for the protection of the environment and human health based on sound science and reporting to the Committee on Ways and Means and the Committee on Finance (“Committees”) on the control and operation of such mechanisms (section 2102(c)(3));
- (2) conducting environmental reviews of future trade and investment agreements consistent with Executive Order 13141 and its relevant guidelines, and reporting to the Committees on the results of such reviews (section 2102(c)(4)); and
- (3) continuing to promote consideration of multilateral environmental agreements and consult with parties to such agreements regarding the consistency of any such agreement that includes trade measures with existing exceptions under Article XX of the GATT 1994 (section 2102(c)(10)).

## **B. The Environmental Review Process**

The framework for conducting environmental reviews of trade agreements is provided by Executive Order 13141—*Environmental Review of Trade Agreements* (64 *Fed. Reg.* 63169) and the associated Guidelines (65 *Fed. Reg.* 79442). The Order and Guidelines are available on USTR’s website at <http://www.ustr.gov/environment/environmental.shtml>.

The purpose of environmental reviews is to ensure that policymakers and the public are informed about reasonably foreseeable environmental impacts of trade agreements (both positive and negative), identify complementarities between trade and environmental objectives and help shape appropriate responses if environmental impacts are identified. Section 5(b) of Executive Order 13141 provides that “as a general matter, the focus of environmental reviews will be impacts in the United States,” but “[a]s appropriate and prudent, reviews may also examine global and transboundary impacts.” Reviews are intended to be one tool, among others, for integrating environmental information and analysis into the fluid, dynamic process of trade negotiations. USTR and the Council on Environmental Quality (CEQ) jointly oversee implementation of the Order and Guidelines. USTR, through the TPSC, is responsible for conducting the individual reviews.

The environmental review process provides opportunities for public involvement, including an early and open process for determining the scope of the environmental review (“scoping”). Through the scoping process, potentially significant issues are identified for in-depth analysis, while issues that are less significant – or that have been adequately addressed in earlier reviews – are eliminated from detailed study.

The Guidelines recognize that the approach adopted in individual reviews will vary from case to case, given the wide variety of trade agreements and negotiating timetables. Generally, however, reviews address two types of questions: (i) the extent to which positive and negative environmental impacts may flow from economic changes estimated to result from the prospective agreement; and (ii) the extent to which proposed agreement provisions may affect U.S. environmental laws and regulations (including, as appropriate, the ability of state, local and tribal authorities to regulate with respect to environmental matters).

## **II. BACKGROUND**

Thailand is located in the center of mainland Southeast Asia and bordered on the west and northwest by Burma; on the northeast and east by Laos and Cambodia; and on the south by the Gulf of Thailand (also known as the Gulf of Siam, the northwestern portion of the South China Sea), peninsular Malaysia, and the Andaman Sea. Stretching nearly 1,100 miles from north to south, with 2,000 miles of coastline, Thailand has a land area of 198 thousand square miles (slightly smaller than Texas). The country has a densely populated central plain with a northeastern plateau and mountain range in the West. The climate is humid tropical and about 29 percent of the land is arable. In 2004, Thailand's population was approximately 63 million. The population is predominantly rural and concentrated in the rice-growing central, northeastern and northern regions. As Thailand continues to industrialize, its urban population is growing (currently 31.6 percent of total population), particularly in the Bangkok metropolitan area. See tables 1-4 (annex VII) for additional information and comparisons of selected economic, development and environment indicators for Thailand and the United States.

The Royal Thai Government (RTG) government is a constitutional monarchy led by a democratically elected parliament and a popular and respected royal family. Thailand is divided into 76 administrative provinces, including Bangkok, the capital city. The provinces are further divided into districts, sub-districts, tambons (groups of villages) and villages.

Thailand was among the countries of Southeast Asia that suffered considerable loss of life and massive destruction of property as a consequence of the December 2004 tsunami. Approximately 8,500 lives were lost in Thailand in connection with the disaster. Property destruction was concentrated along the Andaman Coast in the provinces of Krabi, Phangnga, and Phuket. The United States government and private sector continue to provide humanitarian relief and other assistance to Thailand to aid in reconstruction.<sup>1</sup>

### **A. Economy in Thailand**

In 2004, Thailand's gross domestic product (GDP) was \$163.5 billion, representing a per capita income of about \$2,200. Thailand is an export-oriented economy, with exports of goods and

---

<sup>1</sup> Additional information on U.S. and international efforts related to the tsunami is available at: [http://www.usaid.gov/locations/asia\\_near\\_east/tsunami/](http://www.usaid.gov/locations/asia_near_east/tsunami/)

services accounting for 70 percent of GDP in 2004. Services are an important component of the Thai economy accounting for 46 percent of GDP in 2004. Thailand has largely recovered from the 1997-1998 Asian Financial Crisis and is now one of East Asia's strongest economies. In 2004, increased consumption and investment spending, along with strong export growth, resulted in a 6.1 percent increase in GDP. Although small in comparison to the U.S. economy, Thailand is an important and growing trading partner for the United States. The United States is Thailand's largest export market and second-largest supplier after Japan.

Approximately 60 percent of Thailand's labor force is employed in agriculture. Rice is the country's most important crop, and Thailand is the world's largest rice exporter. The manufacturing sector is a diverse and growing segment of the economy. Tourism also contributes significantly to the Thai economy with over 10 million tourist arrivals a year. Of the approximately 11 million tourist arrivals into Thailand in 2004, roughly 550,000 were Americans.<sup>2</sup>

The Thai economy slowed considerably in the first quarter of 2005. This slowdown was most likely due to high oil prices, unrest in Thailand's southern provinces, the December 2004 tsunami, and a general slowing of growth in the economies of some of Thailand's major export markets, all exacerbated by a turning of the business cycle. Economic growth in the first quarter was 3.3 percent compared to the same period in 2004, but first quarter GDP declined by 0.6 percent compared to the fourth quarter of 2004, the first quarterly contraction since 2001. GDP growth estimates for 2005 currently range from 4.5 to 5.5 percent.

## **B. Environment in Thailand**

As Thailand's economy recovered from the effects of the 1997 financial crisis and most recently the December 2004 tsunami, greater attention was focused on remedying environmental problems and protecting against future environmental degradation. The role of environmental non-governmental organizations (NGOs) is steadily increasing, while the process of decentralizing the government's role in formulating local environmental policy decisions also is progressing. Nevertheless, Thailand faces considerable challenges as it seeks to achieve development goals while protecting the environment. The most pressing environmental issues include: drinking water quality and quantity; air pollution; deforestation; land development and degradation; hazardous waste; illegal wildlife trade; coastal and marine resource depletion and enforcement of environmental regulations.

In response to environmental challenges over the last two decades, Thailand has developed increasingly progressive policy mandates that have aimed to strengthen legal frameworks, institutional arrangements and environmental management capabilities. Both the *Ninth National Economic and Social Development Plan* and the *National Policy and Prospective Plan for the Enhancement and Conservation of National Environmental Quality: 1997-2016* set forth specific

---

<sup>2</sup> [http://www.tatnews.org/tat\\_release/detail.asp?id=2496](http://www.tatnews.org/tat_release/detail.asp?id=2496)

policy areas, strategies and targets that mandate action by public agencies, local communities and citizens. Other environmental policy efforts have included restructuring environmental enforcement, giving environmental improvement projects higher funding consideration, beginning a number of privatization initiatives in environmental areas, and lowering tariffs on environmental goods.

A major impetus for improved environmental policies and practices was the 1997 Constitution, which established new institutions and new authorities to promote improved environmental management. Among other relevant changes, the 1997 Constitution guarantees citizens a number of fundamental rights related to managing and conserving natural resources and the environment (Section 46), participating in environmental decision-making (Sections 56 and 79), and receiving information about projects and activities that may affect the environment (Section 59). Moreover, the Constitution provides that local government has the duty to promote and maintain the quality of the environment in their decision-making (Section 290).

On the legislative side, the elected Senate investigates citizen environmental complaints and recommends action by the government. On the judicial side, the Administrative Court has handed down landmark environmental decisions, sending a strong signal to agency officials on the importance of transparency and accountability. The Supreme Court also recently established an environmental chamber to handle environmental cases, and is working to establish new court policies and practices for environmental cases, aiming toward the eventual creation of a specialized environmental court.

Most of Thailand's recent environmental reforms affect national and local administrative agencies. For example, as part of the Public Sector Reform Program, the RTG established the Ministry of Natural Resources and Environment (MONRE) which consolidates and rationalizes a wide range of environmental functions from across many ministries, and strengthens the role of regional offices to provide training and information to provincial and local governments. Local governments also have increased responsibility for managing the environment, including improving environmental infrastructure and involving their citizens in environmental decision making.

Although Thailand's progressive policies have resulted in tangible improvements in the environment, significant challenges remain. For example, despite the progress toward decentralization described above, environmental enforcement remains highly centralized at the national level. As a consequence, it is difficult to identify and address local problems and effectively regulate the small and medium enterprises that account for a significant share of Thailand's economy. In addition, public participation in environmental management and pollution monitoring and control is limited.

Environmental Laws/Legal Framework<sup>3</sup>

Thailand has over sixty laws and regulations governing environmental and pollution control management and related issues such as city planning, waste disposal, forest conservation, land allocation, groundwater usage and irrigation.<sup>4</sup> Perhaps the most important of these is the Enhancement and Conservation of the National Environmental Quality Act (NEQA). NEQA establishes minimum pollution standards, harmonizes standards implemented by government agencies and fills gaps left by other laws with respect to standards for point-source pollution control. NEQA also defined the role of MONRE in environmental planning, standard setting and monitoring.

Other relevant laws, as amended in 1992, include the Factory Act, Public Health Act, Hazardous Substances Act and the Public Cleansing Act. These laws delegate legal authority over various environmental issues to several ministries: the Ministry of Natural Resources and Environment; Ministry of Industry; Ministry of Interior; Ministry of Public Health; Ministry of Transportation; and Ministry of Agriculture and Cooperatives. Although each ministry has a different mandate, the six ministries, depending on their specific mandate, may share jurisdiction over a particular issue. Although Thailand's environmental laws provide considerable regulatory authority, they also represent a somewhat fragmented environmental regulatory system.

As Thailand's framework environmental law, NEQA includes several progressive regulatory mechanisms, including stringent national environmental effluent and emission standards, establishment of the National Environment Board (NEB) as a Cabinet-level policy-making body, definition of pollution control sources and creation of Pollution Control Areas, the polluter-pays-principle, an environmental fund to assist polluters in controlling and eliminating their pollutants and strict liability and penal provisions. The environmental fund is a revolving fund supported by both domestic and international sources to finance pollution control and wastewater treatment projects and programs in Thailand. The funds are available as grants and low-interest loans to both the public and private sectors and are an important source of funding to improve infrastructure in local communities.

Following a broad government reorganization in 2002, MONRE was designated as the primary authority for environmental regulation and enforcement. In this capacity, MONRE brought together several environmental offices under one Ministry with a broad mandate to protect and conserve Thailand's natural resources. MONRE consists of various departments, including: the Office of Natural Resources and Environmental Policy and Planning; Pollution Control Department (PCD); National Parks, Wildlife and Plant Conservation; Water Resources and Forestry. MONRE's Office of Natural Resources and Environmental Policy and Planning is

---

<sup>3</sup> Additional information on Thailand's environmental laws, including an assessment of enforcement and compliance, will be available in a forthcoming report: "Thailand Country Assessment: Enforcement and Compliance Program" being prepared as part of the U.S.-Asia Environmental Partnership (USAEP) (see <http://www.usaep.org/> for additional information).

<sup>4</sup> Annex III provides a summary of Thailand's major environmental laws.

typically the point of contact for international environmental treaties, but implementation and enforcement is the responsibility of individual departments. Outside of MONRE, the Department of Industrial Works under the Ministry of Industry is responsible for promoting and regulating pollution control of individual industrial factories. Other ministries with environmental responsibilities include the Ministry of Interior, the Ministry of Transportation and the Ministry of Agriculture and Cooperatives.

### Enforcement

Environmental enforcement in Thailand currently faces a variety of challenges that include: scarce resources; overlapping or conflicting authorities; capacity constraints at the local level; poor coordination among agencies and a fragmented environmental regulatory system. The importance of small and medium sized enterprises (SMEs) in the Thai economy is a contributing factor in the difficulties faced by Thailand in compliance and enforcement of environmental regulations. SMEs account for approximately 80 percent of the Thai economy and are typically unable to afford new pollution control technologies. In addition, SMEs are difficult to track and monitor.

Remedies for violations of environmental laws include administrative fines and orders, such as temporary or permanent closure of pollution sources. In general, however, administrative, civil and criminal fines are low and, as a result, typically do not create an effective deterrent. The United States is providing technical assistance to Thailand to improve environmental enforcement (see section IV and annex II for additional information).

Overlapping agency jurisdiction and limited cooperation are an important factor in inadequate environmental enforcement. Under NEQA, the PCD of MONRE has the authority to set the criteria, methods and conditions for pollution management of solid waste, hazardous substances, water quality, air quality, noise and vibration levels; to assign Pollution Control Officers (PCOs) to investigate public complaints about pollution; and to establish fees, fines, and civil and criminal liability for violations of the law. However, PCD does not have the authority to enforce pollution controls against polluters outside its jurisdiction, including most factories and industrial facilities. This responsibility rests with the Department of Industrial Works (DIW). This interagency separation of powers between DIW and PCD complicates the enforcement of environmental laws. PCD has the legal authority to inspect factories and assess compliance with the national effluent and emission standards. PCD cannot, however, directly enforce against those factories, except in rare circumstances when DIW fails to act. As a result of this overlapping and fragmented legal authority, no single ministry is responsible for environmental compliance and enforcement of all pollution sources in Thailand. Information-sharing between the two institutions on enforcement appears to be limited.

### Air and Water Quality

Thailand's overall air quality has improved significantly since a 1992 report stated that Bangkok

was one of the most polluted cities in the world.<sup>5</sup> By 2002, considerable improvement in Bangkok's air quality was reported.<sup>6</sup> These improvements can be attributed to many environmental initiatives including the phase-out of leaded gasoline by 1995; improvements in fuel quality and engine specification; curbing pollution from power plants; and improvement of public transport. Bangkok's light rail system, the Bangkok Transit System (BTS), opened in 1999, and a new Metro system, opened in 2004, have helped to reduce the growth in vehicular traffic and resulting air pollution. While significant progress has been made, air pollution continues to be a major concern. Particulate matter and ozone in traffic corridors and urban centers continue to present significant challenges.<sup>7</sup>

Water quality is a major concern in Thailand. Problems associated with relatively scarce freshwater resources are compounded by pollution.<sup>8</sup> An estimated 50 percent of river systems and lakes, including major sources of drinking water for millions of people, are classified as poor quality.<sup>9</sup> Agricultural runoff, coastal aquaculture, domestic wastewater and industrial effluent contribute to poor water quality in groundwater, coastal and surface water systems.

### Coastal and Marine Resources

Thailand's coastal and marine resources are under increasing pressure from pollution, overfishing and development. Thailand has become one of the world's most important shrimp exporters, based in part on extensive conversion of mangroves to shrimp farming. In addition to destroying coastal ecosystems that provide wildlife habitat and buffers against storms, these farms produce pollutants such as nitrate, phosphate and silicate that are emitted directly into the country's water sources. This discharge of pollutants, along with untreated household sewage from urban centers, is responsible for harmful algal blooms, red tides and oxygen depletions.

Antifouling paints used on vessels also are a source of marine pollution in Thailand. Among these, Tributyltin (TBT) is of particular concern because it is extremely toxic to aquatic life and is an endocrine-disrupting chemical that causes severe reproductive effects in aquatic organisms. TBT is extremely stable and is highly persistent in sediments. Because of its chemical properties and widespread use as an antifouling agent, concerns have been raised over the risks it poses to both freshwater and saltwater organisms. Thailand is committed to restricting the use of TBT and recently hosted a symposium in Bangkok, convened by MONRE, to discuss phasing out the use of TBT and similar compounds.

Over the period 1961 to 2002, the extent of mangrove habitat in Thailand was reduced by more

---

<sup>5</sup> United National Environment Program and World Health Organization (UNEP/WHO): *Urban Air Pollution in Megacities of the World* (1992). Summary available at <http://www.rrcap.unep.org/apeo/Chp1e-air.html>.

<sup>6</sup> See Thailand Environment Monitor 2002: Air quality (available at [www.worldbank.org](http://www.worldbank.org)).

<sup>7</sup> It is estimated that 1,000 vehicles are added to the roads each day. See <http://www.usaep.org/activities/factsheets/thailand.htm> for additional information.

<sup>8</sup> See Thailand Environment Monitor 2001: Water Quality (available at [www.worldbank.org](http://www.worldbank.org)).

<sup>9</sup> See US-AEP at <http://www.usaep.org/activities/factsheets/thailand.htm>

than 40 percent. In addition to conversion to coastal agriculture and aquaculture, other factors in the reduction include population pressure, logging, salt production, tin mining, coastal industrialization and tourism development.<sup>10</sup> Nearly 83 percent of mangrove forests along the Gulf of Thailand have been lost over the past three to four decades. Environmental consequences of the loss of mangroves include: loss of wildlife habitats and biodiversity; coastal erosion; alteration of water drainage patterns; contamination of ground water; acidification; decline in wild shrimp stocks; and introduction of invasive alien species. To help alleviate these problems, the Royal Thai Forest Department has undertaken a Mangrove Rehabilitation Program. In late 2004, a five-year Action Plan for Mangrove Management in the Gulf of Thailand was established with a focus on conservation of existing mangrove habitats and restoration of areas that have been damaged.<sup>11</sup>

Thailand's coral reefs have declined as a consequence of both anthropogenic and natural factors. Sources of damage to reefs include fishing practices, sedimentation, tourism and increases in sea temperatures. In an effort to prevent further degradation, the Thai government has built artificial reefs, limited fishing zones for bottom trawlers to three kilometers from the coastline, enacted controlled catching periods for certain species, prohibited the use of certain types of fishing gear during spawning periods and installed mooring buoys around popular tourist sites. The recent tsunami raised concerns regarding additional physical damage to coral reefs and mangroves and the risk that silt and debris will smother reefs in shallow waters. However, a survey of 174 sites coordinated by Thailand's Department of Marine and Coastal Resources (DMCR) showed that only 13 per cent of the coral reef sites in the Andaman Sea were highly impacted by the tsunami.

### Invasive Alien Species<sup>12</sup>

Invasive alien species (IAS) are a growing environmental concern worldwide, including in Thailand. An inventory of IAS in Thailand identified over 1,500 alien species of animals, plants and microorganisms.<sup>13</sup> These invasions can have significant, negative effects on biodiversity, human health, livelihoods, local cultures and economic activity. As an example, an invasive alien species that has had a major economic impact in Thailand is the Golden Apple or Mulberry snail (*Pomacea canaliculatus*), which was introduced in the 1980s and quickly became the second most serious rice pest. Other examples include invasive aquatic weeds such as water hyacinth (*Eichhornia crassipes*) that clog canals, rivers, and water reservoirs throughout Thailand.

### Wildlife Trade

Trade in wild species of animals and plants is a major threat to the biodiversity of Thailand and surrounding countries. Thailand is an important source, consumer and transit country for trade

---

<sup>10</sup> Thailand Environment Monitor 2004: Biodiversity (available at [www.worldbank.org](http://www.worldbank.org)).

<sup>11</sup> Thailand Environment Monitor 2004: Biodiversity.

<sup>12</sup> See section III.B and annex V for additional information on invasive alien species.

<sup>13</sup> See: <http://www.ftc.agnet.org/library/article/eb544.html> for additional information.

in endangered species and products manufactured from endangered species. Although Thailand became a Party to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) in 1983, illegal wildlife trade has been and continues to be a significant issue in Thailand. As examples, tradable parts and products of several highly endangered species that originate in Thailand include tigers (*Panthera tigris*), Asian elephants (*Elephas maximus*) and crocodiles (*Crocodylus siamensis*).<sup>14</sup>

Thailand has made efforts to address broader issues of wildlife management and trade. Members of the royal family, particularly Queen Sirikit, are dedicated to wildlife conservation. Royal conservation initiatives have included programs for marine turtles,<sup>15</sup> giant clams (Tridacnidae), Asian elephants, and the Inthanon Lady's Slipper orchid (*Paphiopedilum villosum*).<sup>16</sup> Most recently, Thailand has taken important steps to eliminate illegal wildlife trade and to assume a leadership role in combating illegal wildlife trade in the region. During the Thirteenth Meeting of the Conference of the Parties (COP13) of CITES (October 2004), Thailand proposed the formation of the "Southeast Asian Law Enforcement Network to Combat Nature Crimes," which would monitor and strive to prevent illegal wildlife trade through a ASEAN (Association of Southeast Asian Nations)-based regional enforcement network.<sup>17</sup> Bangkok provides a strategic headquarters for the formation of such a regional network as it is the center for the International Criminal Police Organization (Interpol) in Asia. Efforts to form this network are continuing through ASEAN countries with an agreement to expand cooperation and coordination among national agencies involved in wildlife trade law enforcement, including the sharing of intelligence information.<sup>18</sup>

The United States has encouraged and supported Thailand's efforts to combat wildlife trafficking. In October 2005, the United States partnered with the ASEAN countries, China, the CITES Secretariat and WildAid/Traffic to sponsor a workshop to develop an ASEAN wildlife trafficking enforcement network. The United States and these countries will now work to implement the network and to exchange information and experiences on wildlife trafficking in the region. In addition, the United States also recently announced a global coalition to combat wildlife trafficking. The objective of this Coalition Against Wildlife Trafficking (CAWT) is to focus political and public attention on growing threats to wildlife from poaching and illegal trade. The CAWT will focus its initial efforts on Asia.<sup>19</sup>

### Deforestation and Illegal Logging

---

<sup>14</sup> All are listed on CITES Appendix I.

<sup>15</sup> Thai waters have five species of marine turtles, all of which are listed under the U.S. Endangered Species Act: Green turtle [*Chelonia mydas*], Olive Ridley turtle [*Lepidochelys olivacea*], Hawksbill turtle [*Eretmochelys imbricata*], Loggerhead turtle [*Caretta caretta*], and the Leatherback turtle [*Dermochelys coreacea*].

<sup>16</sup> The orchid program is involved in artificial propagation research and plans future commercialization as a source of income for local people, along with reintroductions with the support of the Royal Thai Army, Department of Agriculture, and Chiang Mai University via the Lady's Slipper Conservation Center.

<sup>17</sup> See [http://www.cites.org/eng/news/meetings/cop13/Thai\\_PM\\_open.shtml](http://www.cites.org/eng/news/meetings/cop13/Thai_PM_open.shtml) for additional information.

<sup>18</sup> See <http://www.aseansec.org/16470.htm>.

<sup>19</sup> See <http://www.state.gov/r/pa/prs/ps/2005/53926.htm> for additional information.

Deforestation (conversion of forests to other land uses) and forest degradation have significantly reduced the extent and the quality of Thailand's forest resources. Although Thailand was once renowned as a source of teak and other high quality tropical timber species, sustained high rates of deforestation have reduced forests to one-third or less of the land area (as compared to more than 50 percent of the land area in 1961). In an effort to protect native forests, a logging ban was enacted in 1989. Although some logging in violation of the ban continues, most violations are relatively localized and many violators are caught and prosecuted. The ban has been effective in nearly eliminating harvesting in native forests. Forest products industries in Thailand now rely on plantations for nearly all wood raw material, and Thailand's forest policy has a goal of substantially increasing forest area.

The number and area of national parks and other types of protected areas in Thailand has increased since the early 1990s, one indication of an institutional shift away from commercial management and towards forest protection in the native forest areas.<sup>20</sup> Nevertheless, deforestation is a continuing threat to forests and forest-dependent species.

#### NGOs, Public Involvement and Decentralization

Environmental, non-governmental organizations (NGOs) have a significant presence in Thailand and continue to increase their membership and influence on environmental policies. In general, support for these organizations is from both local and international donors. The United States-Asia Environmental Partnership has been directly engaged in expanding the role of public participation in environmental decision-making.<sup>21</sup> With a new constitution that mandates improved environmental governance, Thailand is currently implementing a Decentralization Action Plan which proposes transferring functions, budget, and personnel from the central government to nearly 8,000 local governments. Goals include decentralizing processes for environmental decision-making and increasing public participation.

### **C. United States – Thailand Goods Trade**

In 2004, two-way goods trade between the United States and Thailand was \$23.9 billion, accounting for 0.8 percent of total U.S. exports and about 1.2 percent of total U.S. imports (see table 5, annex V). U.S. goods exports to Thailand were \$6.4 billion, making Thailand the 23<sup>rd</sup> largest market for U.S. exporters. The largest categories of U.S. exports were electrical machinery, agricultural products, optic and medical instruments, plastic and organic chemicals. Thailand was the 16<sup>th</sup> largest supplier of goods to the United States. U.S imports from Thailand totaled \$17.6 billion in 2004. The largest categories of U.S. imports from Thailand were electrical machinery, machinery, precious stones and metals, agricultural products and apparel. With the exception of footwear and textiles and apparel, average U.S. tariffs on most imports

---

<sup>20</sup> See tables 3 and 4, annex V for additional information.

<sup>21</sup> See [http://www.usaep.org/downloads/Thailand\\_Ftsheet.pdf](http://www.usaep.org/downloads/Thailand_Ftsheet.pdf) for additional information.

from Thailand are already relatively low (see table 6, annex V). Trade in services with Thailand (exports and imports) totaled \$1.8 billion in 2003 (the most recent data available).

More than half of United States-Thailand goods trade enters or exits the United States through West Coast ports (see tables 7 and 8, annex V). This trade is even further concentrated: measured by value, over 32 percent of U.S. goods imports from Thailand and nearly 30 percent of U.S. goods exports to Thailand pass through the Los Angeles Customs District (LACD), which includes the ports of Los Angeles and Long Beach. LACD is the nation's largest customs district, whether measured by trade value or number of containers handled.<sup>22</sup> The Los Angeles/Long Beach port complex is the fifth largest port in the world.

In 2004, Thailand was the 7<sup>th</sup> largest trading partner for the LACD, with total trade valued at \$7.59 billion. Thailand was the 7<sup>th</sup> largest source of imported goods (\$5.7 billion) and the 10<sup>th</sup> largest destination for goods exports (\$1.89 billion) for LACD. Measured by value, the majority (86 percent) of LACD goods imports from Thailand in 2004 arrived via maritime vessels; in contrast, slightly more than 50 percent of goods exports to Thailand from LACD were shipped via maritime vessels. The remainder, roughly 45 percent by value, was shipped by air.<sup>23</sup>

#### **D. U.S. Objectives in the Proposed Free Trade Agreement**

An FTA with Thailand would advance President Bush's Enterprise for ASEAN Initiative (EAI), under which we are working to enhance our trade and economic ties to ASEAN countries. A United States-Thailand FTA also would encourage greater liberalization of foreign investment between the United States and Thailand. The United States already is the second largest investor in Thailand and an FTA would build upon the United States-Thailand Treaty of Amity and Economic Relations. An FTA will encourage continued trade and investment liberalization, economic and regulatory reform, high standards of intellectual property protection, transparency, and the rule of law.

A United States-Thailand FTA would boost trade in a wide range of both goods and services, enhancing employment opportunities in both countries. An FTA would level the playing field for U.S. exports from two perspectives. Thailand is eligible for favorable tariff treatment under the Generalized System of Preferences (GSP) and many of Thailand's products already enter the United States with relatively low duties.<sup>24</sup> An FTA would give U.S. exports comparable treatment to that which Thailand affords goods from its ASEAN and other preferential trading

---

<sup>22</sup> Expansion of U.S. imports from China accounts for a significant share of the total (40 percent of all imports into LACD) and most of recent growth in goods trade at LACD. The value of imports from China handled by LACD was \$80 billion in 2004, up 26 percent from 2003.

<sup>23</sup> All data are from Los Angeles County Economic Development Corporation, "International Trade Trends and Impacts: The Southern California Region", May 2005 (see <http://www.laedc.org/data/index.shtml> for additional information).

<sup>24</sup> See table 6, annex VII for information on U.S. imports and duties collected. Additional information on the GSP program is available at [http://www.ustr.gov/Trade\\_Development/Preference\\_Programs/GSP/Section\\_Index.html](http://www.ustr.gov/Trade_Development/Preference_Programs/GSP/Section_Index.html).

partners. An FTA would also create opportunities for U.S. manufacturers and service suppliers in a wide range of sectors, including information technology, telecommunications, financial services, audiovisual, automotive and medical and other equipment.

As set forth in the notification letters to Congress, the Administration's specific objectives for negotiations with Thailand are as follows:

· *Trade in Goods:*

- Seek to eliminate tariffs and other duties and charges on trade between Thailand and the United States on the broadest possible basis, subject to reasonable adjustment periods for import-sensitive products.
- Seek to eliminate non-tariff barriers in Thailand to U.S. exports, including permit and licensing barriers on agricultural and other products, restrictive administration of tariff-rate quotas, unjustified trade restrictions that affect new U.S. technologies, and other trade restrictive measures that U.S. exporters identify.
- Seek to eliminate government practices that adversely affect U.S. exports of perishable or cyclical agricultural products, while improving U.S. import relief mechanisms as appropriate.
- Pursue a mechanism with Thailand that will support achieving the U.S. objective in the WTO negotiations of eliminating all export subsidies on agricultural products, while maintaining the right to provide *bona fide* food aid and preserving U.S. agricultural market development and export credit programs.
- Pursue fully reciprocal access to Thailand market for U.S. textile and apparel products.

· *Customs Matters, Rules of Origin, and Enforcement Cooperation:*

- Seek rules to require that Thailand's customs operations are conducted with transparency, efficiency, and predictability, and that customs laws, regulations, decisions, and rulings are not applied in a manner that would create unwarranted procedural obstacles to international trade.
- Seek rules of origin, procedures for applying these rules, and provisions to address circumvention matters that will ensure that preferential duty rates under an FTA with Thailand apply only to goods eligible to receive such treatment, without creating unnecessary obstacles to trade.
- Seek terms for cooperative efforts with Thailand regarding enforcement of customs and related issues, including in the area of trade in textiles and apparel.

- *Sanitary and Phytosanitary (SPS) Measures:*
  - Seek to have Thailand reaffirm its WTO commitments on SPS measures and eliminate any unjustified SPS restrictions.
  - Seek to strengthen collaboration with Thailand in implementing the WTO SPS Agreement and to enhance cooperation with Thailand in relevant international bodies on developing international SPS standards, guidelines, and recommendations.
- *Technical Barriers to Trade (TBT):*
  - Seek to have Thailand reaffirm its WTO TBT commitments and eliminate any unjustified TBT measures.
  - Seek to strengthen collaboration with Thailand in implementing the WTO TBT Agreement and create a procedure for exchanging information with Thailand on TBT-related issues.
- *Intellectual Property Rights:*
  - Seek to establish standards to be applied in Thailand that build on the foundations established in the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights and other international intellectual property agreements, such as the World Intellectual Property Organization (WIPO) Copyright Treaty, the WIPO Performances and Phonograms Treaty, and the Patent Cooperation Treaty.
  - In areas such as patent protection and protection of undisclosed information, seek to have Thailand apply levels of protection and practices more in line with U.S. law and practices, including appropriate flexibility.
  - Seek to strengthen Thailand's laws and procedures to enforce intellectual property rights, such as by ensuring that Thai authorities seize suspected pirated and counterfeit goods, equipment used to make such goods or to transmit pirated goods, and documentary evidence.
  - Seek to strengthen measures in Thailand that provide for compensation of right holders for infringements of intellectual property rights and to provide for criminal penalties under Thai law that are sufficient to have a deterrent effect on piracy and counterfeiting.
- *Trade in Services:*
  - Build upon rights in the United States - Thailand Treaty of Amity and Economic Relations to develop broader disciplines to address discriminatory and other barriers to trade in Thailand's services markets. Seek improved transparency and

predictability of Thai regulatory procedures, specialized disciplines for financial services, and additional disciplines for telecommunications and other sectors as necessary.

- Pursue a comprehensive approach to market access, including any necessary improvements in access to the telecommunications, financial services, professional services, or other sectors.

*Investment:*

- Seek to establish rules that reduce or eliminate artificial or trade-distorting barriers to U.S. investment in Thailand, while ensuring that Thai investors in the United States are not accorded greater substantive rights with respect to investment protections than U.S. investors in the United States, and to secure for U.S. investors in Thailand important rights comparable to those that would be available under U.S. legal principles and practice.
- Seek to ensure that U.S. investors receive treatment as favorable as that accorded to domestic or other foreign investors in Thailand and retain the preferences they currently receive under the U.S.-Thai Treaty of Amity and Economic Relations and to address unjustified barriers to the establishment and operation of U.S. investments in Thailand. Provide procedures to resolve disputes between U.S. investors and the Government of Thailand that are in keeping with the Trade Promotion Authority goals of being expeditious, fair, and transparent.

*Electronic Commerce:*

- Seek to have Thailand affirm that it will allow U.S. goods and services to be delivered electronically to its market and to ensure that Thailand does not apply customs duties to digital products or unjustifiably discriminate among products delivered electronically.

*Government Procurement:*

- Seek to establish rules requiring government procurement procedures and practices that are fair, transparent, and predictable for suppliers of U.S. goods and services that seek to do business with Thailand, and that ensure that U.S. suppliers receive treatment as favorable as that accorded to domestic or other foreign suppliers in Thailand.
- Seek to expand access for U.S. goods and services to Thailand's government procurement market.

*Transparency/Anti-Corruption/Regulatory Reform:*

- Seek to make Thailand's administration of its trade and investment regime more transparent, and pursue rules that will permit timely and meaningful public comment before Thailand adopts trade-and investment-related measures.
- Seek to eliminate Thailand's government regulations or other measures that discriminate against or deny full market access for U.S. exporters or investors.
- Seek to ensure that Thailand applies high standards prohibiting corrupt practices affecting international trade and investment and enforces such prohibitions.
- *Competition:*
  - Address possible issues involving competition-related matters, if appropriate.
- *Trade Remedies:*
  - Provide a safeguard mechanism during the transition period to allow a temporary revocation of tariff preferences if increased imports from Thailand are a substantial cause of serious injury or threat of serious injury to the domestic industry.
  - Make no changes to U.S. antidumping and countervailing duty laws.
- *Environment:*
  - Seek to promote trade and environment policies that are mutually supportive.
  - Seek an appropriate commitment by Thailand to effectively enforce its environmental laws.
  - Establish that Thailand will strive to ensure that it will not, as an encouragement for trade or investment, weaken or reduce the protections provided for in its environmental laws.
  - Help Thailand strengthen its capacity to protect the environment through the promotion of sustainable development, such as by establishing consultative mechanisms.
- *Labor, including Child Labor:*
  - Seek an appropriate commitment by Thailand to effectively enforce its labor laws, particularly those relating to internationally-recognized labor rights and prohibiting the worst forms of child labor.
  - Establish that Thailand will strive to ensure that it will not, as an encouragement for trade or investment, weaken or reduce the protections provided for in its labor laws.

- Based upon review and analysis of Thailand's labor law and practices, establish procedures for consultations and cooperative activities with Thailand to strengthen its capacity to promote respect for core labor standards, including compliance with ILO Convention 182 on the worst forms of child labor.

*State-to-State Dispute Settlement:*

- Encourage the early identification and settlement of disputes through consultation.
- Seek to establish fair, transparent, timely, and effective procedures to settle disputes arising under the agreement.

In addition, the FTA is taking into account other legitimate U.S. objectives including, but not limited to, the protection of health, safety, environment, and essential security and consumer interests.

### **III. SCOPE OF THE ENVIRONMENTAL REVIEW**

To determine the scope of this review, the Administration considered information provided by the public, advice of USTR's advisory committee on trade and environment issues, the Trade and Environment Policy Committee (TEPAC), and input from environmental, trade and investment experts within federal agencies. In addition to providing guidance on the scope of the environmental review, any information, analysis, and insights available from these sources are being taken into account throughout the negotiating process and are considered in developing U.S. negotiating positions. As envisaged by the guidelines, environmental reviews are an ongoing process to examine environmental issues and inform the negotiating process. This document describes the results of this process at this interim stage.

Section III.A describes the process used to solicit comments and advice on the scope of the environmental review, including a summary of the comments received. Section III.B discusses the possible direct impacts of the United States-Thailand FTA on the U.S. environment resulting from prospective changes in the U.S. economy. Section III.C describes a number of environmental issues associated with possible transboundary effects of the United States-Thailand FTA. Although possible domestic impacts are the primary concern of this environmental review, global and transboundary impacts are to be considered as appropriate and prudent.<sup>25</sup> Section III.D considers the extent to which the United States-Thailand FTA might affect U.S. environmental laws, regulations, policies and/or international commitments.

#### **A. Public Outreach and Comments**

---

<sup>25</sup> See section I.B, above.

This review was formally initiated by publication of a notice in the *Federal Register*, which requested public comment on the scope of the review (see 69 *Fed. Reg.* 19263; April 12, 2004). A notice in the *Federal Register* also requested public comments on the overall negotiation and announced a public hearing on the proposed FTA (see 69 *Fed. Reg.* 9419, February 27, 2004). Comments and testimony addressing environmental issues received in response to that notice were taken into account in the preparation of this Interim Review.

Two written comments were received regarding the scope of the environmental review of the United States–Thailand FTA (see annex I for a list of organizations that provided comments). One comment drew attention to forestry concerns in Thailand and noted that a United States–Thailand FTA provided opportunities to take steps toward eliminating illegal logging and unsustainable forestry practices and promoting enforcement of domestic environmental laws. A second comment drew attention to sugar production in the United States and Thailand, noting differences in environmental standards and enforcement and requesting that sugar be excluded from market access negotiations.

## **B. Potential Economically Driven Environmental Impacts**

Thailand is an important market for some U.S. producers and exporters, but the impact of the United States Thailand FTA on total U.S. production through changes in U.S. exports appears likely to be very small. Exports to Thailand currently account for less than one percent of total U.S. exports (see table 5, annex VII) and a very small portion of total U.S. production. Even if significant increases in U.S. goods exports to Thailand are a result of the FTA, associated increases in U.S. production will represent a very small change in the aggregate U.S. economy. Although small changes in production and exports in environmentally-sensitive sectors could provide a basis for concern regarding the United States-Thailand FTA's direct environmental effects in the United States, no basis for such concerns was identified in interagency analysis. However, we identified two specific concerns for further analysis: the potential for increases in trade to contribute to localized impacts at selected U.S. maritime ports; and the potential for increased risk of introduction of invasive alien species. These potential impacts are discussed below and additional information is provided in annexes IV and V.

Liberalization of services can be expected to have an economic impact in the United States although here, too, the effect of the United States-Thailand FTA is likely to be small, and we could not identify any environmentally sensitive sectors in the United States likely to be affected by such impacts. The United States already allows substantial access to foreign service providers, including in environmentally sensitive areas (*e.g.*, tourism, maritime shipping and services incidental to energy distribution).

### *Port-Related Environmental Issues*

Air and water pollution at maritime ports results from the concentration and cumulative effects of emissions from ships, trucks, trains and goods-moving equipment associated with

international trade.<sup>26</sup> In addition to air and water pollution, other environmental concerns associated with ports include: degradation or loss of wildlife habitat; introduction of invasive alien species; and land use conflicts associated with dredging and port expansion. Increased United States-Thailand goods trade associated with the FTA may contribute to some of these negative environmental impacts at selected U.S ports.

As discussed in Section II.C, roughly one third of all United States-Thailand goods trade (imports and exports) passes through the ports of Los Angeles and Long Beach (LACD).<sup>27</sup> However, although United States-Thailand goods trade is relatively concentrated at these ports, this trade currently accounts for only a small share—about three percent—of total trade through the LACD.<sup>28</sup> The ports and surrounding communities experience environmental problems associated with existing volumes of cargo and the cumulative effects of pollution, notably air pollution. To the extent that United States -Thailand goods trade remains concentrated at southern California ports, increases in trade associated with the FTA may contribute to environmental concerns associated with trade-related goods movement. The Administration welcomes public comment on this issue.

### *Invasive Alien Species*

Public comments and interagency analysis identified invasive alien species as an environmental concern related to the FTA.<sup>29</sup> Commodity trade can provide pathways for invasive alien species, and the introduction of invasive alien species can result in harmful effects on the environment and economy of the host country. Differences in climate and ecological conditions between the United States and Thailand reduce, to some extent, U.S. vulnerability to the establishment and spread of invasive alien species. Nevertheless, to the extent that the FTA stimulates increases in trade along known pathways for invasive alien species, there is an increased risk of movement of invasive alien species between Thailand and the United States. The United States and Thailand already face and recognize risks associated with invasive alien species and have taken corresponding action (see below).<sup>30</sup>

Trade-related pathways for invasive alien species include the methods used to transport commodities (for example, in the ballast water or on the hulls of cargo ships), the transport of

---

<sup>26</sup> Annex IV provides additional information on port-related environmental issues.

<sup>27</sup> See table 7, annex VII).

<sup>28</sup> These ports are the largest in the United States and accounted for about 40 percent of total U.S. seaborne imports (235.7 million metric tons) in 2004. As discussed above (see section II.C and note 20), U.S.-China goods trade accounts for about 40 percent of LACD trade.

<sup>29</sup> The term “invasive alien species” refers to species not native to a particular ecosystem that are intentionally or unintentionally introduced as a result of human activities and cause, or are likely to cause, harm to ecosystems, economic systems or human health. See annex V for additional information.

<sup>30</sup> For the United States, Executive Order 13112 (February 3, 1999) established the Invasive Species Council and commits federal agencies to conducting research on invasive alien species issues, taking reasonable actions to discourage the introduction of these species into the United States and elsewhere and to undertaking international cooperation aimed at addressing this issue.

products and packaging that contain potentially invasive organisms (for example, grains that contain weed seeds) and the possibility that the traded goods themselves will become invasive alien species. Some invasive alien species are introduced in the form of ornamental plants, aquarium fish, or through other commonly traded products. Invasive alien species can also be introduced through tourism.<sup>31</sup> The risk of introduction of invasive alien species is difficult to quantify and is highly variable.

An examination of relevant data sources reveals previous examples of unwanted biological invasions between the United States and Southeast Asia and an ongoing risk of exchange of new invasive alien species. For example, the Global Invasive Species Database<sup>32</sup> maintained by the Invasive Species Specialist Group of the World Conservation Union (IUCN) lists several species that are invasive in the United States and originate in Southeast Asia. One particular example is the walking catfish (*Clarias batrachus*), which has become a pest in Florida by invading aquaculture ponds and preying on fish stocks. A database on nonindigenous aquatic species maintained by the U.S. Geological Survey catalogues the presence in U.S. territory of seventeen species native to Southeast Asia.<sup>33</sup> While it is unknown whether the U.S. populations came from Thailand, all are native to Thailand and therefore illustrate, to some extent, the risk of new introductions. Examples of known invasives include a number of aquarium fish as well as several species known to be especially troublesome invaders, such as snakeheads, the Asian swamp eel and the Burmese python.

Thailand is an exporter to the United States of certain categories of products associated with a relatively higher risk of becoming invasive alien species, including ornamental fish. Some non-living products in bilateral trade (for example, processed wood products) and packing materials used for a wide variety of traded goods also may pose a risk as a consequence of their possible role as a vector for insects. Therefore, with any level of trade there is a continuing risk that invasive alien species may move between Thailand and the United States. Experience with species that may have already moved between the two countries demonstrates that the possible economic and ecological consequences are quite variable and difficult to quantify but potentially significant.

The FTA's incremental effect on these risks also is difficult to quantify, but appears to be small.<sup>34</sup> The FTA will not require alteration to either country's regulatory framework for combating the introduction of invasive alien species. The FTA also will not require alteration to related regulations, such as those prohibiting or regulating agricultural and other trade for the purpose of protecting against the introduction of agricultural pests or diseases. At the same time,

---

<sup>31</sup> For the period 2000-2006, a significant share of plant interceptions from Thailand occurred in APHIS inspections of personal baggage at airport points of entry to the United States.

<sup>32</sup> See <http://www.issg.org/database/welcome/> for additional information.

<sup>33</sup> For additional information, see: <http://nas.er.usgs.gov>.

<sup>34</sup> Our analysis is inconclusive on whether the FTA, through its potential to increased trade, increases the risk of harmful introductions or, through cooperation and consultation, decreases risks associated with invasive alien species. See annex V for additional information on invasive alien species.

the FTA also offers opportunities to enhance United States-Thailand cooperation to monitor, prevent or control invasive alien species through new bilateral coordinating mechanisms.<sup>35</sup> The Administration welcomes public comments on these preliminary findings.

### **C. Transboundary and Global Issues**

While the environmental impacts of expected economic changes in the United States attributable to the United States-Thailand FTA are expected to be minimal, the Administration examined a large number and wide variety of environmental issues with potential global and transboundary impacts in determining the scope of this review. These were provisionally identified through public comments in response to a notice in the Federal Register (see section III.A) and through an open-ended scoping process among agencies with environment, trade and economic expertise.

We subsequently eliminated topics from further and more detailed analysis when initial findings revealed that there was no identifiable link to the United States-Thailand FTA. The following topics warranted further consideration.

#### **1. Economically Driven Environmental Effects in Thailand**

As compared to its effects in the United States, the United States–Thailand FTA may have relatively greater impacts on the economy of Thailand and, through those impacts, effects on their environment. Although net changes in Thailand’s trade and production are difficult to predict, the importance of trade to Thailand’s economy and the importance of the United States as a trading partner suggest that there may be economically driven environmental effects in Thailand.<sup>36</sup>

To the extent that the FTA has significant effects on the Thai economy, over time, the environmental effects may be both positive and negative. The FTA may further increase investment, trade and production, which may be associated with further pressure on the environment. On the other hand, some new investment may bring environmentally-beneficial technologies and production methods as well as higher standards for private sector environmental performance. In addition, proposed commitments in the FTA, such as those to effectively enforce environmental laws, are likely to have a positive effect, especially when coupled with capacity-building and environmental cooperation activities. The FTA also is likely to contribute to increases in per capita income and, through this, to greater demand for environmental regulation.<sup>37</sup> The Administration continues to examine the scale and importance of these possible effects and invites public comments on these issues.

#### **2. Wildlife Trade**

---

<sup>35</sup> See section IV for discussion of the environmental cooperation mechanism that is expected to be part of the FTA.

<sup>36</sup> Thailand is conducting a review of environmental issues associated with the FTA.

<sup>37</sup> Higher levels of income are typically associated with greater demand for environmental protection.

Wildlife trade, including illegal trade in endangered species, is a serious concern in Thailand. Thailand has well-established domestic markets for wild animals and plants that are used for food, traditional medicines and crafts, and commercial purposes including restaurants, pet trade, and religious ceremonies. Thailand also exports wild plants and animals throughout Asia and serves as a regional hub for both legal and illegal wildlife trade.<sup>38</sup>

As an example, demand for traditional medicines, food and raw material for manufactured products contribute to Thailand's trade in certain reptiles (snakes, freshwater and terrestrial turtles, and lizards). Trade, both legal and illegal, is the major threat for most species of freshwater and terrestrial turtles in Southeast Asia.<sup>39</sup> The United States imports medicinal "turtle jelly" that is manufactured in China from turtle shells, many of which are illegally harvested and exported from Thailand.<sup>40</sup> Although Thailand has traditionally been an exporter of many of these species, its continuing role in the terrestrial and freshwater turtle trade is uncertain due to declining domestic turtle populations.

CITES is designed to provide for cooperation to prevent international trade from threatening the survival of threatened and endangered plants and animals. CITES is implemented by Parties through domestic laws and regulations and both the United States and Thailand are Parties to CITES. In the United States, CITES is implemented through the Endangered Species Act of 1973 (ESA); the ESA provides protection that goes beyond obligations under CITES including, in some cases, for species with ranges outside the United States. Although Thailand has historically faced challenges in CITES implementation, considerable efforts have been made in the recent past to effectively enforce CITES requirements. Thailand is now listed as "Category 1" in the CITES National Legislation Project, a designation that recognizes that Thailand has legislation in place to adequately implement the text of the Convention.<sup>41</sup>

The majority of wild plant and animal trade between the United States and Thailand is in non-CITES-listed tropical fish for the pet trade.<sup>42</sup> Other types of wildlife in bilateral trade include non-CITES marine shell products, CITES Appendix II reptile skins and skin products, non-CITES reptile skins and skin products and small amounts of non-CITES and CITES Appendix II dried/mounted butterflies and live wildlife (birds, reptiles, etc.) for the pet trade.<sup>43</sup>

With few exceptions, current U.S. tariffs on wild plants and animals imported from Thailand are already low or zero; therefore, the FTA is not likely to cause an increase in wildlife trade. Given

---

<sup>38</sup> See section II.B and annex VI for additional information on Thailand's wildlife trade.

<sup>39</sup> TRAFFIC, Asian Turtle Trade Working Group, Conclusions from the Workshop on Trade in Tortoises and Freshwater Turtles in Asia, <http://www.traffic.org/turtles/> (visited May 3, 2005).

<sup>40</sup> From 1997-2001, the United States imported approximately 500 metric tons of turtle jelly via this trade route (USFWS, LEMIS data).

<sup>41</sup> See [www.cites.org](http://www.cites.org) for additional information.

<sup>42</sup> It is important to note that some of these tropical fish could later become invasive if released into U.S. ecosystems.

<sup>43</sup> Based on U.S. Fish and Wildlife Service review of wildlife trade records.

the legal protections for wildlife and endangered species in place in both the United States and Thailand, the FTA appears unlikely to contribute to an increase in illegal trade of wildlife or endangered species. Instead, the FTA may help to reduce illegal trade by facilitating exchange of information about patterns of legal trade and potential or actual problems with illegal wildlife trade. Proposed provisions related to customs cooperation have the potential to enhance cooperation on a variety of trade-related matters, including cooperation relevant to combating illegal wildlife trade and enhancing CITES enforcement. We invite public comment on these preliminary findings.

### **3. Coastal Habitats and Marine Migratory Species**

Thailand provides critical habitats for migratory marine species of importance to the United States. Coastal and marine ecosystems in this region are rich in biological diversity and living marine resources and are habitats for migratory shorebirds and sea turtles. As described above (see section II.B), many of these ecosystems are threatened by a variety of factors, including exploitation, development and pollution. Over the last four decades, the development of shrimp aquaculture in Thailand has been a significant contributor to conversion of mangrove forests and destruction of coastal habitats.

Currently, green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricate*), olive ridley (*Lepidochelys olivacea*) and leatherback (*Dermochelys coriacea*) turtles are found in Thai waters. Loggerhead turtles (*Caretta caretta*) are found occasionally in the Gulf of Thailand, but believed to be largely extirpated from elsewhere in Thailand. Green, hawksbill, olive ridley and leatherback turtles are found along the coastline and islands of the Gulf of Thailand and Andaman Sea. The predominant nesting site for green and hawksbill turtles in the Gulf are Khram and adjacent Islands in the inner Gulf, Chonburi Province. On the Andaman Coast of Thailand, sea turtle nesting areas are predominantly on the west coast of Phuket and Phang-nga provinces. The December 2004 tsunami caused extensive erosive damage to the Mai Khao turtle nesting beach in Phuket. The primary threats to sea turtles in Thailand include development of nesting beaches for tourism, incidental bycatch in shrimp/fish trawls and push nets and poaching.

Thailand is working to reduce the impact of tourism development on turtle nesting beaches. RTG's efforts to protect and enhance turtle populations include National Marine Parks, as well as areas controlled by the Department of Fisheries and use of the Royal Thai Navy to protect vital nesting sites. However, increased trade and tourism could result in increased pressure to further develop beaches thus encroaching further on nesting beaches for turtles. On the other hand the presence of turtles could conceivably be an incentive for appropriately managed tourism. Recent cooperation activities have included turtle conservation projects (see annex II).

The tariff provisions of the FTA are not expected to have direct, significant effects on products whose production methods currently affect coastal habits because U.S. tariffs on these products are already zero or very low. The longer-term economic and environmental effects of the FTA, for example through investment, are more difficult to identify and assess. Nevertheless, the

FTA may provide a number of opportunities to address concerns related to coastal ecosystems, including mangrove habitats. One such opportunity is cooperation associated with implementation of the International Wetlands Convention (Ramsar).

The United States and Thailand are parties to Ramsar which has urged its parties to suspend the promotion and creation of new facilities and expansion of unsustainable aquaculture activities harmful to coastal wetlands until environmental and social impact of such activities are determined and measures can be enacted to establish a sustainable system of aquaculture.<sup>44</sup> The FTA, through its environmental cooperation activities, provides a basis for enhancing implementation of Ramsar and augmenting these efforts through environmental cooperation activities (see section IV).

FTA provisions proposed in the environment chapter, such as the commitment to effectively enforce environmental laws, also can provide the basis for strengthened enforcement of relevant environmental laws, better public understanding and more active public participation in the development of relevant laws and standards and enhanced compliance. The Administration welcomes public comments on these preliminary conclusions.

#### **4. Shrimp/Turtle**

Seven species of sea turtles are currently included on CITES Appendix I, and all appear in the World Conservation Union Red Data List of threatened species where two species are listed as critically endangered.<sup>45</sup> All sea turtles, except the flatback sea turtle, are protected by the U.S. Endangered Species Act. Sea turtles have been affected by a variety of human activities (exploitation for their shells, meat and eggs, as well as being affected by sea pollution), but one of the main threats to their survival is incidental mortality in nets used by shrimp trawlers. In response, the U.S. Government issued voluntary guidelines in 1987 and, subsequently, a mandatory requirement that domestic shrimp trawlers use turtle-excluder devices (TEDs) in their nets. These devices allow larger animals to escape the nets and significantly reduce turtle mortality in shrimp fishing. Starting in 1989, the United States extended turtle conservation efforts to include other shrimp-producing countries with the objective of reducing incidental mortality to rates comparable to those of the U.S. domestic fishery.

Recognizing that shrimp trawl fishing poses threats to sea turtles, Section 609 of Public Law 101-162 prohibits the importation of shrimp or shrimp products which have been harvested with commercial fishing technology which may adversely affect sea turtles. The import prohibition does not apply to imports of shrimp and shrimp products from certified countries or from areas where the incidental taking of sea turtles is not a threat. The Department of State makes annual certifications to the Congress of countries that meet the requirements of Section 609 in terms of sea turtle protection for commercial shrimp trawl fisheries. The standard for

---

<sup>44</sup> See Ramsar Resolution VII.21 (available at [http://www.ramsar.org/key\\_res\\_vii.21e.htm](http://www.ramsar.org/key_res_vii.21e.htm)).

<sup>45</sup> See <http://www.iucnredlist.org/> for additional information.

certification is that the country's sea turtle protection program is comparable in effectiveness to the program in effect in the United States.

Certification decisions are based in part on bi-annual verification visits to observe compliance and enforcement that are conducted by Department of State and National Marine Fisheries Service personnel. Meeting the standard for certification requires a country to adopt a regulatory program for the mandatory use of TEDs, including the development of a credible enforcement program to ensure the use of the devices, or adoption of a program governing the incidental taking of sea turtles that is of comparable effectiveness to the TEDs-based program in effect in the United States.<sup>46</sup> Although Thailand enacted TED regulations in 1997, Thailand has not received certification under Section 609 as a consequence of concerns over the effectiveness of the enforcement program.

The provisions of the proposed FTA will not affect the trade restriction included in Section 609, or the manner in which the Department of State assesses and makes decisions on the effectiveness of foreign governments in their implementation and enforcement of their domestic laws related to protection of sea turtles. The FTA is expected to provide opportunities to reinforce efforts to protect turtles through proposed obligations to effectively enforce environmental laws and through environmental cooperation activities. The Administration welcomes public comments on these preliminary conclusions.

## **5. Environmental Goods and Services**

Increased trade in environmentally beneficial goods and services represents an opportunity for positive environmental impacts resulting from the United States-Thailand FTA. Environmental goods and services include a wide variety of service and technologies relevant to, for example, pollution control and waste management and natural resource protection. Thailand is an increasingly important market for U.S. exports of environmental goods and services, although high tariffs on many environmental goods limit opportunities for U.S. exporters and restrict Thailand's access to potentially beneficial goods and services.<sup>47</sup>

Existing environmental challenges in Thailand (see section II.B) as well as prospective economic growth should lead to increased demand for environmental infrastructure projects and related consulting, engineering, testing, and other services. Thailand's proposed services commitments in ongoing WTO negotiations and potentially in this FTA should afford it greater access to U.S. environmental technologies and hence the potential for enhanced environmental protection at lower cost with greater choice among technologies. Therefore, the FTA's provisions regarding environmental services should have a positive environmental impact in Thailand and the surrounding region. The Administration welcomes comments on this preliminary assessment.

---

<sup>46</sup> Additional information is available at: <http://www.state.gov/r/pa/prs/ps/2004/32529.htm>.

<sup>47</sup> Thailand's environmental technologies market was estimated to be \$550 million in 2003; in 2004, Thailand was the eighteenth largest export destination for U.S. environmental goods.

#### **D. Potential Regulatory Impacts**

Consistent with EO 13141 and its Guidelines, this review includes consideration of the extent to which the United States-Thailand FTA might affect U.S. environmental laws, regulations, policies and/or international commitments. Thai FTA negotiators are aware of the need to preserve the U.S. government's ability to maintain strong environmental laws and regulations and an effective process for enforcing them. As the FTA negotiations proceed, negotiators will continue to focus on this important objective.

Within the realm of FTA obligations, those related to services, SPS measures and TBT can have particular significance for domestic regulatory practices concerning the environment, health and safety. Previous environmental reviews, including the preliminary and final reviews for the Jordan, Chile, Singapore and Dominican Republic-Central America FTAs, have considered potential impacts on the U.S. regulatory regime with respect to all of these obligations and have found that the respective trade agreements were not anticipated to have a negative impact on U.S. legal or regulatory authority or practices. Further, in all cases, the reviews noted the potentially positive impact that the FTAs could have on the U.S. environmental regulatory regime as a result of FTA commitments to effectively enforce U.S. environmental laws, not to weaken U.S. environmental laws to attract trade or investment and to ensure that U.S. environmental laws and policies provide for high levels of environmental protection.

Based on this previous analysis, and assuming that the core obligations in these areas will be similar to those undertaken in the previous FTAs,<sup>48</sup> the Administration does not expect that the United States-Thailand FTA will have a negative impact on the ability of U.S. government authorities to enforce or maintain U.S. environmental laws or regulations. For a more in depth analysis of general FTA commitments and their potential regulatory impacts in the United States, please see the preliminary and final reviews for Jordan, Chile, Singapore and Dominican Republic-Central America FTAs at [http://www.ustr.gov/Trade\\_Sectors/Environment/Section\\_Index.html](http://www.ustr.gov/Trade_Sectors/Environment/Section_Index.html). We welcome comments on this preliminary finding.

#### **Investment**

FTA investment provisions, in particular, were a matter of intense debate during Congress' consideration of the Trade Act. The central question was the appropriate balance that should be struck between protecting the rights of U.S. investors abroad and preserving the ability of the federal government and state and local governments to regulate with respect to health, safety and the environment. The Trade Act strikes this balance in the negotiating objectives it established with respect to the substantive investment provisions of particular concern (notably provisions

---

<sup>48</sup> Text of recent FTAs is available on the USTR website at [http://www.ustr.gov/Trade\\_Agreements/Bilateral/Section\\_Index.html](http://www.ustr.gov/Trade_Agreements/Bilateral/Section_Index.html)

on expropriation and “fair and equitable treatment”) and the procedures for resolving disputes between Parties and investors (the investor-State dispute settlement mechanism).

Following TPA guidance, and after consultations with interested stakeholders, the Administration has included in Investment Chapters of previous FTAs, including the Chile, Singapore, Morocco and Dominican Republic-Central America FTAs, a number of substantive and procedural provisions that balance protections for investors with the ability to regulate with respect to health, safety and the environment. A fuller discussion of these and other relevant investment provisions and their potential impact on the ability to regulate with respect to environmental matters is provided in final environmental reviews of recent FTAs including the United States-Morocco FTA and the Dominican Republic-Central America-United States FTA.<sup>49</sup>

The Administration is seeking similar provisions in the United States-Thailand FTA, including: provisions on expropriation and minimum standard of treatment (“fair and equitable treatment”) that take into account regulatory concerns; provisions to increase transparency in the investor-State dispute settlement mechanism; provisions to discourage frivolous investor-State claims; and provisions to promote the consistency and coherence of investor-State arbitral decisions. Based on the previous analysis, and assuming that the United States-Thailand FTA contains provisions similar to the previous FTAs, we do not expect that the FTA will result in a significant potential for negative impacts on U.S. environmental measures. We invite comments on this preliminary finding.

#### **IV. ENVIRONMENTAL COOPERATION**

The Trade Act of 2002 establishes that a principal negotiating objective of the United States is to strengthen the capacity of our trading partners to protect the environment through the promotion of sustainable development. In addition, the Trade Act instructs negotiators to seek to establish consultative mechanisms among parties to trade agreements to strengthen the capacity of U.S. trading partners to develop and implement standards for the protection of the environment and human health based on sound science. Environmental cooperation is expected to be an important complement to the environmental provisions of the FTA.

The United States and Thailand already work together on a bilateral basis to address environmental issues through a number of ongoing projects. The United States also works with Thailand through multilateral mechanisms such as the United Nations Environment Program, the World Bank and the International Tropical Timber Organization. U.S. agencies have several regional and bilateral programs in Thailand, principally under the auspices of the Agency for International Development, the Department of Commerce, the Department of the Interior, the Department of State and the Environmental Protection Agency. Annex II summarizes recent environmental cooperation activities supported by federal agencies.

---

<sup>49</sup> See: [http://www.ustr.gov/Trade\\_Sectors/Environment/Environmental\\_Reviews/Section\\_Index.html](http://www.ustr.gov/Trade_Sectors/Environment/Environmental_Reviews/Section_Index.html).

The United States and Thailand expect to enter into an environmental cooperation mechanism similar to those negotiated in parallel with other recent FTAs, such as the United States-Chile FTA, United States-Singapore FTA and the Dominican Republic-Central America-United States FTA. A framework for cooperative activities between the United States and Thailand is expected to contribute to national and regional efforts to protect, improve and conserve the environment. Important elements of this framework can include public participation in the cooperative work and public-private partnerships. While the Parties are establishing this framework, they are also exploring whether there are immediate environment-related needs that could be addressed in connection with the work of the Trade Capacity Building (TCB) Working Group. The Administration welcomes public comments on the general approach to cooperation in the context of the FTA, as well as objectives and priorities for cooperative activities.

**Annex I: Organizations Providing Comments**

**Received in response to 69 *Fed. Reg.* 19263**

American Forests and Paper Association  
American Sugar Alliance

## **Annex II: Selected Recent Environmental Cooperation Activities with Thailand**

This annex provides examples of recent environmental cooperation activities between agencies of the U.S. Government and partners in Thailand. Although illustrative of the number and variety of cooperative activities, the list is not exhaustive. Further information on these activities is available from the respective agencies.

### **A. Department of the Interior**

The U.S. Department of the Interior provides financial and technical support for a number of projects in Thailand, with broad objectives that include assisting in establishing and managing parks and protected areas, species conservation, research, education and natural resource management. Examples of recent projects include:

- Establishing outreach units at key protected areas for the long-term conservation of a sub-population of tigers in the Tenasserim Range of Kaeng Krachan National Park and Kuiburi National Park.
- A survey to establish the presence or absence of Sumatran rhinoceros, ecological monitoring of tigers and prey species, law enforcement training for park staff, and education and outreach programs.
- Status and distribution surveys, habitat mapping, study of poaching trends, park staff training, strengthening of law enforcement and initiation of wildlife awareness program for local communities.
- Gibbon Re-introduction and Long-term Conservation Education Program at Khao Phra Teaw Non-hunting Area, Phuket.
- A survey of 17 protected areas in 3 forest complexes to estimate pileated gibbon abundance.
- Efforts to reduce poaching by providing communities with alternative sources of income through village-based microfarming projects and environmental awareness education.

### **B. U.S. Agency for International Development**

Since 1992, the United States - Asia Environmental Partnership (US-AEP) has been USAID's primary program in Asia supporting efforts to improve environmental conditions in selected Asian countries, including Thailand. US-AEP has developed valuable partnerships, strengthened the capacities of Asian environmental institutions, addressed the challenges of urbanization and industrialization, and promoted sustainable economic growth to improve the environment and quality of life for the people of Asia. After more than a decade of accomplishments, the US-AEP formally concluded on September 30, 2005 and in October 2005, a new USAID regional environmental program began. This new program continues and extends US-AEP's support of a

number of activities promoting regional environmental initiatives, such as the Asian Environmental Compliance and Enforcement Network (AECEN), ASEAN Sustainable Cities Initiative and South East Asia Water Utility Network (SEAWUN).

The goal of the new regional environmental program is to improve environmental conditions in Asia through regional cooperation. The program's goal will be achieved through:

- Addressing regional and transboundary environmental issues;
- Addressing environmental problems that are common across borders;
- Strengthening regional counterparts to provide leadership in addressing environmental challenges in Asia;
- Catalyzing change through regional commitments; and
- Sharing and replicating experiences.

The new program will initially implement targeted activities focused on safe water supply and sanitation, biodiversity conservation, regional environmental governance, strengthening coastal communities affected by the tsunami, and the regional tsunami early warning system.

### **C. Department of State**

In October 2005, the Department of State (Bureau of Oceans Environment and International Scientific Affairs), the Department of Justice and the U.S. Fish and Wildlife Service co-sponsored a workshop to develop an ASEAN wildlife trafficking enforcement network. Implementation of this network will enhance exchange of information and experience combating wildlife trafficking in the region.

### **D. U.S. Environmental Protection Agency (USEPA)**

USEPA has an ongoing cooperative relationship with the Thailand government through a memorandum of understanding that was signed in 2004 and runs through 2009. As of July 2005, USEPA had nine cooperative projects in Thailand under this agreement:

1. Symposium on the reduction of TBT released into the marine environment from dockyards: USEPA assisted the Marine Pollution Division in developing a symposium on the use of TBT based anti-fouling paints for ship hulls. TBT is a known endocrine disruptor that can pose a serious threat to shellfish and other marine life. As a result of USEPA's technical assistance, MONRE has drafted a plan of action for the phase-out of TBT-based paints.

2. Air quality model training courses: USEPA will train staff in the MONRE Pollution Control Department on the use of three air quality models – CAMx, 3/CMAQ, and Calpuff.
3. Development of a smoke school in Thailand: USEPA will continue to assist Thailand in establishing a smoke school, through which MONRE staff and others will learn to take accurate opacity readings on air emissions from stationary sources. Thailand has already invested in a smoke generator (purchased from a U.S. manufacturer) and will soon be ready to train the first group of opacity inspectors.
4. Setting of an 8-hour ozone standard: USEPA will advise the Pollution Control Department on the development of an 8-hour ozone standard for Thailand. This effort will draw upon technical assessment information and other data that USEPA used in establishing the National Ambient Air Quality Standard in the United States.
5. Decentralization of air quality monitoring functions: The Pollution Control Department has requested USEPA assistance and technical advice in decentralizing Thailand's national air quality monitoring system. Initial work on this project will likely focus on developing a plan for transferring data communications systems and quality assurance-quality control (QA/QC) programs from the national to the provincial levels.
6. Development of air quality and noise abatement standards from aircraft operations: USEPA has agreed to advise Thailand on the development of air quality and noise emissions standards for airports.
7. Pollutant Release and Transfer Register: USEPA will assist the Pollution Control Department in designing a national Pollutant Release and Transfer Register (PRTR) for the chemicals manufacturing sector. This effort will include helping the relevant Thai agencies reach consensus on a PRTR design and guiding development of a draft PRTR reporting system manual.
8. Chemical emergency planning and response: USEPA will continue to assist the Pollution Control Department and Thailand's provincial environment departments in building capacity for chemical emergency assessments and site evaluations for time critical cleanups.
9. Development of methodology and QA/QC systems for hazardous air pollutants: USEPA will assist the Pollution Control Department in developing a QA/QC system for the Department's existing air pollutant analysis process and will help the Department to improve its analytical methodology for hazardous air pollutants.

In addition, USEPA has one diesel retrofit demonstration project with the Thailand government, supported through the U.S.-Asian Environmental Partnership. In collaboration with USAID, the

World Bank, and Thailand's Pollution Control Department, USEPA is demonstrating the pollution reduction capabilities of diesel retrofit devices. USEPA will help the Pollution Control Department to test various retrofit devices on both heavy duty and light duty fleet vehicles in Bangkok.

USEPA also is providing technical assistance and training to Thailand in the area of environmental impact assessments. In early 2005, at the request of the Thai Ministry of Natural Resources and Environment (MONRE), EPA provided training for MONRE staff on principles and methods for conducting environmental impact assessments.

#### **E. Department of Commerce, National Marine Fisheries Service (NMFS)**

##### *Sea Turtles at Phra Thong Island, South Thailand: Post-Tsunami Evaluation*

The number of sea turtles in Thailand has dramatically decreased in Thailand in the last 20 years. The tsunami on the 26th December 2004 completely washed away a collaborative project between Naucrates (a local NGO) and the Phuket Marine Biological Center (PMBC) to conserve sea turtles

Post-tsunami, NMFS is supporting efforts to rebuild and focus on evaluation of the status of sea turtle nesting and foraging population. With NMFS support, local organizations will compare earlier findings concerning nesting populations with the situation post-tsunami, continue monitoring and protection of nesting beaches and conduct an evaluation of the foraging sea turtle population. The goal is to ensure that conservation activities and protection of nesting beaches will help avoid the extinction of the nesting population in the area and contribute to restoration. In contrast to efforts to counter the imminent risk of extinction of the species in Thailand by establishing various sea turtle breeding programs along the coast, this project aims at conservation *in situ* and addresses marine turtle conservation actions recommended in the Global Strategy for the Conservation of Marine Turtles (1995).<sup>50</sup>

---

<sup>50</sup> For further information see <http://www.iucn.org/themes/ssc/marine/stmproject.htm>.

**Annex III: Thailand’s Primary Environmental Legislation and Responsible Ministries<sup>51</sup>**

<b>Legislation</b>	<b>Regulated Activities</b>	<b>Resource</b>	<b>Responsible Agencies</b>
Enhancement and Conservation of the National Environmental Quality Act (NEQA) of 1992	Prescribes emission and effluent standards for the control of wastewater discharge, polluted air emissions, and discharge of other wastes and pollutants from point sources into the environment. (Section 55 & 56) Regulates specified point sources for discharges into the water and air based on effluent standards. Specifies the types of pollution point sources. (Section 68 & 69) Requires owners and possessors of point sources of pollution to submit data on the daily functioning of their operations. (Section 80)	Air Water Solid & hazardous waste	MONRE  PCD, ONEP, DEQP, DNP, DMR, DMCR, DWR, DGR
The Factory Act of 1992	Requires regulated factories to submit construction and operating permits. Requires multi-media self-monitoring reports on a quarterly basis. Limits level of effluent discharged and restricts concentration levels of chemical and metal pollutants.  Authorizes PCD to establish standards and criteria to control factory operations, especially the standards and methods to control the disposal of waste, pollution and contaminants resulting from factory operations that impact the environment.	Air Water	MOI DIW PCD
Public Health Act of 1992	Prescribes the collection, transportation, and disposal of solid waste to be administered by local administrations and local laws.	Solid waste	MoPH
Hazardous Substance Act of 1992	Describes hazardous substance control criteria for import, production, transportation, consumption, disposal and export to minimize the influence and danger to humans, animals, plants, property, and the environment. Categorizes hazardous substances into four types, establishes the Hazardous Substances Information Center to coordinate with other government agencies on hazardous substances information and stipulation of the criteria and methods to register hazardous substances.	Solid & hazardous waste	MOI
Energy Conservation Promotion Act of 1992	Promotes efficient energy consumption. Authorizes DoE to regulate, monitor and inspect factories to ensure efficient energy utilization, advise and assist businesses to achieve energy conservation, and evaluate the performance of designated factories.	Energy	MoE

<sup>51</sup> For additional information see: <http://www.usaep.org/activities/thailand.htm>

<b>Legislation</b>	<b>Regulated Activities</b>	<b>Resource</b>	<b>Responsible Agencies</b>
Building Control Act of 1979	Regulates the discharge of water pollution from buildings.	Water	MoInt Decentralized implementation to LGAs
Navigation in Thai Waterways Act (Vol 14) as amended in 1992	Prohibits dumping of any refuse, including oil and chemicals, into rivers, canals, swamps, reservoirs, lakes, and waterways that may pollute the environment or disrupt navigation in Thai waterways	Water	MoTC Successful cases against polluters frequently brought under this legislation.
Cleanliness and Tidiness of the Country Act of 1992	Prohibits dumping of refuse in waterways.	Water	LAOs Decentralized implementation to LGAs
City Planning Act of 1975	Designates zoning of land use and provides notice and comment to citizens prior to land designations.	Land	MoInt, MoAC, MoI, MoTC, BMA
National Forest Reserve Act of 1964	Prohibits logging in national reserve forests, as well as the removal or destruction of any flora or fauna. Prescribes agencies forestry management practices.	Forest	MONRE, RFD
Penal Code of 1956	Prohibits adding harmful substances in water resources reserved for consumption.	Water	OAG (Infrequently used)
Land Act of 1954	Allows the issuance of land titles.	Land	MoInt

#### **Annex IV: Environmental Issues at U.S. Ports<sup>52</sup>**

The United States is one of the world's largest importers and exporters, annually accounting for approximately one million metric tons of cargo—approximately twenty percent of world ocean-borne cargo. Although increasing trade has provided economic benefits to U.S. consumers and exporters, a number of U.S. ports currently operate at or near capacity and, in addition, are areas of concentrated pollution from a variety of sources. Therefore, depending on its location and magnitude, an increase in goods trade may contribute to existing environmental and related problems at U.S. ports. For many U.S. ports, infrastructure challenges include the need for deeper channels and larger facilities, increases in land area to handle inbound and outbound containers and expanded rail and highway capacity for land-based goods movement.<sup>53</sup> In addition, all U.S. ports also must address the need for increased security.<sup>54</sup>

#### ***Port-related Environmental Issues***

##### *Air Quality*

Marine vessels, land-based cargo handling equipment, trucks and trains all contribute to air pollution emissions at ports. Major air pollutants from diesel engines at ports that can affect human health include particulate matter, volatile organic compounds, nitrogen oxides (NO<sub>x</sub>), ozone, and sulfur oxides (SO<sub>x</sub>). In addition, other air pollutants associated with ports include carbon monoxide (CO), formaldehyde, heavy metals, dioxins, and pesticides used to fumigate produce. Nationally, the proportion of air pollution accounted for by ocean-going ships is increasing as a consequence of decreasing emissions from other sources, increasing trade volumes and limited regulation of port-based sources.

##### *Water Quality*

Marine vessels and port operations are the source of a variety of water pollutants. Sources of water pollution from port operations include dredging, storm water runoff and chemicals. Water pollution from vessels includes waste from ships that is either dumped directly or leached into water, ballast water (see below) and incidental spills of oil and chemicals.

---

<sup>52</sup> For an extended discussion of many of these issues see, for example, Ron Orol, "Air pollution from ships a growing concern" in *Trio: the Newsletter of the North American Commission on Environmental Cooperation* (Summer 2005) (available at <http://www.cec.org/trio/stories/index.cfm?ed=15&ID=166&varlan=english>); Natural Resources Defense Council, "*Harboring Pollution: Strategies to Clean Up U.S. Ports*", (available at <http://www.nrdc.org/air/pollution/ports/contents.asp>); and Felicity Barringer, "California air is cleaner, but troubles remain" *New York Times*, August 3, 2005, page A1.

<sup>53</sup> Post-Panamax container ships now account for about 30 percent of the world's shipping fleet. These larger ships increase the container-equivalent capacity of vessels by a factor of 2-3 times and once unloaded have the equivalent of 20 miles of trucks. Unloading and loading these ships requires up to twice as much time in port as compared to the current average vessel.

<sup>54</sup> See <http://www.dhs.gov/dhspublic/display?theme=21> for additional information on port-related security issues.

Dredging to maintain, deepen or expand channels is a routine activity at all ports. Each year, more than 300 million cubic yards of sediment are dredged in U.S. waterways and harbors. About five to ten percent of dredged sediment is contaminated with toxic chemicals, including polychlorinated biphenyls (PCBs), mercury and other heavy metals, polycyclic aromatic hydrocarbons (PAHs) and pesticides, all of which can cause water contamination and complicate sediment disposal. Dredging also may increase water turbidity (cloudiness), harm habitat and disturb or kill threatened and endangered species.

Storm water management is an increasingly important concern in managing water quality near port facilities. Storm water (precipitation that travels across paved surfaces) accumulates deposits of air pollution, automotive fluids, sediments, nutrients, pesticides, metals and other pollutants and is the largest source of water quality impairment in U.S. coastal waters and the second-largest source of water pollution in U.S. estuaries. With few exceptions, most land at U.S. port facilities is paved and therefore can contribute to water pollution through storm water runoff. Existing state regulations and new Total Maximum Daily Load (TMDL) requirements, which specify the maximum amount of pollutants that each water body can receive, are contributing to reductions in pollution associated with storm water. Voluntary efforts to improve storm water management also are underway at some ports.

#### *Ballast Water and Invasive Alien Species*

Cargo vessels carry ballast water for stability and ease of steering and propulsion. Ballast water discharges from marine vessels are a significant vector for the introduction of aquatic invasive alien species into U.S. waters. A growing body of evidence points to commercial marine traffic as a source of dispersal both for marine species and for pathogens.<sup>55</sup> In addition, ballast water discharges have been identified as an important vector for transmittal of diseases affecting human health. Pathogens identified in ballast water include *Clostridium perfringens*, *Salmonella species*, *Escherichia coli*, *Vibrio cholerae*, and enteroviruses.<sup>56</sup> Public health impacts include paralytic shellfish poisoning, which can cause severe illness or death in humans. This risk exists in part because the water in many international ports is highly contaminated with sewage and agricultural run off. Significant concentrations of pathogens can be suspended in the millions of gallons of ballast water needed to stabilize larger ships and subsequently transported throughout the world. In addition to pathogens, ballast water may also transfer micro-algae, including those species that are known to form harmful algae blooms or red tides.

#### *Land Use and Wildlife Habitat*

To accommodate increased volumes trade carried by larger vessels, many U.S. ports face the need to increase their physical infrastructure, including dredging deeper channels and harbors.

---

<sup>55</sup> *Ballast Water News*. Global Ballast Water Management Program, United Nations Environment Program, Issue 8, January-March 2002.

<sup>56</sup> Knight, I.T., et al., "Detection and Enumeration of Fecal Indicators and Pathogens in the Ballast Water of Transoceanic Cargo Vessels Entering the Great Lakes," presentation to the General Meeting of the American Society for Microbiology, Chicago, Illinois, 1999.

Although some increases in capacity can be gained through improvements in technology and operational efficiency, many ports will require physical expansion. Environmental implications of port expansion include loss of wetlands and other coastal habitats. Communities surrounding ports are increasingly challenged to balance economic and environmental concerns in the context of port expansion.

In addition, ongoing operations at most ports affect wildlife. Noise from ship engines may disturb hearing and behavior patterns in populations of marine mammal, as well as feeding and nesting sites for birds. Artificial lights at ports, sometimes burning 24 hours a day, can have negative effects on wildlife, including disorientation, confusion of biological rhythms that are adapted to a day/night alternation. Light pollution can cause high mortality in birds attracted to brightly lit buildings and towers.

### ***International Agreements***

The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) establishes regulations aimed at preventing and minimizing pollution from ships, both accidental pollution and that from routine operations. Both the United States and Thailand are parties to MARPOL although neither the United States nor Thailand have ratified all existing annexes.

MARPOL Annex VI (part of the Protocol of 1997) establishes emission standards for the fuel and engines of most large oceangoing vessels and prohibits deliberate emissions of ozone depleting substances. The annex requires that the heavy fuel oil, large oceangoing vessels have a sulfur oxide (SOx) content of 4.5 percent or less. Countries that ratify Annex VI are eligible to establish SOx Emission Control Areas (SECAS), which are geographic zones with more stringent restrictions on sulfur requiring 1.5 percent or less.<sup>57</sup> Annex VI also sets emission standards for nitrogen oxides from diesel engines constructed on or after January 1, 2000 and prohibits deliberate emissions of ozone depleting substances. MARPOL Annex VI entered into force in May 2005 and has been ratified by 22 countries representing over 60 percent of the world's merchant ships. In the meantime, these same standards are already required of ocean-going vessels flagged in the United States. The United States is also working with other countries within the International Maritime Organization to push for standards that are even more stringent than MARPOL Annex VI standards in engine design, fuel quality and volatile organic chemical (VOC) emissions.

---

<sup>57</sup> It is important to note that the average sulfur content in heavy fuel ships is already down to 2.7 percent and only an estimated 5 percent of international fuel samples exceed the MARPOL Annex VI limit. For additional information, see <http://www.cec.org/trio/stories/index.cfm?ed=15&ID=166&varlan=english>

## **Annex V:      Invasive Alien Species**

The introduction and spread of invasive alien species is a major and growing environmental problem both within the United States and worldwide. The annual global economic loss to agriculture, biodiversity, fisheries, forests, and industry caused by invasive alien species has been estimated at approximately five percent of the global economy, or U.S. \$1.4 trillion.<sup>58</sup> As an example, EPA has estimated the direct and indirect cost of invasive alien species effects on water resources in the United States at \$138 billion for yearly economic impacts and control costs. EPA also estimates that the impacts to ecosystems and their beneficial services are several times more than this total.<sup>59</sup> One invasive alien species alone – zebra mussels – has caused over \$3.1 billion in economic impacts during the past ten years.<sup>60</sup>

### ***The Role of Trade***

Trade provides several broad pathways for potential introductions of invasive alien species. These pathways include several categories:

- Commodities
- Commodity “hitchhikers”
- Transportation pathways
- Movement of people

The transportation of goods and services and associated movement of vehicles and people represents a significant vector for the introduction of alien species that may become invasive. Tradable commodities also may become invasive if inadvertently or deliberately introduced into new ecosystems. Commodities, such as agricultural or timber products, may also carry a risk of invasions by “hitchhikers,” which are insects or other organisms that are attached to the commodities. Foreign direct investment also is associated with the movement of people and equipment and also may be associated with an increased risk of the introduction of invasive alien species.

Trade in previously un-traded goods, increases in the volume of trade, number of people traveling internationally, or the use of transportation pathways may affect and increase the risk of new introductions of invasive alien species. The magnitude of such increases in the risk of new introductions depends on several factors. The ongoing work of the National Invasive Species Council and the Aquatic Nuisance Species Task Force is identifying criteria for

---

<sup>58</sup> Pimental, D. editor. See “Biological invasions: economic and environmental costs of alien plant, animal, and microbe species,” CRC Press, Boca Raton, Florida, 2002.

<sup>59</sup> See [http://www.epa.gov/owow/invasive\\_species/shedinvaders.html](http://www.epa.gov/owow/invasive_species/shedinvaders.html), USEPA, “Oceans, Coasts and Estuaries,” (accessed August 25, 2005).

<sup>60</sup> Zebra mussels clog engines, municipal water intakes and cooling systems and also concentrate toxins, alter food chains, reduce fish populations, damage spawning areas, smother native mussel beds and cause taste and odor problems in water.

assessing risk by all pathway categories.<sup>61</sup> These criteria are based in part on probability of introduction, probability of establishment, history of invasiveness, availability of prevention or mitigation measures, and potential impact.

### *Geographic and Ecological Factors*

The probability of introduction and establishment are linked to geographic and ecological relationships that define the extent to which one country or region is vulnerable to invasive alien species from the other. The volume of commodities and related transport, the type of commodities traded and associated packaging may have an effect on the probability of introduction. Where the territories of trading partners have similar ecological or climactic conditions, but are separated by geographic barriers that have resulted in the evolution of distinct ecosystems, species and populations, each may be vulnerable to invasions by species native to the other through trade pathways.

Thailand is largely a humid, tropical climate with limited counterparts in the United States. The limited areas in which the two countries contain similar climactic zones reduces ecological vulnerability to invasive alien species. Nevertheless, the tropical and subtropical regions of the United States, including Hawaii, the Pacific island territories, south Florida and the Caribbean, could be vulnerable to introductions of invasive alien species from tropical terrestrial, freshwater aquatic and marine areas of Thailand, based on ecoregion compatibility. Such species could also establish themselves and spread in other parts of the United States as well.

### *Transportation Factors*

Marine Shipping Ballast water discharges from marine vessels are a significant vector for the introduction of aquatic invasive alien species into U.S. waters. A growing body of evidence points to commercial marine traffic as a source of dispersal both for marine species and for pathogens.<sup>62</sup> In addition, ballast water discharges have been identified as an important vector for transmittal of diseases affecting human health. Pathogens identified in ballast water include *Clostridium perfringens*, *Salmonella species*, *Escherichia coli*, *Vibrio cholerae*, and enteroviruses.<sup>63</sup> Public health impacts include paralytic shellfish poisoning, which can cause severe illness or death in humans. This risk exists in part because the water in many international ports is highly contaminated with sewage and agricultural run off. Significant concentrations of pathogens can be suspended in the millions of gallons of ballast water needed to stabilize larger ships and subsequently transported throughout the world. In addition to pathogens, ballast water may also transfer micro-algae, including those species that are known to

---

<sup>61</sup> See <http://www.invasivespeciesinfo.gov/council/main.shtml> for additional information.

<sup>62</sup> *Ballast Water News*. Global Ballast Water Management Program, United Nations Environment Program, Issue 8, January-March 2002.

<sup>63</sup> Knight, I.T., et al., "Detection and Enumeration of Fecal Indicators and Pathogens in the Ballast Water of Transoceanic Cargo Vessels Entering the Great Lakes," presentation to the General Meeting of the American Society for Microbiology, Chicago, Illinois, 1999.

form harmful algae blooms or red tides.

Commodity Factors The risk of introduction of invasive alien species varies across traded commodities. Greater risks are associated with trade in live organisms, for example, live fish, live plants, seeds and plant parts and cereal grains. Thailand's exports to the United States include products associated with a relatively higher risk of becoming invasive alien species, such as ornamental fish. Some non-living products in bilateral trade (for example, processed wood products) also can pose a risk as a consequence of their possible role as a vector for insects. Packing materials used for a wide variety of traded goods also can harbor pests as "hitchhiking" organisms.

Shrimp products are a significant Thai export to the United States.<sup>64</sup> Most of these exports are processed (frozen or canned), which pose significantly lower risks than live organisms, but frozen raw shrimp processed in the United States is considered a risk for shrimp disease introduction.<sup>65</sup> In addition, bilateral trade includes wood products as well as wood crating and pallets that may provide vectors for introductions of invasive insects.

Bark and wood-boring beetles are a growing concern. At least 24 new species of exotic bark and wood-boring Coleoptera (beetles) were reported in the continental United States during 1985-2004.<sup>66</sup> Data from the U.S. Department of Agriculture, Plant and Animal Health Inspection Service's (APHIS) Port Information Network indicate that from 1985 through 2000, APHIS recorded 43 interceptions of Thai wood products containing bark-boring beetles at U.S. ports of entry.<sup>67</sup>

Looking more broadly at inspections of commodities from Thailand, the APHIS Port Information Network data indicate that from 2000 through July 2005, APHIS made 6,157 interceptions of plant products from Thailand at U.S. ports for positive findings of reportable organisms. This represented less than two percent of the 358,234 total plant interceptions reported by APHIS at U.S. ports. These 6,157 interceptions were the result of 83,240

---

<sup>64</sup> Thai exports of frozen and other un-canned shrimp to the U.S. have varied from a high of \$945 million in 2000 to \$444 million in 2004. The FTA is not expected to have a significant effect on trade in these products because they already face zero or very low tariffs. Further information on U.S. imports of shrimp is available at [http://www.usitc.gov/trade\\_remedy/731\\_ad\\_701\\_cvd/investigations/2004/shrimp/final/PDF/PUB3748.pdf](http://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/2004/shrimp/final/PDF/PUB3748.pdf).

<sup>65</sup> The Taura Syndrome Virus has been shown to remain infective after one or more freeze and thaw cycles. This virus infected shrimp farms in Texas, originated from South America. Therefore, transport of the disease between countries by the exportation of infected, frozen shrimp and shrimp products exists. See Lightner, D. V. 1995. Taura Syndrome: An Economically Important Viral Disease Impacting The Shrimp Farming Industries Of The Americas Including The United States. In: Proceedings Of The Niny-ninth Annual Meeting USAHA, Reno, Nevada. Pat Campbell & Associates, Richmond, Virginia, USA. Pp. 36-52.

<sup>66</sup> Robert A. Haack, U.S. Forest Service, publication forthcoming, *Canadian Journal of Forest Research*.

<sup>67</sup> Ibid.

inspections of commodities imported from Thailand during the same time period.<sup>68</sup>

### ***Historical Invasion Patterns***

A review of the history of biological invasions between the United States and Southeast Asia suggests a baseline risk of invasive alien species from the region. For example, the Global Invasive Species Database maintained by the Invasive Species Specialist Group of the World Conservation Union lists several species that are invasive in the United States and that originate in Southeast Asia.<sup>69</sup> Examples include:

- *Clarias batrachus*, also referred to as walking catfish or Thailand catfish. This catfish was introduced into the United States primarily for purposes of fish farming. Walking catfish move over land. During a drought large numbers of walking catfish may congregate in isolated pools and consume other species. They are known to have invaded aquaculture farms, entering ponds where they prey on fish stocks.
- *C. batrachus* is believed to have been introduced into the United States from Thailand in the 1960s for the aquarium trade and has become a pest in Florida.

Trade can also facilitate the introduction of species not native to either partner. Through their bilateral trade, either trading partner may transfer invasive alien species that originate elsewhere. One mechanism for this transfer is marine shipping. Frequent ports of call are common for most cargo ships, thereby increasing opportunities to pick up and transfer hitchhiking organisms. For example, the Mysore thorn or *Caesalpinia decapetala* is native to India and has become invasive in a number of countries, including both Thailand and the United States. This is a deciduous, sprawling noxious shrub, with numerous spines, that forms impenetrable thickets limiting animal movement and smothering other plants. Once an invasive alien species is established in a new location, this can be the origin for potential new introductions.

A database on nonindigenous aquatic species maintained by the U.S. Geological Survey catalogues the presence in U.S. territory of 17 species native to Southeast Asia.<sup>70</sup> While it is unknown whether the U.S. populations came from Thailand specifically, they are all native to Thailand and thus illustrate the continuing risk of new introductions. These nonindigenous aquatic species include a number of aquarium fish as well as several species known to be troublesome invaders, including snakeheads, the Asian swamp eel, and the Burmese python. Most of these species have ecotypes in Thailand that have not yet arrived in the United States.

### ***Preventive Measures***

---

<sup>68</sup> The statistics on inspections and interceptions come from different databases maintained by APHIS. The statistics are subject to change based on updates to the APHIS reporting system and are used as illustrative examples of the balance of interceptions and inspections made of Thailand commodities.

<sup>69</sup> See <http://www.issg.org/database/welcome/> for additional information.

<sup>70</sup> See <http://nas.er.usgs.gov> for additional information.

### *International Efforts*

Examples of international efforts to address issues of potential introductions of invasive alien species include:

- The International Plant Protection Convention has issued standards that clarify that countries can consider ecological effects on natural ecosystems when imposing phytosanitary measures to regulate imports.
- The North American Plant Protection Organization is in the early stages of considering whether to strengthen regional standards regulating trade in horticultural and other plant propagating material, which is recognized as a major pathway for invasive alien species.

### *U.S. Government Regulation*

U.S. policy on invasive alien species is embodied in Executive Order 13112, which requires the National Invasive Species Council of the United States to produce a National Management Plan for Invasive Species. In January 2001, the Council released the first National Management Plan, which served as a blueprint for all federal action on invasive alien species. The Council now aims, through a series of federal and nonfederal working groups, to implement the action items of the National Management Plan.<sup>71</sup>

In addition to the work of the National Invasive Species Council and the Aquatic Nuisance Species Task Force, a number of agencies and departments are working to prevent or address the impacts of invasive alien species on U.S. ecosystems. Some highlights of recent regulatory changes that might reduce the risk of new introductions of IAS from other countries, including Thailand, include the following:

#### *USDA/Animal Plant and Health Inspection Service (APHIS)*

- In order to reduce the potential risk of invasive alien species within wood packaging materials, on September 16, 2005, APHIS adopted an international standard for the treatment of pallets, crates, boxes and dunnage imported into the United States. These products must be heat treated or fumigated and marked with the International Plant Protection Convention logo and appropriate country code designating the location of treatment.<sup>72</sup>

---

<sup>71</sup> As of July 2005, significant progress had been made in completing action items in the NISC Plan. See [www.invasivespecies.gov](http://www.invasivespecies.gov) for additional information.

<sup>72</sup> See <http://www.aphis.usda.gov/lpa/issues/wpm/wpm.html>, (accessed August 22, 2005).

- APHIS regulations do not currently allow the importation from Thailand of live cattle, buffalo, goats and sheep and their products, including meat, offal and any other parts of slaughtered animals. This ban has been in effect for at least two years due to a number of livestock and poultry diseases that have not been eradicated in Thailand.

*U.S. Coast Guard*

- To respond to the growing concern over harmful effects of micro-organisms, the U.S. Coast Guard has transformed its voluntary ballast water management plans for marine vessels into mandatory regulations.
- On June 14, 2004, the Coast Guard published regulations establishing penalties for ships headed to U.S. waters that fail to submit a ballast water management reporting form. The Coast Guard also published regulations establishing penalties for vessels bound for the Great Lakes or portions of the Hudson River that violate mandatory ballast water management requirements. These regulations also increase the number of vessels subject to these provisions by expanding the reporting and the recordkeeping requirements on ships, thereby increasing the Coast Guard's ability to determine the patterns of ballast water movement as required by the National Invasive Species Act.
- On July 28, 2004, the U.S. Coast Guard published regulations establishing a national mandatory ballast water management program for all vessels equipped with ballast water tanks that enter or operate within U.S. waters. These regulations also require vessels to maintain a ballast water management plan that is specific for that vessel and assigns responsibility to the master or appropriate official to understand and execute the ballast water management strategy for that vessel.
- On October 29, 2004, the U.S. Coast Guard issued compliance guidelines for compliance with and enforcement of the Coast Guard's Ballast Water Management Program.

## **Annex VI: Wildlife Trade Information for Thailand**

The United States and Thailand engage in a substantial amount of wildlife trade, mainly involving U.S. imports of ornamental fish (which are generally not listed under CITES) for the pet trade and orchids (which generally are listed under CITES). In 2004, the United States imported more than \$8 million of ornamental fish from Thailand; this is about 20 percent of the total value of U.S. imports of ornamental fish from all sources.<sup>73</sup> U.S. imports of live CITES-listed plants from Thailand, primarily artificially propagated orchids, totaled approximately 16.3 million specimens in 2002-2003.<sup>74</sup>

The majority of the wild animal trade between the United States and Thailand is in non-CITES-listed tropical fish for the pet trade. Other wildlife in bilateral trade includes marine shell products (not listed on CITES), reptile skins and skin products (including both items listed on CITES Appendix II and others) and small quantities of dried/mounted butterflies and live wildlife (birds, reptiles, etc.) for the pet trade. The Asian rat snake (*Ptyas mucosus*) (listed on CITES Appendix II) was the item most frequently imported indirectly from Thailand, typically arriving in the United States as re-exported leather products (e.g., shoes, handbags, etc.) from Italy.

Based upon a review of data from the U.S. Fish and Wildlife Service (Division of Law Enforcement, LEMIS), approximately 160 wildlife shipments were refused entry into the United States from Thailand in 2004.<sup>75</sup> The quantities of wildlife detected in these refused shipments do not suggest commercial operations, but rather unknowing individuals importing wildlife specimens for a variety of reasons.

The United States does not directly export significant quantities of wildlife to Thailand; most exports of CITES-listed species appear to be household pets. No trends were detected indicating the presence of regularized illegal trade of United States-origin species by persons or businesses operating in Thailand.

### ***Thailand's Threatened Wildlife***

The following is a list of threatened species found in Thailand, with notations indicating whether the species are listed on a CITES Appendix (commercial trade is banned for species on Appendix I and regulated to prevent detriment to the species for species on Appendix II).

- tiger (*Panthera tigris*; Appendix I)
- leopard (*Panthera pardus*; Appendix I)

---

<sup>73</sup> Source: US ITC database, URL: <http://dataweb.usitc.gov/> (visited April 29, 2005).

<sup>74</sup> USFWS, Division of Management Authority, CITES Annual Report data; 2002-2003.

<sup>75</sup> The largest number of those refusals involved shells, followed by coral items, Asian medicinal products, elephant specimens (skin, skin products, and meat), and Siamese crocodile skin products.

- clouded leopard (*Neofelis nebulosa*; Appendix I)
- leopard cat (*Prionailurus [=Felis] bengalensis*; Appendix II)
- gibbons (*Hylobates* spp; Appendix I)
- macaques (*Macaca* spp; Appendix II)
- orangutan (*Pongo pygmaeus*; Appendix I), as well as some other primates which are listed on Appendix II
- Gaur (*Bos frontalis [=gaurus]*; Appendix I)
- civets (various species; some CITES-listed)
- monitor lizards (*Varanus* spp; Appendices I and II)
- elongated tortoise (*Indotestudo elongata*; Appendix II)
- Asian brown tortoise (*Manouria emys*; Appendix II)
- hornbills (Bucerotidae; Appendices I and II)
- Hill mynah (*Gracula religiosa*; Appendix II)
- various parrots and related species (Psittaciformes; Appendices I and II)
- Asian elephant (*Elephas maximus*; Appendix I)
- Asian rhino (*Rhinoceros* spp. and *Dicerorhinus* sp; Appendix I)
- Asian pangolins (*Manis* spp; Appendix II)
- Malayan sun bear (*Helarctos malayanus*; Appendix I)
- Asian deer and antelope (various species and status)
- freshwater and terrestrial turtles (various species and status)
- snakes (various species and status)
- Siamese crocodile (*Crocodylus siamensis*; Appendix I)
- native birdwing butterflies (various species; Appendix II)<sup>76</sup>
- agarwood (*Aquilaria* spp; Appendix II)
- sandalwood (*Pterocarpus santalinus*; Appendix II)
- orchids (Orchidaceae; various species and status)
- additional CITES-listed and other bird species.

---

<sup>76</sup> The international illegal trade in birdwing butterflies has been a problem for CITES implementation for many years; although Thailand remains a source for many illegal specimens, in 2003 Thailand added the Common and Malayan birdwing species to its list of protected species.

**Annex VII: Data Tables**

**Table 1—Population, economic, and trade data for Thailand and the United States, 2004**

	Population <i>Millions</i>	Gross Domestic Product			Exports	
		Total <i>Billion US\$</i>	Per capita <i>US\$/capita</i>		Total <i>Billion US\$</i>	As a share of GDP <i>Percent</i>
			Nominal	PPP <sup>a</sup>		
Thailand	62.4	163.5	2,621	2,540	97.1	58.2
United States	293.5	11,734.3	39,980	41,400	818.8	7.0

<sup>a</sup> Purchasing Power Parity.

Sources: World Bank, U.S. Department of Commerce (International Trade Administration and Bureaus of Economic Analysis), U.S. Central Intelligence Agency.

Data available at: <http://www.worldbank.org/data> and <http://www.ita.doc.gov/td/industry/otea/>, <http://www.bea.doc.gov/> and <http://www.cia.gov/cia/publications/factbook/>

**Table 2—Selected development indicators for Thailand and the United States in 2003**

	Population density <i>People per square km</i>	Urban Population <i>Percent</i>	Access to		Under-5 mortality <i>No. per 1,000 births</i>	Life expectancy at birth <i>Years</i>
			Improved water source <i>Percent</i>	Improved sanitation facilities <i>Percent</i>		
Thailand	121.6	32	85	96	26	69
United States	31.3	78	100	100	8	77

Source: World Bank, World Development Indicators, 2004.

Data available at: <http://www.worldbank.org/data>

*Access to an improved water source*-refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters a person a day from a source within one kilometer of the dwelling. (World Health Organization and United Nations Children's Fund, Global Water Supply and Sanitation Assessment 2000 Report).

*Access to improved sanitation facilities*-refers to the percentage of the population with at least adequate excreta disposal facilities (private or shared, but not public) that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained. (World Health Organization and United Nations Children's Fund, Global Water Supply and Sanitation Assessment 2000 Report).

**Table 3—Land area, land use, and forest cover change for Thailand and the United States<sup>a</sup>**

	Land area <i>Million square kilometers</i>	Land use <i>Percent total land</i>		Annual change in forest cover, 1990-2000 <i>Percent</i>	Share of land in protected status <sup>b</sup> <i>Percent</i>
		Forest	Agriculture		
Thailand	0.51	29	25.8	0.7	15.7
United States	9.4	30	12.8	0.2	15.8

<sup>a</sup> Data are for 2003 or the most recent available.

<sup>b</sup> Nationally protected areas.

Sources: United Nations Food and Agriculture Organization; World Bank, World Development Indicators, 2004.

Data available at: <http://www.fao.org> and <http://www.worldbank.org/data>.

**Table 4—Recent biodiversity indicators for Thailand and the United States**

	Number of protected areas <i>Number</i>	Area of biosphere reserves <i>Thousand hectares</i>	Species threatened <i>Number (Percent known species)</i>		
			Mammals	Birds	Plants <sup>a</sup>
Thailand	223	85	37 (14.0)	37 (13.0)	78 (0.7)
United States	7,448	31,570	37 (8.6)	55 (10.8)	169 (0.8)

<sup>a</sup> Flowering plants only.

Sources: United Nations Environment Program; World Bank; and World Resources Institute Earth Trends Country Profiles. Data available at: [www.worldbank.org](http://www.worldbank.org) and [www.earthtrends.wri.org](http://www.earthtrends.wri.org).

*Protected areas:* Refers to management categories I through V of the International Union for the Conservation of Nature and Natural resources (IUCN). (See: <http://www.iucn.org> for additional information.)

*Biosphere reserves:* Refers to areas representative of terrestrial and coastal/marine environments that have been internationally recognized under the United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and the Biosphere Programme. (See <http://www.unesco.org> for additional information.)

**Table 5—United States goods trade with Thailand, 2000-2004<sup>1</sup>**

	2000	2001	2002	2003	2004
<i>Billion U.S. Dollars</i>					
U.S. Total Exports	6.6	6.0	4.9	5.8	6.4
U.S. Total Imports	16.4	14.7	14.8	15.2	17.6
U.S. Goods Trade Balance	-9.7	-8.7	-9.9	-9.3	-11.2

<sup>1</sup>Total exports and total imports, customs value.

Source: U.S. Department of Commerce

Data available at: <http://www.ita.doc.gov/td/industry/otea/> and <http://dataweb.usitc.gov>

**Table 6—Selected U.S. imports from Thailand by major industry/commodity sectors, 2003**

Sector	U.S. imports for consumption <sup>1</sup>	Dutiable imports	Calculated duties collected	Share of U.S. imports for consumption by dutiable imports	Average calculated duty collected on dutiable imports
	----- Thousand dollars -----			----- Percent -----	
Agricultural products.....	2,120,811	579,463	41,561	27.3	7.2
Forest products .....	223,568	7,058	192	3.2	2.7
Chemicals and related products.....	793,144	30,386	1,372	3.8	4.5
Energy-related products .....	18,334	18,054	84	98.5	0.5
Textiles and apparel.....	2,512,906	2,020,724	306,268	80.4	15.2
Footwear .....	284,720	282,936	31,378	99.4	11.1
Minerals and metals .....	958,256	246,603	14,271	25.7	5.8
Machinery.....	710,043	296,690	10,877	41.8	3.7
Transportation equipment .....	247,387	29,333	2,052	11.9	7.0
Electronic products.....	5,270,439	547,513	27,487	10.4	5.0
Miscellaneous manufactures.....	1,670,168	335,785	31,157	20.1	9.3
Special provisions <sup>2</sup> .....	265,557	112,081	4	42.2	( <sup>3</sup> )
Total .....	15,075,333	4,506,625	466,705	29.9	10.4

<sup>1</sup>Customs value.

<sup>2</sup>Trade under special provisions includes exports under chapter 98 of the Schedule B and imports under chapters 98 and 99 of the Harmonized Tariff Schedule of the United States (HTS). All other product sectors listed are from chapters 1-97 of the Schedule B and HTS.

<sup>3</sup>Less than 0.05 percent.

Note.—Calculations based on unrounded data.

Source: Compiled by the U.S. International Trade Commission from official statistics of the U.S. Department of Commerce.

**Table 7 - U.S. General Imports from Thailand (Customs Value)**

CUSTOM DISTRICT	2000	2001	2002	2003	2004	Percent of 2004 Total
<i>Million U.S. Dollars</i>						
Los Angeles, CA	\$5,465	\$4,991	\$5,425	\$5,117	\$5,698	32.4
San Francisco, CA	\$2,369	\$1,716	\$1,416	\$1,550	\$2,373	13.5
New York, NY	\$2,199	\$2,006	\$2,037	\$2,166	\$2,151	12.2
Chicago, IL	\$603	\$569	\$561	\$666	\$970	5.5
Savannah, GA	\$504	\$585	\$585	\$637	\$783	4.5
Anchorage, AK	\$484	\$410	\$454	\$443	\$550	3.1
Seattle, WA	\$506	\$440	\$367	\$342	\$474	2.7
Columbia-Snake, OR	\$145	\$124	\$116	\$117	\$112	0.6
Honolulu, HI	\$58	\$72	\$47	\$41	\$32	0.2
San Diego, CA	\$25	\$41	\$35	\$37	\$20	0.1
All Other CDs	\$4,031	\$3,775	\$3,756	\$4,065	\$4,414	25.1
<b>TOTAL IMPORTS</b>	<b>\$16,389</b>	<b>\$14,729</b>	<b>\$14,799</b>	<b>\$15,181</b>	<b>\$17,577</b>	

Source: U.S. Department of Commerce

Data available at: <http://dataweb.usitc.gov>**Table 8 - U.S. Exports to Thailand (FAS Value)**

CUSTOM DISTRICT	2000	2001	2002	2003	2004	Percent of 2004 Total
<i>Million U.S. Dollars</i>						
Los Angeles, CA	\$1,480	\$1,726	\$1,528	\$1,563	\$1,889	29.7
San Francisco, CA	\$1,887	\$1,410	\$790	\$698	\$866	13.6
New York, NY	\$757	\$577	\$492	\$597	\$725	11.4
Chicago, IL	\$269	\$298	\$321	\$409	\$480	7.5
New Orleans, LA	\$396	\$286	\$362	\$347	\$407	6.4
Seattle, WA	\$528	\$562	\$196	\$687	\$280	4.4
Columbia-Snake, OR	\$135	\$128	\$98	\$151	\$145	2.3
Anchorage, AK	\$29	\$80	\$73	\$72	\$102	1.6
San Diego, CA	\$0.4	\$0.3	\$0.6	\$4	20	0.3
Honolulu, HI	\$2	\$1	\$4	\$16	\$18	0.3
All Other CDs	\$1,161	\$928	\$994	\$1,297	\$1,431	22.5
<b>TOTAL EXPORTS</b>	<b>\$6,643</b>	<b>\$5,995</b>	<b>\$4,859</b>	<b>\$5,842</b>	<b>\$6,363</b>	

Source: U.S. Department of Commerce

Data available at: <http://dataweb.usitc.gov>