**Assignment 3 (Introduction)**

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Title: Turtle Confiscation in the Northeastern United States

**Abstract**

In the Northeastern U.S., turtles are routinely confiscated from trade routes after being illegally harvested from their natural habitats. The origins, health and genetic make-up of these turtles are often unknown, which makes returning individuals to their original population difficult. To determine what would the best thing to do with these turtles once they are in our possession, I used structured decision to conduct my research. I performed many informative interviews with decision makers to gain perspective and to construct the decision tree. This tree linked the decisions made from all these decision makers that a turtle may encounter as it makes its way through the trade from employees in state law enforcement, postal workers and zoos. Each choice the person makes effects the next and so on. Once all the decisions trees are created, I linked their decisions to see which route leads to the ultimate survival of the turtles. I used this information to create a standard protocol that will be used when turtles are confiscated.

**Introduction**

Illegal wildlife trafficking is a growing problem both nationally and internationally (Rosen & Smith, 2010). The illegal trading of wildlife and wildlife byproducts is a multi-billion-dollar industry in the US, bringing in up to 20 billion dollars annually (Rosen & Smith, 2010). This makes it the second largest illegitimate business behind the illegal drug trade (Rosen & Smith, 2010). The illegal wildlife trade is a large-scale operation that involves many stakeholders.

Crime groups

Stakeholder networks consist of organized crime groups, corporate crime groups, and disorganized crime groups (Wyatt et al., 2020). Organized crime groups use violence to maintain order and have elements of corruption (Wyatt et al., 2020). In some cases, they use existing drug networks and use those connections and routes to smuggle wildlife instead of drugs because they see it as “more profitable and less risky than drug trafficking” (Wyatt et al., 2020). These crime groups will also use wildlife to smuggle drugs or serve as camouflage for drug trafficking across smuggling routes (van Uhm et al., 2021). Disorganized crime groups differ in that they are seen as an assembly of opportunistic entrepreneurs (Wyatt et al., 2020). They are all brought together and develop relationships all centered around smuggling wildlife. Disorganized crime groups “are characterized by swift and sometimes temporary and fluid relationships between actors that react to socio-economic, political and ecological changes by looking for opportunities for illegal activities” (Wyatt et al., 2020). They reach out to others who can help at different parts of the trafficking and each person gets paid and goes back to business as usual if the turtles are not apprehended during any of the events. Lastly, corporate crime groups, which are corporations and businesses that participate in illegal wildlife trade to increase their profits. They blend wildlife trade into their day-to-day business operations (Wyatt et al., 2020). People in possession of counterfeit credentials can pose as animal traders for zoos, circuses, and breeding companies allowing them to sneak under the radar. In wildlife laundering, the illegal origin of the wildlife is hidden, and the animal is declared as legally obtained through fraudulent paperwork (Wyatt et al., 2020). The trader or businessman sends a request to a poacher and then when the order is filled, they can say that the animals are captive bred so the animal can travel with no questions asked (Wyatt et al., 2020). Thus, people are finding ways to get around the law or slipping under the radar so that they can continue to practice illegally transporting wildlife (Gong et al., 2009).

In the Northeastern U.S., terrestrial turtles are routinely confiscated from trade routes after being illegally harvested from their natural habitats. From 1996 to 2008, 135, 153reptiles were seized from shipments, making it the group with the most living specimen shipped (Rosen & Smith, 2010). The second most seized taxonomic group is birds with 19,136 animals recorded (Rosen & Smith, 2010).  There is an increasing demand for turtles in the pet trade (Gong et al., 2009) due to their unique characteristics, such as skin color and carapace shape. Turtles come in many different shapes, colors, and sizes and this makes them even more desirable. In Southeast Asia, the demand for pet turtles is currently flooding the market (Gong et al., 2009). Consumption is yet another driver of the turtle trade (Gong et al., 2009). Turtle meat and eggs are seen as a delicacy and serve as the main source of protein in many countries (Mancini & Koch, 2009). In China, their growing populations are putting a strain on the native turtle population as they have grown to depend on the turtles as a meat source (Gong et al., 2009). Unsustainable hunting and consumption of these animals is having a negative impact on wild populations (Mancini & Koch, 2009).

  Uncertainties with turtles

When a turtle is confiscated in route by an authority, they have many risks and uncertainties to consider when thinking about their next step and how to proceed. Since they have little to no information about the turtle's origin, disease status, or genetic make-up, these uncertainties make returning individuals to their original population difficult. For example, if a turtle was exposed to a parasite while being transported, then it can be spread to the wild population if that individual is reintroduced back into the wild. This can be detrimental to the wild turtle population, especially if the species is threatened or endangered. To make better decisions and weigh the risk and uncertainty of their actions, these decision-makers need tools and a structured way of making decisions.

Structured Decision Making

For this project, I will be using structured decision making to collect information and design my conceptual models. Structured decision making has five main components and they are: 1) identifying the problem at hand 2) creating clear objectives 3) making alternatives for these objectives 4) assessing consequences and 5) recognizing tradeoffs (Gregory & Keeney, 2002). I will be conducting informational interviews of the stakeholders and mapping out the decisions they make and analyzing it using structure decision making. Some examples of the decision makers I will be talking to are employees from the United States Postal Service (USPS), Transportation Security Administration (TSA) and the U.S. Fish and Wildlife Service (USFWS).  I want to know what their thought process is if they find a turtles in a package, suitcase or cargo shipment. What do they think happens to these turtles once they are confiscated? I want to see things from their viewpoint and address any concerns they may have (Gregory & Keeney, 2002). There may be flaws in their current system that they may be aware of, and it can be an opportunity for their voices to be heard. Every thought they have molds the decisions they make on the job. For instance, if a postal service worker is not sure what happens to a turtle after they are confiscated, they may believe that the turtle would have a better chance of survival if they released it into a nearby park instead of if it is turned into law enforcement.  This can end up causing more harm than good in certain situations.

Case Study

\*For this project, we will be using the wood turtle (*Glyptemys insculpta)* as a case study. This species is of conservation concern because of its decreasing populations throughout the species range (Nugent et al., ). The main threats to the species are fragmentation, habitat loss and illegal wildlife (Nugent et al., ) . I will be conducting my research in the current range for the species, which is from the southern providences of Canada down to Virginia then out west to Minnesota (Lapin et al., 2019). I will be conducting my research in the states and providences where the wood turtle is found. This species is

Objectives

Therefore, the goal of my project is to work with decision makers (e.g., managers from state and government agencies) to (1) frame the problem of illegal turtle trafficking using structured decision making, (2) outline a conceptual model to identify points of intervention in the turtle trade and decision-making authority at each point along the route, and (3) using the conceptual model, map out a decision tree used to weight risk and uncertainty.

This research will help decision-makers consider the uncertainties, constraints, and many different possible outcomes of their problem and map out their decisions. The conceptual model will allow us to plot out decision points and options. I will use these tools and models to come up with standardized protocol that can be used in many areas to ensure that the turtles are given the best possible chance of survival. I aim to equip decision-makers the knowledge needed to make informed choses to conserve affected turtle species of illegal wildlife trafficking.

**Methods**

Before conducting my interviews, I will create a conceptual model of all possible routes a turtle can take starting from being in the wild to ending up in the illegal pet trade or consumed. The conceptual model will include encounters both at the point of confiscation and after. The model will also include nodes for if the turtle was not confiscated at all. I will try to think about all possible options. Once turtles are taken from the wild, they can end up in someone’s house being used to breed or wrapped in socks and duct tape in someone’s luggage at the airport (Utermohlen, 2019 add citation to lit cited). The model also shows what the next step for the turtles may be after they are in our possession. Some can end up in temporary captivity, permanent captivity or even being reintroduced to the wild. By mapping out this route, it helps us come up with the list of decision makers of people we need to interview. We want to talk to people that are the decision makers in these situations. The choices that people make along the way determines the fate of the turtle. Once the call is out that there is a turtle in possession, we must determine what would be the best thing to do with that animal.

Interview Process

 After I identify who the decision makers are, I will come up with the appropriate questions to ask them. I will generate broad questions that can be asked to anyone in the conceptual model regardless of their place of employment and more specialized questions for their specific practice. Developing the proper questions is very important because it helps guide the conversation. If I do not ask the correct questions, it can impede my results and mislead me. Once these questions are generated, I will conduct mock interviews to test out the questions on someone in the field who has experience with turtles. This will give me an opportunity to make necessary adjustments to the questions or create additional ones. Once the questions are finalized, I will interview a sample group of decision makers and collect their responses. This sample group will consist of people who we.. The interviews will be an hour long on Zoom and will contain from 3 – 8 decision makers. I will use the questions I have created to guide the conversation and make sure I am getting information on the numbers (how many turtles they have come across, etc.) and their thought process. To visualize the data collected, I will construct a decision tree.

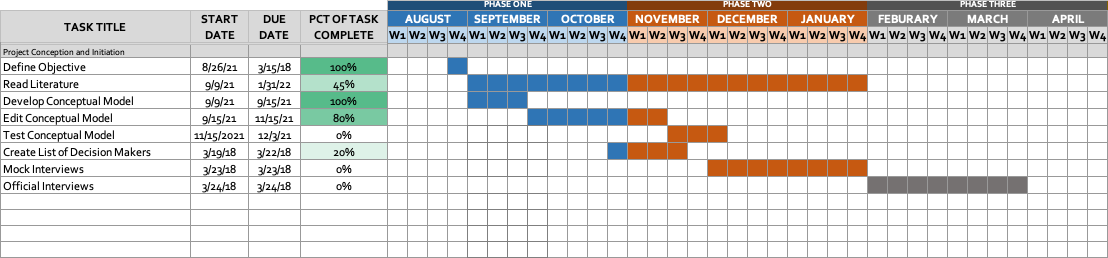
Constructing Decision Trees

Decision trees are used to calculate the uncertainties and generate alternatives~~,~~ (Canessa et al., 2016), which are important to keep in mind when using structured decision making. The trees show how the choices we make are all linked and how they affect one another. There will be a decision tree created for each person I interview. At the end, I will link all the trees together to illustrate their connection and how they flow together. A decision made from a postal worker will determine if the turtle is detected during transit, which will later determine if that turtle is picked up by law enforcement or possibly repatriated. I will map out all the possible decision that can be made and tie them back to the survival of the turtle. I will conclude which path within the decision tree will contribute most to the survival the species.

**Expected Results and Management Implications**

Once the entire decision tree is created it will include nodes that will have calculations showing the survival rate of the wood turtle at each branch in the tree. On completion of my research, I anticipate seeing what decisions would lead to ultimate survival of the species and would prove to serve as the best route to further conservation efforts for the turtles. The goal is to make choices that will be beneficial for the animals so we can help preserve their declining populations. The material gathered from this study will allow me to see what the best management route for confiscated turtles. This data can be used to create a standardized protocol for confiscated turtles. It will also help us see any shortcomings we see in communication between the different decisions makers. We will be able to use the information to create specialized training to in different high traffic areas such as postal offices, airports and ports. This can educate employees on what the best plan of action would be if they encounter a live specimen in route. It can also identify the most used methods of transportation for poachers so we can increase law enforcement involvement so we can catch perpetrators.

**Timeline**



Literature Cited

Gong, S., Chow, A., Fong, J., & Shi, H. (2009). The chelonian trade in the largest pet market in China: Scale, scope and impact on turtle conservation. *Oryx,* *43*(2), 213-216. doi:10.1017/S0030605308000902

Gregory, R. S., & Keeney, R. L. (2002). Making smarter environmental management decisions. *Journal of the American Water Resources Association*, *38*(6), 1601–1612. <https://doi.org/10.1111/j.1752-1688.2002.tb04367.x>

Hamilton, R. J., Desbiens, A., Pita, J., Brown, C. J., Vuto, S., Atu, W., James, R., Waldie, P., & Limpus, C. (2021). Satellite tracking improves conservation outcomes for nesting hawksbill turtles in Solomon Islands. *Biological Conservation*, *261*, 109240. <https://doi.org/10.1016/j.biocon.2021.109240>

Joseph, J., Nishizawa, H., Alin, J. M., Othman, R., Jolis, G., Isnain, I., & Nais, J. (2019). Mass sea turtle slaughter at Pulau Tiga, Malaysia: Genetic studies indicate poaching locations and its potential effects. *Global Ecology and Conservation*, *17*, e00586. <https://doi.org/10.1016/j.gecco.2019.e00586>

Lapin, C. N., Woodford, J. E., Tamplin, J. W., Brown, D. J., Cochrane, M. M., & Moen, R. A. (2019). A regional analysis of *Glyptemys insculpta* (Wood turtle) survival in the upper Midwest of the USA. *Herpetological Conservation and Biology*, *14*(3), 668–679.

Levell, J. P. (n.d.). Commercial exploitation of Blanding’s turtle, *Emydoidea blandingii,* and the wood turtle, *Glyptemys insculpta,* for the live animal trade. *Chelonian Conservation and Biology*, 665–674.

Mancini, A., & Koch, V. (2009). Sea turtle consumption and black-market trade in Baja California Sur, Mexico. *Endangered Species Research*, *7*(1), 1-10.

Nugent, B., Eckert, R., O’Donnell, C., Ferry, B., Megysey, J., Carloni, J., Rines, K., Normandeau, G., & Ellingwood, M. (n.d.). *New Hampshire Wildlife Action Plan* (2015th ed.). <https://www.wildlife.state.nh.us/wildlife/wap.html>

Nuno, A., Blumenthal, J. M., Austin, T. J., Bothwell, J., Ebanks-Petrie, G., Godley, B. J., & Broderick, A. C. (2018). Understanding implications of consumer behavior for wildlife farming and sustainable wildlife trade: Consumer Behavior and Wildlife Trade. *Conservation Biology*, *32*(2), 390–400. <https://doi.org/10.1111/cobi.12998>

Riley, S. J., & Gregory, R. S. (2012). *Decision making in wildlife management* (2nd ed.). Johns Hopkins University Press.

Rosen, G. E., & Smith, K. F. (2010). Summarizing the evidence on the international trade in illegal wildlife. *EcoHealth*, *7*(1), 24–32. <https://doi.org/10.1007/s10393-010-0317-y>

van Uhm, D., South, N., & Wyatt, T. (2021). Connections between trades and trafficking in wildlife and drugs. *Trends in Organized Crime*, 1-22.

Wyatt, T., van Uhm, D., & Nurse, A. (2020). Differentiating criminal networks in the illegal wildlife trade: Organized, corporate and disorganized crime. *Trends in Organized Crime*, *23*(4), 350–366. <https://doi.org/10.1007/s12117-020-09385-9>