H.R. 69 The Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013

A COMPREHENSIVE FIRST-YEAR IMPLEMENTATION STRATEGY FOR H.R. 69



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Executive Summary

Earlier this year the U.S. government was forced to subsidize the commercial fishing industry in New England by $33 million, after the region's cod stocks fell to their lowest numbers in forty years. In November of 2014, the government proceeded to halt cod fishing in New England entirely for six months. At first glance, it may be difficult to perceive how the situation could get so out of hand; cod fishing is an important industry in the region and New England annually enacts new fisheries legislation to protect the valuable fish stocks. However, these regulations have proven inadequate in addressing one of New England's (and the world's) most serious issues: illegal fishing. It is estimated that roughly 24 percent of New England cod is harvested illegally, which amounts to revenue to illegal fishers of roughly $13 million. Such a high profit potential, coupled with a distinct lack of regulations enforcement by agencies like the Coast Guard has made the lure of fishing illegally more desirable than following the rules for many fishers all over the world, and the prevalence of illegal fishing has had many consequences. Not only are fish stocks dwindling and effecting global food security and the food chain, but without being able to accurately count the amount of fish caught, policymakers cannot regulate the fishing industry sustainably. Without stepping up enforcement and coordinating policies, illegal fishing will continue to ravage the fishing industry.

Illegal fishing often occurs in conjunction with unreported and unregulated fishing, and together these three exploitations continue to drive unsustainable fishing practices, costing the world between $10 and $23 billion annually.[1] In the U.S., the Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013, known formally as H.R.69, has been proposed as a solution to fight illegal fishing in U.S. waters. This Act intends to streamline enforcement mechanisms to more effectively prevent illegal, unreported, and unregulated (IUU) fishing as well as increase enforcement and compliance with U.S. and international fishery regulations.

The following report presents a program design and first year implementation plan for H.R.69 that will successfully deter IUU fishing in the U.S. The key forces that drive IUU fishing are financial gain and the relative ease of fishing undetected. This program targets these drivers directly by removing the financial incentive to fish illegally as well as increasing tracking and monitoring of fishing vessels. By increasing fines and penalties for IUU violations and equipping all commercial fishing vessels with satellite tracking systems, the program ensures that other U.S. fisheries do not suffer the same fate as New England's cod. In its first year, the program focuses on adding new staff resources to the National Oceanic Atmospheric Administration (NOAA) and the U.S. Coast Guard (USCG) using the "20/20" plan. This plan is designed to achieve a long-term goal of decreasing illegal fishing by 20 percent through increasing investigations and enforcement personnel by 20 percent. These additions in staff significantly shape the program budget, which totals a net of about $39 million. To put this in perspective, illegal fishing cost the U.S. $46 million in lost revenue and subsidies in New England alone in

2014, making illegal fishing enforcement a financially sound choice to maintaining the status quo.

Together with the program design, an ongoing program evaluation system has been developed to measure success and incorporate necessary changes, creating feedback loop. This feedback loop provides performance measurement information throughout the year, allowing NOAA and the USCG to know quickly if they're on track toward their year-end 20 percent goal, and thus to make changes if necessary. A crucial aspect of the program is the collaborative relationship between NOAA and the USCG, which will ensure that implementation of H.R. 69 uses tracking and monitoring data in combination with increased investigations to establish targeted enforcement mechanisms that deter IUU fishing. In doing so, the program will not only dissuade IUU fishing, but also guarantee continuous improvements for U.S. fisheries—ultimately creating a sustainable fishing industry. But before delving into the specifics of the program design and first year implementation process, it's important to have a full, contextual understanding of illegal fishing and its global impacts.

1.0 Issue Background

Over the past few decades, unsustainable fishing practices have resulted in the depletion of several important commercial fisheries. Scientists began noticing this problem in the late 1980s when global catches started to decline significantly. It is estimated that at the current rate, marine harvesting will result in the total depletion of worldwide commercial fish stocks by 2050 (Fig. 1).[2] This presents several serious problems. Loss of global food security, biodiversity, jobs, and economic loss are real consequences if action is not taken to prevent the continued decline of commercial fisheries. One of the greatest contributors to this issue is illegal, unreported, and unregulated (IUU) fishing. While it is difficult to calculate exactly the extent of illegal fishing, it is estimated that nearly 20 percent of the global seafood catch is harvested through illegal or unregulated means.[3]

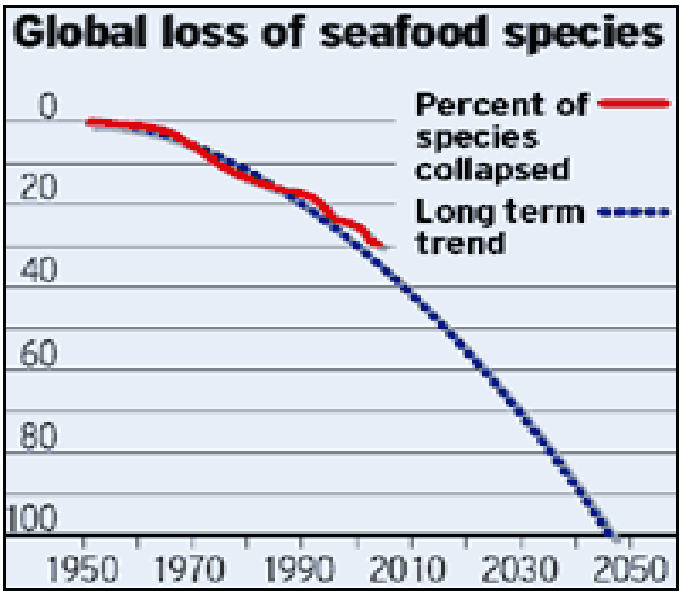


Figure 1. Current and predicted percentage of seafood species loss. Trends reporting the current species loss (red line), already around 30 percent, and the projected long term trend (dotted blue line). The projection is made using the current exploitation rates if no action is taken (Worm et al., 2006).

1.1 Ecological Issues

Healthy fish stocks serve a fundamental role within the environment, helping to maintain a delicate equilibrium. Every species has a particular role in the ecosystem and removing or

reducing the population of any one species can affect the entire food chain.[4] By depleting the populations of one key species, fishers can unintentionally have dramatic impacts on the populations of other species. For example, the overfishing of Atlantic cod, a top predator in the North Atlantic, led to an increase in the cod's prey of herring, which impacted the populations of zooplankton and ultimately phytoplankton, the cornerstone of the region's marine ecosystem.[5]

In addition to upsetting the balance in the food chain, overfishing results in a loss of biodiversity. Biodiversity is defined as "all organisms, species, and population, the genetic variation among these, and all their complex assemblages of communities and ecosystems."[6] Studies on the loss of biodiversity within marine environments indicate numerous consequences. Existing fisheries regulations are based on scientific estimates of sustainable fishing levels. IUU fishing violates these established levels and leads to extensive overfishing. As a result, IUU fishing causes considerable loss in biodiversity.[7] The elimination of locally adapted populations and species sabotages the stability and recovery potential of the marine ecosystem, thereby impairing the ability of marine ecosystems to feed a growing human population.[8]

1.2 IUU and its Impact on Biodiversity and Food Security

According to the Marine Stewardship Council, the global demand for seafood is estimated at over 120 million tons per year.[9] The UN's Food and Agriculture Organization (FAO) latest report says "fish accounts for almost 17 percent of the global population's intake of protein."[10] Since fish has been labeled a healthy alternative protein in the developed world, its popularity has incentivized greater fish takes. The rates of fish stock depletion in the past half century have already led to the collapse of nearly 30 percent of oceanic species fisheries.[11] Scientists estimate that marine harvesting at the current rate will result in the total depletion of worldwide fish stocks in the next 34 years.[12]

1.3 IUU Economic Impact

IUU is not only an ecological issue; there is a large local, national and international economy that is affected by illegal fishing. The FAO estimates 10-12 percent of the world's population depend on fisheries for their livelihood.[13] In the U.S., commercial fishing employs over one million people, and in 2010 had revenue totaling over $4.5 billion.[14] Stock depletion has a profound impact on the livelihoods of fishers, distributors, and the greater seafood industry. Worldwide IUU fish extractions are estimated to be between eleven and 26 million tons per year. The latter is equivalent to six times the annual harvest of all U.S. commercial fishing, or up to USD $23.5 billion.[15] IUU fishing causes estimates to be skewed and lead to extensive overfishing. Therefore, IUU fishers not only contribute to overfishing, they also decrease the amount of fish that can be caught by legal fishers.

1.4 Dissuading Illegal Fishers: Removing Financial Incentives and Streamlining Enforcement

Despite the increased attention that's been given to IUU fishing in recent years, national and international authorities have still not been successful in effectively dealing with the issue. A case study issued by the European Parliament earlier this year concludes that low fines are ineffective in deterring IUU fishing and that if enforcement efforts are to be successful the financial incentive that exists in IUU fishing needs to be eliminated. Moreover, the case study recognizes that penalty systems and enforcement efforts need to be streamlined across member states in order to effectively deter IUU fishing.[16] Along with the disharmony among enforcement mechanisms, the study points out the need for improvements in information sharing between member states. This can be achieved through existing mechanisms such as the EU Alert System, a digital database that enables member states to track and monitor IUU vessels in European waters.

1.5 H.R. 69: Addressing Inefficient Regulation to Discourage IUU Fishing

Fisheries management in the United States has primarily fallen under the scope of the Magnuson-Stevens Act since its passage in 1976. Originally titled the Fisheries Management and Conservation Act, Magnuson-Stevens provides the bulk of the legal framework for the U.S. fishing industry.[17] The bill accomplished several ends: it developed the federal management of fisheries, protects marine resources and the U.S.'s exclusive economic zones, makes the transshipment of catch between U.S. and foreign vessels illegal and allows the boarding and investigation of vessels suspected of illegal actions.[18] The bill was amended in 1996 to shift the focus from generalized fisheries management to the restoration of depleted fisheries, conservation efforts, and the reduction of by-catch. In 2006, it was amended again to incorporate international agreements.[19]

Prior to Magnuson-Stevens, there were marine conservation efforts but only in a broad legal sense. Conservation efforts have been part of US legislation since 1900, with the passage of the Lacey Act. This set up the protection of fish and wildlife with enforcement through civil and criminal sanctions; it was amended in 1981 allowing for higher fines to those committing crimes against wildlife, including the trade in species that are illegally harvested, which applies directly to IUU.[20] In addition to the Magnuson-Stevens Act, many other bills have been passed that name specific marine resources and/or regions that are either enhanced or alluded to in the Magnuson-Stevens Act. These bills range from a very narrow focus on a particular species (such as the Pacific Salmon Treaty Act of 1985) to the designation of specific protected areas (such as the National Marine Sanctuary's Act).

Overall, the U.S. has an ample variety of national laws and is a signatory in several international agreements on fisheries. In fact, legal analysts suggest that U.S. commercial fisheries are the most heavily regulated in the world.[21] Despite the copious legislation on the matter, IUU is still a threat to the sustainability of U.S. fisheries as well as national and local economies. Given that

most of these laws were written separately from one another in different years and each with its own focus, there are inconsistencies about investigation and prosecution protocols among the various statues. Hence, the number and variety of regulations complicate the enforcement of existing legislation in existence—some of which has not been updated in decades, and others even contradict one another.[22]

Although current U.S. laws cover a multitude of IUU fishing-related issues, they fail in practice due to their uncoordinated approaches. The disharmony that exists within U.S. fisheries laws has similar consequences for U.S. enforcement efforts as the inconsistent enforcement between MS in the EU, and the U.S. Coast Guard and the National Oceanic Atmospheric Administration (NOAA) are rendered inefficient by attempting to enforce piecemeal regulations. H.R. 69, introduced in 2013 by Congresswoman Madeleine Bordallo (D-Guam), seeks to update, strengthen, and eliminate the discrepancies between these regulations. Entirely focused on IUU fishing, the bill intends to protect U.S. fishing communities from unfair competition, provide consumers with confidence that the fish they are purchasing is sourced legally and sustainably, and maintain healthy global marine ecosystems.[23] It does so by harmonizing fourteen separate, existing acts by incorporating the civil and criminal penalties from the Magnuson-Stevens Act, the nation's primary fisheries legislation, into several other fishing agreements. These include increasing monetary fine limits and adding judicial and criminal sanctions beyond the existing administrative penalties to deter IUU fishing. The financial discouragement that is employed by the EU is thus being followed up in U.S. legislation and enforced through H.R. 69's program. This would eliminate confusion and streamline the enforcement procedures for NOAA and USCG officers. If clear policies are not established, existing and future legislation will continue to be ineffective against IUU. H.R. 69 addresses this by focusing on the practical aspects of fisheries law implementation.

Through the implementation of H.R. 69, the U.S. Coast Guard and NOAA will be working with separate foci to monitor and investigate IUU fishing and bring those who partake in illegal activities to justice. Permit requirements will become more stringent to include a requirement for all fishing vessels to be equipped with a GPS tracking technology. The heightened focus on tracking vessels, coupled with collaborative reporting between NOAA and the U.S. Coast Guard ensures that H.R.69's program does not suffer from the same lack of information sharing that currently exists in the EU. Other nations have already recognized the importance of monitoring through cross-agency collaboration and have set up successful programs that resemble H.R.69. In particular, Iceland implemented an integrated program for monitoring, collaboration, and surveillance (MCS) combining the nation's maritime tracking databases into one overarching system.[24] Because of these integrated and collaborative efforts, the Icelandic MCS database is far more efficient than the current EU Alert System.

2.0 Program Design and Implementation

IUU fishing threatens global fish stocks as its very nature makes it impossible to take the full scope of the effects into account when creating catch limits and regulations. By strengthening enforcement mechanisms to stop IUU fishing, H.R. 69 can help curb its occurrence, leading to greater stock sizes and ultimately a more sustainable commercial fishing industry. While H.R. 69 harmonizes fourteen separate acts, a specific nationwide program must be designed to coincide with its passage, assuring unity of vision and execution throughout the country.

In designing our program to combat IUU fishing, we identified two key discretionary points within the legislation that could be molded to achieve the goals of H.R. 69: permitting and penalties. By altering permit requirements, we improve the ability to track commercial fishing vessels, thereby making it easier to investigate suspected vessels and illicit activities. Additionally, establishing stricter penalties removes the financial incentive to fish illegally. Illegal fishers will finally face real consequences for their actions as the repercussions could not only be dire, but more expensive than if they simply operated legally.

2.1 Permitting

Under our program, all commercial fishing vessels seeking a permit will be required to purchase and install tracking devices. Specifically, commercial fishing vessels will need to be equipped with an Automatic Identification System (AIS), a GPS-based tracking system that records information such as vessel location, course, speed, and registration number. Figure 2 explains the path of data flow using the AIS system. AIS tracking systems will be available for purchase through the National Oceanic and Atmospheric Administration (NOAA). NOAA will be the sole provider of these tracking devices as it is crucial that they be consistent across all commercial vessels. In addition to distributing these devices, the Fisheries Monitoring Center (FMC – a division within NOAA) will be responsible for collecting, monitoring and disseminating information from the AIS to the relevant enforcement bodies. This information can be used to infer if vessels are fishing illegally and should therefore be subject to investigations by enforcement officers. The FMC will relay gathered information to enforcement officials in much the same way that a radar aircraft relays information about speeding vehicles on the roadway to law enforcement officers on the ground.

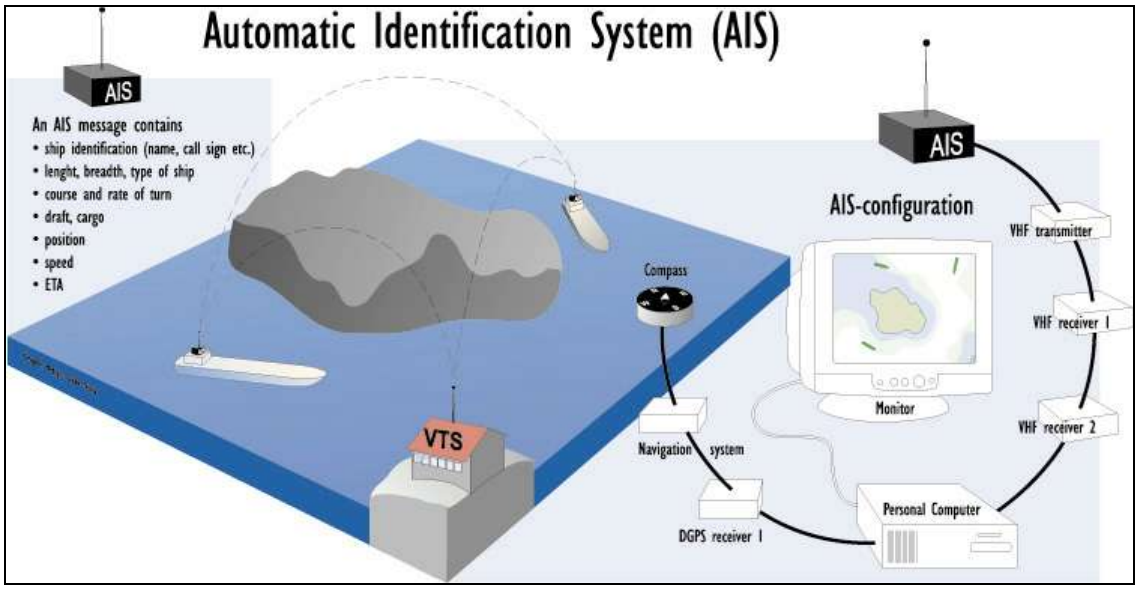


Figure 2: The satellite-based AIS system relays information such as vessel course and speed to land-based monitoring centers.

2.2 Penalties

As previously stated, the program design places significant weight on penalties for infractions. The U.S Coast Guard (USCG) and NOAA's Office of Law Enforcement (OLE) will be responsible for enforcing our penalty system and reporting information about infractions to the Fisheries Monitoring Center (FMC) within NOAA. The FMC will track infractions incurred by individual vessels. The penalty scheme consists of a three-strike system that resets after three years without infraction. Vessels caught engaging in IUU activities as a first offense are fined (the severity of which is scalable to the extent of the offense) and given an official warning. If a vessel is caught engaging in IUU activities a second time, the owner will be fined a heavier sum (up to $100,000), the vessel's fishing permit may be revoked, and the vessel is placed on the internationally shared IUU Watch List. The IUU Watch List allows enforcement officials all over the world to identify the vessel as one that engages in illegal fishing. Once a vessel is on this list, it remains for three years without further infraction. If a vessel is apprehended a third time, possible repercussions may include confiscation of the vessel, additional fines (up to $100,000) and criminal proceedings against the vessel owner.

In addition to the fines and criminal penalties incurred by individual vessels, foreign vessels caught engaging in IUU activities (whether in U.S. territory or on the high seas) incur further consequences. The FMC will also track foreign vessels that are found engaging in IUU activities and the country from which they originate. Similar to the penalty system for individual vessels, sanctions against foreign nations are based on a three-strike system that resets after three years. Each time a foreign vessel is caught fishing illegally (as defined by either domestic or international regulations depending on which is relevant) within a three-year period, its flag state incurs another strike. Caught a first time, the vessel's flag state is notified and advised to further

investigate the vessel in question. If a second vessel from the same country is caught engaging in IUU activities within the three-year period, the country will be alerted again and the USCG will automatically investigate any vessel from that state operating within a reasonable distance to U.S. interests. If a country incurs a third strike within the same three-year period, U.S. port privileges will be revoked for all vessels operating under that country's flag resulting in serious economic consequences for the country. Additionally, after a third violation the country will be placed on the international IUU Watch List as a nation that has failed to effectively address IUU fishing.

2.3 Measuring Success: Targeted Enforcement from Collaboration

In order to achieve the goals of the permitting and penalty mechanisms, the program significantly increases staffing resources – specifically in fisheries enforcement offices. Because the frequency of investigation activities is directly correlated with the availability of personnel, we have assumed that a 20 percent increase in employee resources will generate a 20 percent increase in investigations. Under this assumption, regional offices for each agency will be assigned seasonal monthly investigation quotas. These quotas will be based on data that is collected and analyzed continually throughout the lifetime of the program. Ideally, over time, these quotas will decrease as IUU fishing becomes less frequent. Investigations will be fully reported and logged into a cloud-based system shared between NOAA and the U.S. Coast Guard. Meeting the seasonal quotas on a regular basis will be indicative of the program's success and the ability of each agency to utilize the additional staff effectively. The heads of each investigative department at both NOAA and the U.S. Coast Guard will liaise with each other on a monthly basis, establishing accountability as well as transparency between the two agencies. Should a regional office fail to meet the set quota three months in a row, the functional parameters of the office will be audited and quotas may be adjusted. Ultimately this reporting process will see to it that the year-end target of a 20 percent increase in investigations is achieved. Figure 3 shows this feedback mechanism graphically.

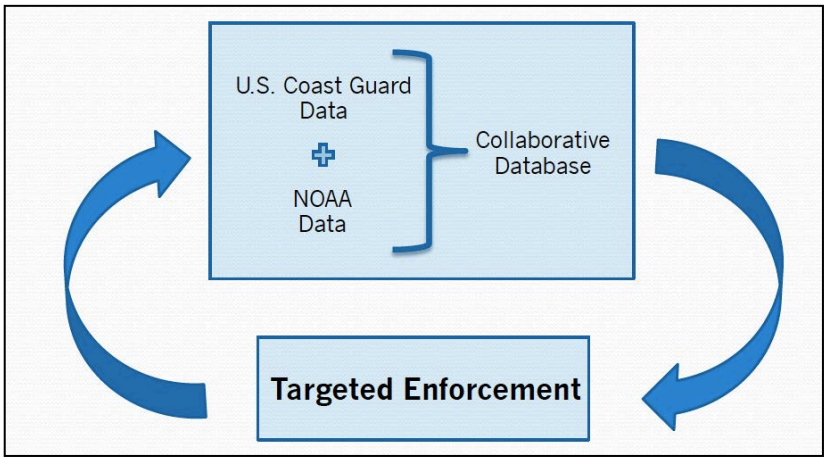


Figure 3: The continuous process of vessel tracking and investigation between the three offices will allow for more targeted enforcement of IUU fishing violations.

Additionally, the program is expediting the implementation of increased USCG and NOAA investigations, quotas, audits, and the cloud system reporting in the USCG's 17th District of

Alaska. The decision to fast-track implementation in Alaska allows us to account for the requested budgetary expenses and will showcase the need of the program before a national implementation is initiated, identifying potential areas of improvement. Thus, expediting the program in Alaska will both show preliminary program results and allow for changes to be made to increase effectiveness before the program is fully implemented nationwide. For more information on the use of Alaska as a program test site, see the Implementation Schedule in Figure 7.

While these performance feedback mechanisms are meant to provide data on how well NOAA and the Coast Guard are doing with meeting the quotas, the results of their investigations will also contribute to a pool of data. Both agencies will log reports into the cloud-based system, which can thus be used to create more targeted enforcement. Analysis of this data will enable us to identify key issues such as the location of illegal fishing hotspots or which fisheries are more likely to engender illegal fishing. Here, the FMC serves a pivotal role in the program design. Since the office is focused entirely on tracking and monitoring vessels and recording data received from the U.S. Coast Guard and NOAA inspections, it serves as a point of connection between the two agencies and the tracking and investigation operations. With the data collected by the FMC across the two agencies, illegal fishing can be targeted better than ever before, aiding in the ultimate outcome of fishery stock replenishment and a sustainable fishing industry. As such, the FMC is mirrored on the integrated MCS database developed in the Icelandic case study, which greatly improved the Icelandic Coast Guard's ability to target IUU fishing activities and led to a greater overall efficiency within the agency. In order for the program to be successful in the long run, it's vital that the FMC database does not suffer the same fate as the current EU Alert System, where information sharing has been less of a priority.

3.0 Staffing Plan

Increases in personnel within both NOAA and the U.S. Coast Guard are pivotal in order to guarantee the effective enforcement of H.R.69. Specifically, the implementation plan focuses on adding personnel to supply needed manpower for additional investigations and subsequent enforcement as well as the increased data traffic generated by the AIS technology. This need to increase personnel in order to work with a multi-agency database is mirrored in several other, similar programs. For instance, when Iceland implemented its integrated MCS system and combined several tracking databases, the Icelandic Coast Guard had to reorganize its staffing structure to account for the increased data flow requiring interpretation and follow-up.

Personnel will be increased at existing NOAA and Coast Guard offices. The choice to use existing agency structures to implement the program, as opposed to creating new authorities, is based on the fact that NOAA and the U.S. Coast Guard each have well-established frameworks in place to combat IUU practices. Furthermore, there already exists a certain level of

communication and collaboration between these agencies that would be beneficial—although is program will require a greater degree of interagency cooperation. Finally, utilizing existing authorities and organizations saves money and time in the initial stages of program implementation.

3.1 Organizational Chart

The program operates under the **Office for Law Enforcement (OLE)** and the **Fisheries Monitoring Center (FMC)** divisions of NOAA, and the **U.S. Coast Guard's Investigative Service (CGIS)** arm. Actual investigation and enforcement activities will be under the purview of NOAA's OLE and the Coast Guard's CGIS. Meanwhile, the Fisheries Monitoring Center is tasked with receiving and analyzing tracking data from commercial fishing vessels via the AIS technology in a support capacity. OLE and FMC, under NOAA, reports to the U.S. Secretary of Commerce, while the CGIS reports to the U.S. Secretary of Homeland Security. This organizational structure can be seen graphically in Figure 4. Additionally, the FMC will collaborate with the **International Maritime Organization (IMO)** —the UN's main agency for regulating shipping as it relates to safety, maritime security, and the environment.[25] The joint effort between the FMC and the IMO will ensure the U.S. remains fully updated on vessels outside of its EEZ and that information from the FMC, like the IUU Watch List, is shared internationally.

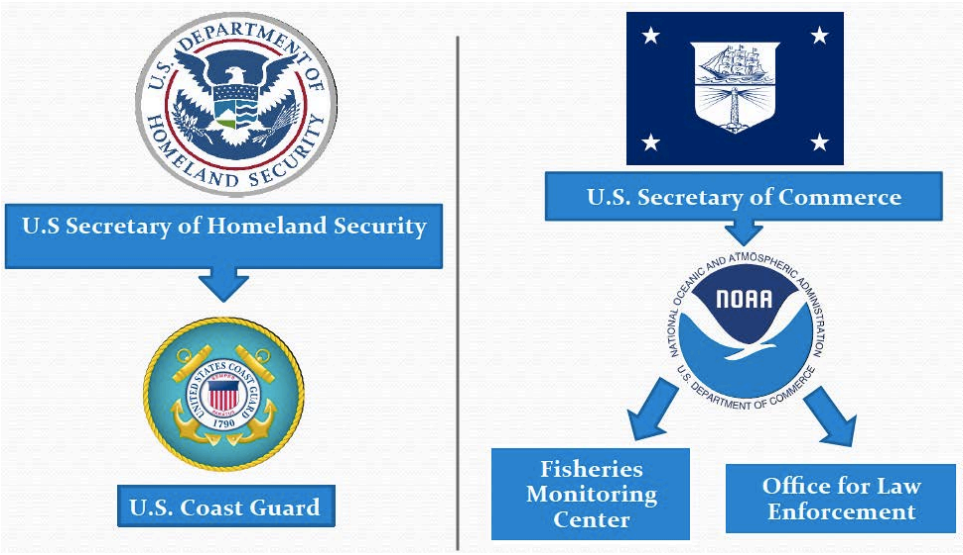


Figure 4: Organizational structure for the U.S. Coast Guard and NOAA.

3.2 Personnel Resources: the "20/20" Plan

In its first year of implementation, the program aims for a "20/20" increase in staffing—increasing personnel by 20 percent in order to obtain a 20 percent increase in the number of

inspected vessels in 2015. The two agencies will hire staff for the following positions distributed across all of the districts:

- 30 Oceanographic Instrumentation Technicians (NOAA - FMC)
- 33 Enforcement Officers (NOAA - OLE)
- 54 Civilian Agents (USCG - CGIS)

Oceanographic Instrumentation Technicians within the FMC are experts trained in data collection, monitoring, and analysis of tracking information for technologies such as the AIS required in this program. These employees will be in charge of monitoring fishing vessels, and recording and interpreting the information obtained through the AIS. They are also trained to conduct maintenance on tracking systems, and will therefore be able to address potential technical issues.

The NOAA Enforcement Officers are federal law enforcement agents responsible for enforcing federal fisheries regulations.[26] These employees conduct criminal and civil investigations, carry out patrols, inspections, and monitoring, and assist with outreach and compliance assistance.

The U.S. CGIS Civilian Agents are responsible for criminal investigations of crimes related to the maritime realm and U.S. Coast Guard missions.[27] Specifically, the Civilian Agents hired under the program implementation plan for H.R. 69 will investigate at-sea fishing vessels and ensure compliance with the existing U.S. fisheries regulations.

The proposed increase of 117 employees will consist entirely of lower-level staff, as we assume the necessary upper-level staff is already in place within the two agencies. The hiring and training process will occur in three batches over the course of the first year. These incremental increases are necessary in order to ease the transition and distribute the first-year costs of adding a large number of additional personnel. Appendix 7.2, 7.3 and 7.7 provide more detail on staffing and hiring.

4.0 Budget

As mentioned above, this program focuses on achieving its mission through personnel increases within NOAA and the U.S. Coast Guard. As such, these personnel increases account for the primary expenses in the program budget. The program budget separates expenses into personnel expenses and other than personnel expenses (OTPS), which includes operating expenses and contractual services. A full detailed budget can be found in Appendix 7.6 but a summary is provided here in Figure 5. The budget assumes average U.S. office OTPS expenses when estimating the needs of the program employees. Personnel expenses include salaries and benefit packages for the 20 percent increase in FMC, OLE, and CGIS staff, which were calculated as averages of existing wage ranges for the NOAA and U.S Coast Guard positions. The training of

the new employees will be contracted out for $4000 per individual, which is equivalent to what the agencies have spent on training contracts in the past. The distribution of funds between NOAA and the Coast Guard can be found in Figure 6.

H.R. 69 Abbreviated Program Budget (Dollars in Thousands) Calendar Year of 2015	
Expenses	Total
National Oceanic and Atmospheric Administration	$179,085
U.S. Coast Guard	$19,356
Total Expenses	$198,441
Revenues	
National Oceanic and Atmospheric Administration	$165,900
U.S. Coast Guard	$41,400
Total Revenue	$207,300
Net Gain/Loss	**$8,859**

Figure 5: Brief summary of program budget.

Revenue will come from the increased fines instituted under the program, as well as the procurement fee from the required AIS equipment and permit fees. The AIS equipment will be bought in bulk by NOAA and sold at for $2000 per unit.[28] The Class A device was selected because it meets all international and national requirements for marine safety.[29] No capital expenses will be made in the first year of program implementation, as the initial workload will center on hiring and training staffing resources in order to ensure the long-term success of the program. However, following the first year vessels and facilities will be purchased to better incorporate the new personnel and ensure the continued success of the program.

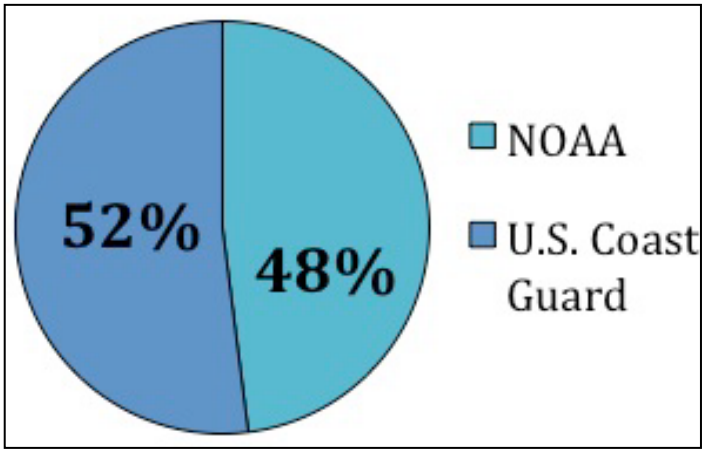


Figure 6: Pie chart showing the program expense distribution between the two enforcement agencies, NOAA and the U.S. Coast Guard.

The total budget expenditures are $39 million, of which 52 percent will go towards the U.S. Coast Guard's 17 districts, and 48 percent is directed to the six NOAA

districts. The program is expected to result in a net surplus of $10,356,000 for 2015, which will go back into the federal budget. Because federal budgets operate under different rules than other budgets, it cannot be assumed that this program surplus will go towards future expenditures of the same program. The surplus for 2015 is a result of the program design, which places a significant emphasis on permit requirements and penalties. Revenue from permit requirements comes from increased permit fees as well as procurement fees of the required AIS tracking equipment. Furthermore, our program design mandates a three-strike system with fines on an increasing scale resulting in revenue from fines as well.

For further details on the budget please see Appendix 7.4, 7.5 and 7.6. Overall, these changes in personnel, permit requirements, and penalties will lead to an increase in the USCG's and NOAA's abilities to combat IUU fishing, leading to a decrease in unsustainable fishing practices and an increase in global food security.

4.1 Assumptions

- Budget and revenue plan is based on the current budgets for NOAA[30] and the USCG.[31]
- For tracking expenses, a US commercial vessel count at 79,000 has been assumed, based on a 2008 vessel list, and estimate our strikes to place thirty-five new vessels on the IUU list annually.[32]
- For OTPS expense assumptions, the program will use ten selected vessels from the Coast Guard, and pay for fuel at the projected 2015 price of $3.70/gal filling the four-hundred gallon tank, with a projected one hundred refuels throughout the year.

5.0 Implementation Timeline

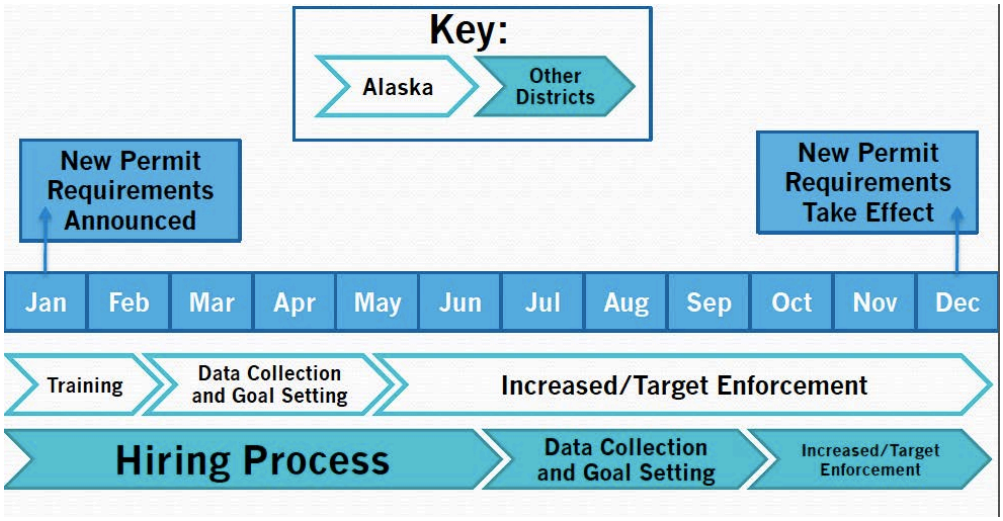


Figure 7. Implementation timeline for the program's first year.

Due to the nature of the program design, which emphasizes the need for increased personnel resources, the first year of implementation will primarily be centered on the hiring and training of new staff. The timeline for hiring and program implementation can be found in Figure 7. NOAA's Oceanographic Instrumentation Technicians and Enforcement Officers and the U.S. Coast Guard's Civilian Agents will be hired and trained in three batches. Each batch involves a 90-day hiring period followed by two weeks of training. These batches will commence in the second, third, and fourth quarter of the initial program year, respectively. For further details please see the table in Appendix 7.3 and 7.7.

The program will implement general elements that will begin in the first year and continue through the life of the program. These elements include reports, audits, meetings, and conferences. They are scheduled at regular intervals that can be observed in the comprehensive first year calendar in Appendix 7.9. For more information on the objectives and frequency of the general program elements, please see Appendix 7.8.

In addition to the national implementation schedule, the Coast Guard's 17th District in Alaska has been selected as a case study area for expedited implementation. Investigation quotas, agency audits, and the interagency cloud-based data and tracking system will be fast-tracked in order to generate preliminary results that justify the initial investment. Expediting implementation in Alaska will allow the U.S. Coast Guard and NOAA to evaluate the effectiveness of the program and ultimately ensure that unintended complications can be accounted for prior to the nationwide implementation. Alaska was conceived as an optimal case study area due to its isolation from the continental U.S., leaving it less vulnerable to lurking variables that would confound the evaluation of the program's effectiveness. At the same time, Alaskan waters account for nearly half of fish caught in the U.S. annually.[33] Finally, Alaska's Coast Guard district has an upwards of 2,500 civilian employees at any given time, making it the largest and most well-staffed Coast Guard fleet in the country.[34] Therefore, Alaska is ideal for expediting the program without adding additional personnel. To view the complete first year schedule see Appendix 7.9.

At the end of the first year, a full performance review will be conducted and a year-end report written to assess the effectiveness of the program and make necessary adjustments.

6.0 Conclusion

The Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013 proposes to solve the issue of IUU fishing by amending fourteen existing regulations, resulting in streamlined enforcement mechanisms and stricter consequences for IUU fishing violations. The goal is that the implementation of H.R.69 will address the risks posed to biodiversity, food security, and economic stability in the fisheries market, ultimately protecting U.S. fish stocks and contributing to the international conservation of fisheries resources. In order to effectively manage sustainable

fisheries, a dual approach to H.R.69 is necessary, and because of this the program has been designed to attack the problem of IUU fishing from two directions: enhancing the ability of enforcement officials to identify and apprehend perpetrators, and disincentivizing fishers from engaging in IUU activities in the first place.

Collaboration is crucial to the program's effectiveness. To meet the first goal, the program emphasizes interagency collaboration between NOAA and the U.S. Coast Guard to streamline communication and better enable enforcement officers to detect and investigate IUU fishing activities. As illustrated by the EU case study, even the most carefully planned program can be rendered inefficient from a lack of harmonized enforcement efforts. In contrast, the unified approach seen in Iceland focuses on coordinated information sharing and has proven highly successful.

The second goal is addressed by making consequences for perpetrators far greater. The EU case study highlights financial incentives as a primary reason for why IUU fishing is still a worldwide issue. To remove financial incentives, the program focuses on increasing monetary fines for IUU violations as well holding IUU perpetrators accountable through criminalization. Furthermore, the program adds to these financial disincentives by amending permit requirements to make AIS tracking technology mandatory for all commercial fishing vessels, increasing the probability that IUU fishing vessels are brought to justice.

Using net Congressional allotments of $39 million, the program's first year focuses on increasing staffing resources within NOAA and the U.S. Coast Guard, adding a total of 117 employees between the two agencies. These additional employees will provide the manpower needed for these agencies to effectively manage the increase in responsibilities that this program requires. To justify the budgetary expenses and demonstrate the paramount need for action, implementation will be expedited in Alaska, a key region. Although nationwide implementation will take time and results are not expected to be realized for several years, we anticipate that we will be able to report preliminary results by year-end from the accelerated efforts in Alaska.

The U.S. already has a multitude of fisheries regulations in place, yet none of them has been successful in deterring IUU fishing. The logical conclusion from this fact is that adding additional regulations is not the answer. To actually address the problem, we have to enforce what we already have more effectively. This program design achieves this through employing modern technologies, fostering interagency collaboration, and removing incentives to break the law.

7.0 Appendices

7.1 Performance Management Table

	Measurement	**Collection**	**Reporting**	**Feedback**
20% increase in USCG staff	-Monthly quotas for each of the 17 districts: --Vessels searched --Property seized -Has the seasonal monthly quota been reached?	-54 Coast Guard agents completing reports -Each incident reported to full extent, including date, time, location, and results of investigation -All reports available to USCG and NOAA via cloud-based system	-17 Department Heads interpret data from reports -Department Heads liaise monthly -Help each other reach quotas by discussion and giving advice -Ensures regional accountability	-The result of each quota attempt is announced by the end of each month -Three months of underperformance results in an audit -Audit process will interview each agent and department head at the respective office -If quota is determined to be too high, it may be lowered
20% increase in NOAA staff	-Monthly quotas for each of the six regional offices: --Number of Vessels searched -Has the seasonal monthly quota been reached?	-63 NOAA agents completing reports -Each incident reported to full extent, including date, time, location, and results of investigation -All reports available to USCG and NOAA on the synced, cloud-based system	-Six Department Heads interpret data from reports -Department Heads liaise monthly -Help one another reach quotas by discussion and giving advice -Ensures regional accountability	-The result of each quota attempt is announced by the end of each month -Three months of underperformance results in an audit -Audit process will interview each agent and department head at the respective office -If quota is determined to be too high, it may be lowered

7.2 Staffing Positions

Agency	Number of New Hires	Position
NOAA	30	Oceanographic Instrumentation Technicians
	33	Enforcement Officers
U.S. Coast Guard	54	Civilian Agents

7.3 Hiring Schedule

	Q1	Q2	Q3	Q4	Total:
NOAA					
Oceanographic Instrumentation Technician	0	15	10	5	**30**
Enforcement Officer	0	16	12	5	**33**
U.S. Coast Guard					
Civilian Agent	0	25	15	14	**54**

7.4 Program Budget

H.R. 69 Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013

Program Budget (Dollars in Thousands)

Calendar Year of 2015

Expenses			Total
	National Oceanic and Atmospheric Administration		
	PS	Increase Personnel	$4,316
	OTPS	Overhead Expenses	$174,769
	United States Coast Guard		
	PS	Increase Personnel	$3,889
	OTPS	Overhead Expenses	$15,467
		Total Expenses	$198,441
Revenues			
	National Oceanic and Atmospheric Administration		
	Tracking Equipment and Procurement Fee		$165,900
	United States Coast Guard		
	Permit Fees		$31,600
	Fines Collected		$9,800
		Total Revenue	$207,300
		Profit/(loss)	**$8,859**

7.5 Line-Item Budget

H.R. 69 Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013

Line-item Budget (Dollars in Thousands)

Calendar Year of 2015

National Oceanic and Atmospheric Administration			
PS	*Fisheries Monitoring Center*	Individual	Total
	Oceanographic Instrumentation Technician, 30 full-time	$64	
	Fringe Benefits	$25	$1,889
	Office for Law Enforcement		
	Enforcement Officer, 33 full-time	$73	
	Fringe Benefits	$29	$2,427
		Total PS Expenses	$4,316
OTPS	Space and Utilities		
	Rent Expense		$15,750
	Operating Costs		$79
	Systems Operation and Maintenance		
	AIS Base Station Receivers		$15
	Computer and Accessories		$158
	Supplies and Equipment		
	Tracking Equipment		$158,000
	Office Supplies		$15
	Contractual Services		
	Communication Center between NOAA and IMO		$500
	Training Expense		$252
		Total OTPS Expenses	$174,769
		Total NOAA Expenses	$179,085
United States Coast Guard			
PS	*Investigative Services*		
	Civilian Agents, 54 full-time	$64	
	Fringe Benefits	$37	$3,889
		Total PS Expenses	$3,889
OTPS	Space and Utilities		
	Rent Expense		$13,500
	Operating Costs		$67
	Vessel Expense		
	Maintainance Fees		$56
	Gas Expenses		$1,480
	Supplies and Equipment		
	Office Supplies		$13
	Computer and Accessories		$135
	Contractual Services		
	Training Expense		$216
		Total OTPS Expenses	$15,467
		Total U.S. Coast Guard Expenses	$19,356
		Total Program Budget	**$198,441**

7.6 Revenue Plan

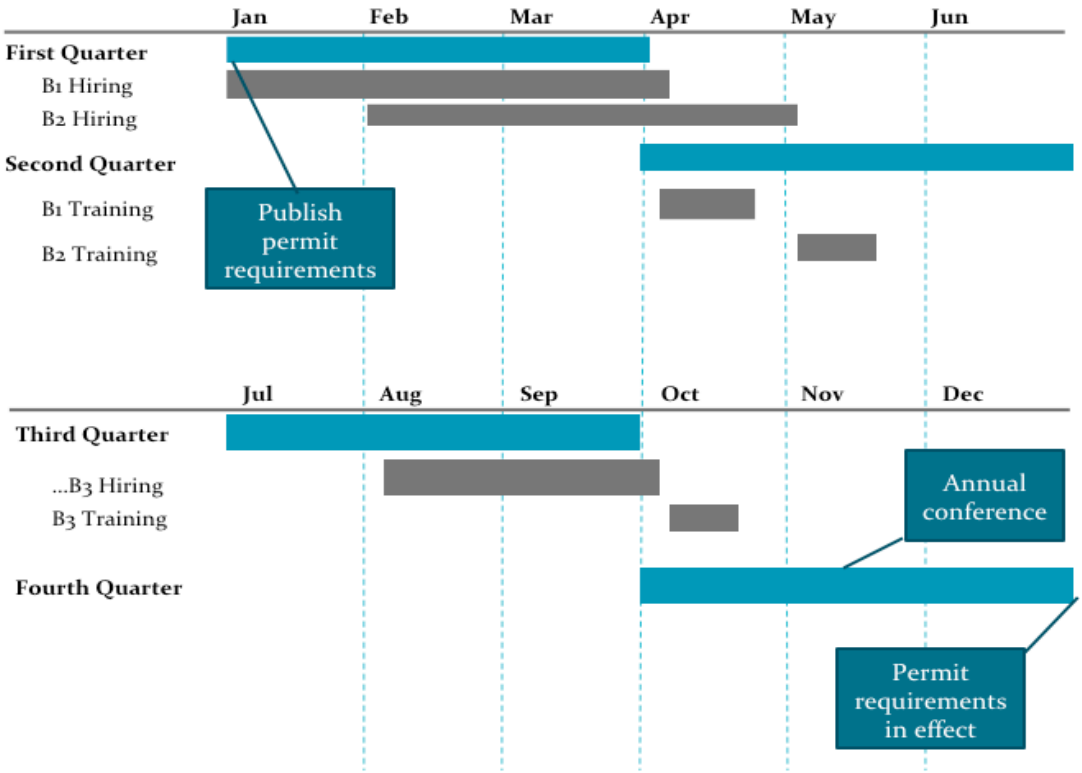
H.R. 69 Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2013

Revenue Plan (Dollars in Thousands)

Calendar Year of 2015

		Cost Per Vessel	Estimated Number of Vessels	Total
National Oceanic and Atmospheric Administration				
Tracking Equipment		$2	79000	$158,000
5% Procurement Fee		$0.1	79000	$7,900
			Total NOAA Revenue	$165,900
United States Coast Guard				
Permit fees		$0.4	79000	$31,600
Fines	Frequency			
1-strike	60%	$15	210	$3,150
2-strike	30%	$40	105	$4,200
3-strike	10%	$70	35	$2,450
		Total	350	$9,800
			Total U.S. Coast Guard Revenue	$41,400
			Total Program Revenue	**$207,300**

7.7 Staffing Implementation Schedule



7.8 General Elements Table

Item	Objective	Frequency
Fishery Monitoring Center Reports	Keeps up to date with vessels on the IUU vessel list.	Weekly
Audits	Ensures that program and quotas are effective and leaves room for reevaluation.	Quarterly
Interagency Meeting – USCG & NOAA	Brings the agencies together to ensure collaboration.	Monthly
Internal Reports	Reports agency actions to ensure productivity and to be used for future reference.	Quarterly
Conference	Bring together agencies and experts to better address IUU fishing.	Annual

7.9 Comprehensive 1st Year Calendar

Task	Start Date	End Date	Outcomes & Results
Publish New Permit Requirements	5-Jan	5-Jan	New requirements are published to the public
Purchase Tracking Equipment	5-Jan	5-Jan	Tracking equipment will be purchased in bulk to be sold to vessels with permits
Contracting	5-Jan		Begin process for all contracting to be used in the program
B1 Hiring Process	5-Jan	6-Apr	Post job, interviews, and hiring employees for batch 1 employees
Case Study Quota	*12-Jan*	*30-Jan*	*Gather data to establish a quota for the case study area*
Case Study Clouding System	*12-Jan*		*Implement clouding system in case study area*
Ensure Supplies are Purchased	26-Jan		Ensure supplies needed for extra employees are included with the supply budget
Interagency Meeting	26-Jan	26-Jan	Meeting between NOAA and USCG to ensure communication and effectiveness
B2 Hiring Process	2-Feb	4-May	Post job, interviews, and hiring employees for batch 2 employees
Interagency Meeting	23-Feb	23-Feb	Meeting between NOAA and USCG to ensure communication and effectiveness
Clouding System	2-Mar	27-Mar	Implement and sync all offices through the clouding system
Interagency Meeting	30-Mar	30-Mar	Meeting between NOAA and USCG to ensure communication and effectiveness
B1 Employee Training	6-Apr	17-Apr	Contract out employee training – 2 week training for batch 1
Case Study Quota Review	*13-Apr*	*1-May*	*Review case study quota – establish new quota if needed*
B1 Employees Begin	20-Apr	20-Apr	Batch 1 employees completely trained and operational
Q1 Report Due	27-Apr	27-Apr	
Interagency Meeting	27-Apr	27-Apr	Meeting between NOAA and USCG to ensure communication and effectiveness
B2 Employee Training	4-May	15-May	Contract out employee training – 2 week training for batch 2
Quota	4-May	29-May	All districts gather data and establish

8.0 References

[1] U.S. House of Representatives Natural Resources Committee Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs. *Testimony of Michael Kraft, Vice President of Sustainability, Bumble Bee Foods, LLC*. 2014. 113th Cong. 2nd sess. Web. 15 Nov. 2014. <http://naturalresources.house.gov/uploadedfiles/krafttestimony4-3-14.pdf>.

[2] Worm,Boris; Barbier, Edward B.; Beaumont, Nicola; Duffy, J. Emmett; Folke, Carl; Halpern, Benjamin S.; Jackson, Jeremy B. C.; Lotze, Heike K.; Micheli, Fiorenza; Palumbi, Stephen R.;Sala, Enric; Selkoe, Kimberley A.; Stachowicz, John J.; and Watson, Reg. "*Impacts of Biodiversity Loss on Ocean Ecosystem Services." Science*. 314.5800 (2006): 787-790. Web. 5 June 2014. <http://www.sciencemag.org/content/314/5800/787.short>.

[3] Knapp, Sandra, and Geoff Boxshall. "Biodiversity and Systematics: How Have We Fared in the International Year of Biodiversity?" *Systematics and Biodiversity* 8.4 (2010): 419-22. Web. 16 Nov. 2014. <http://www.sciencemag.org/content/314/5800/787.short>.

[4] Briley, John. "Illegal, Unreported and Unregulated Fishing: Frequently Asked Questions - The Pew Charitable Trusts." The Pew Charitable Trusts. 2013. Retrieved June 5, 2014. <http://www.pewenvironment.org/news-room/other-resources/illegal-unreported-and-unregulated-fishing-frequently-asked-questions-85899454024>.

[5] Steneck, R. S. "Apex predators and trophic cascades in large marine ecosystems: learning from serendipity." *Proceedings of the National Academy of Sciences of the United States of America, 109*.21 (2012): 7953–7954. doi:10.1073/pnas.1205591109 Retrieved Nov. 16, 2014, from http://www.pnas.org/content/109/21/7953.full

[6] Knapp and Boxshall, 2010.

[7] Agnew, David J., John Pearce, Ganapathiraju Pramod, Tom Peatman, Reg Watson, John R. Beddington, and Tony J. Pitcher. "Estimating the Worldwide Extent of Illegal Fishing." *PLoS One* 4.2 (2009): e4570. Web. 15 Nov. 2014. doi:10.1371/journal.pone.0004570. http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0004570#pone-0004570-g002

[8] Worm et al., 2006.

[9] "Fish as Food". *Marine Stewardship Council*. 2014. Retrived Nov. 16, 2014, from http://www.msc.org/healthy-oceans/the-oceans-today/fish-as-food

[10] FAO. "Report highlights growing role of fish in feeding the world." *Food and Agriculture Organization of the United Nations*. 2014. Web. 16 Nov. 2014. http://www.fao.org/news/story/en/item/231522/icode/

[11] Worm et al., 2006.

[12] "The End of the Line: Where Have All the Fish Gone?" *NationalGeographic.com*. N.p., n.d. Web. 15 Nov. 2014.< http://www.nationalgeographic.com/endoftheline/>.

[13] FAO, 2014

[14] National Marine Fisheries Service. ”Fisheries Economics of the United States, 2010.” *U.S. Dept. Commerce, NOAA Tech*. Memo. 2011. NMFS-F/SPO-118, 175p. Available at: <https://www.st.nmfs.noaa.gov/st5/publication/index.html>.

[15] Kraft, 2014

[16] Beke, M. and Blomeyer, R. “Illegal, Unreported and Unregulated Fishing: Sanctions in the EU Study.” European Parliament. 2014. Retrieved Nov. 16, 2014, from <http://www.europarl.europa.eu/RegData/etudes/STUD/2014/529069/IPOL_STU(2014)529069_EN.pdf >.

[17] NOAA Fisheries Feature. *Magnuson-Stevens Fishery Conservation and Management Act Reauthorized*. National Marine Fisheries Service (NMFS). 2014. Retrieved Nov. 2, 2014, from <http://www.nmfs.noaa.gov/msa2005/index.html>.

[18] U.S. Department of State and National Oceanic and Atmospheric Administration. “National Plan of Action of the United States of America to Prevent, Deter, and Eliminate Illegal, Unregulated, and Unreported Fishing.” 2005. Retrieved Nov. 26, 2014, from <http://www.nmfs.noaa.gov/ia/iuu/iuu_nationalplan.pdf >.

[19] Blank, R, M.; Lubchenco, J.; and Rauch III, S. D. “Improving International Fisheries Management Report to Congress.” 2013. Retrieved Nov. 26, 2014, from <http://www.nmfs.noaa.gov/ia/iuu/msra_page/2013_biennial_report_to_congress__jan_11__2013__final.pdf >.

[20] “Lacey Act Amendments of 1981.” *U.S. Fish and Wildlife Service*. n.d. Retrieved Nov. 26, 2014, from <http://www.fws.gov/laws/lawsdigest/LACEY.HTML>.

[21]. U.S. House of Representatives Natural Resources Committee Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs. *Testimony of James P.Walsh, Partner, Davis Wright Tremaine LLP*. 2014. 113th Cong. 2nd sess. Web. 15 Nov. 2014. <http://naturalresources.house.gov/uploadedfiles/walshtestimony4-3-14.pdf>.

[22] U.S. House of Representatives Natural Resources Committee Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs. *Testimony of Russel F. Smith III, Deputy Assistant Secretary for International Fisheries, NOAA, U.S. Department of Commerce*. 2014. 113th Cong. 2nd sess. Web 29. Nov. 2014.< http://www.legislative.noaa.gov/Testimony/Smith021214.pdf>.

[23] "Bordallo Reintroduces Coral Reef, IUU Bills." *Bordallo.House.Gov*. N.p., n.d. Web. 16 Nov. 2014. <https://bordallo.house.gov/press-release/bordallo-reintroduces-coral-reef-iuu-bills>.

[24] Geirsson, G. “Case Study of The Icelandic Integrated System for Monitoring, Control, and Surveillance.” Food and Agriculture Organization. 2011. Retrieved Nov. 17, 2014, from <http://www.fao.org/docrep/013/i2099e/i2099e.pdf>.

[25] "Introduction to IMO". *International Martime Organization*. n.d. Retrieved on Nov. 12, 2014, from <http://www.imo.org/About/Pages/Default.aspx>.

[26] "Law Enforcement FAQ". *NOAA Fisheries*. n.d. Retrieved on Nov. 16, 2014, from <http://www.nmfs.noaa.gov/ole/faqs.html>.

[27] "Coast Guard Investigative Service Personnel" United States Coast Guard. August 18, 2014. Retrieved on Nov. 16, 2014, from < http://www.uscg.mil/hq/cg2/cgis/personnel.asp>.

[28] "MCMurdo Smartfind M5 AIS Class A Transponder on Show at Mets 2013" *McMurdo*. November 19, 2013. Retrieved on Oct. 13, 2014, from <http://www.mcmurdomarine.com/press-releases-2013/184-mcmurdo-smartfind-m5-ais-class-a-transponder-on-show-at-mets-2013>.

[29] "AIS Frequently Asked Questions" *U.S. Coast Guard Navigation Center*. 2014. Retrieved on Nov. 6, 2014, from <http://www.navcen.uscg.gov/?pageName=AISFAQ#14>.

[30] National Oceanic and Atmospheric Administration. "Budget Estimates Fiscal Year 2015. n.p. n.d. Retrieved on Oct 21, 2014, from <http://www.corporateservices.noaa.gov/~nbo/docs/NOAA_FY15_CJ_508%20compliant.pdf>. ; U.S. Senate Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard. *Oversight of the President's Fiscal year 2014 Budget Requests for Coast Guard and NOAA*, Hearing. April 23, 2013. 113th Cong. 1st sess. Washington, GPO: 2013. Web Oct. 20, 2014. <http://www.gpo.gov/fdsys/pkg/CHRG-113shrg85473/html/CHRG-113shrg85473.htm>.

[31] United States Coast Guard. "Fiscal Year 2015 Congressional Justification". N.p., n.p., n.d., Retreved on Oct. 19, 2014, from <http://www.uscg.mil/budget/docs/USCG_FY2015_Congressional_Justification.pdf>. ; U.S. Senate Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard. Washington, GPO: 2013. <http://www.gpo.gov/fdsys/pkg/CHRG-113shrg85473/html/CHRG-113shrg85473.htm>.

[32] U.S. National Transportation Safety Board. United States Coast Guard: Commercial Fishing Vessel Count by State/Jurisdiction and Federally-Documented by the U.S. Coast Guard. N.p., n.p., n.d. Print.

[33] DeVuyst, G. "Know Your 17th District: Enforcement." *DVIDS*. U.S. Coast Guard, 28 May 2014. Web. 16 Nov. 2014. <http://www.dvidshub.net/video/339891/know-your-17th-district-enforcement#.VGkH6Icbp9m>.

[34] United States Coast Guard – 17th District. "U.S. Coast Guard 17th District." U.S Coast Guard. Web. 16 Nov. 2014. <http://www.uscg.mil/d17/images/D17%20Fact%20Sheet.pdf>.