Total Maximum Daily Loads are designed to quantify the amount of pollution that an individual body of water can carry without exceeding water quality standards. Pollution is divided into point source and non-point source categories, and individual pollutants are identified in specific mitigation strategies. A TMDL is created by using data specific to each body of water and the pollutant sources found there with a margin for seasonal variability and a margin for error. Surface water quality models have been used to assess the condition of bodies of water. Mitigation strategies are created accounting for the use of water, ease of implementation, environmental impact, and cost.

Although the framework is set up to allow accurate scientific analysis, it is still susceptible to the faults of the data chosen and the measurement tools, since none are specified. It is incumbent on states to initiate the process of creating TMDLs, so the data measurement may suffer based on what funding and resources are available, although the federal EPA has grants for the purpose. The section of the Oregon statute defining an excess pollutant load describes using available data rather than mandating the creation of adequate data, "this element evaluates, to the extent existing data allow, the difference between the actual pollutant load in a waterbody and the loading capacity of that waterbody."

the endangered species act. The endangered species act (ESA) was created to prevent extinction and protect the ecosystem of these species. It is stated that there are over 31,000 animals threatened in extinction. Petitions by public or state agencies can put these animals up on the Threatened/endangered list. Many of this data that is collected seems to be based on monitoring that specific animal's population over time. Some factors that are counted towards this is their habitat, how much food availability, reproduction rate, climate change etc. The data that is taken comes from a long time of research into the species and the life they have in the wild.

The purpose of the Marine Mammal Protection Act(1972) is to prevent the "take" of types of marine mammals and protect endangered species within the waters of the United States. For establishment, "depleted" species are listed under the act: "(2) such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population." Originally, no specific numbers were used to determine the population sizes that were needed to place certain species under the act. However, in 1994

The marbled murrelet was listed as endangered in its southern range in 1993. It's a relatively small seabird that nests in the canopies of old growth conifers near the coast. It ranges from Alaska to northern california. The bulk of accessible research is published by the USDA, USGS and USFS. There is a lot of conservation policy surrounding the bird and similar to the spotted owl, many timber sales have been prevented due to the bird's status. Research on the bird's biology and ecology are represented very quantitatively. Habitat association and reproductive ecology of the bird, for example. These studies help inform policy because by figuring out what habitats are strongly associated with the bird we can inform policy makers to protect particular habitats, without completely overestimating how much habitat the bird needs.

Oregon.

The federal listing in the Endangered Species Act was mainly determined by loss of critical habitat due to timber harvest, in addition to two smaller factors: oil pollution and loss of birds from gillnet fisheries. In Alaska, there is no special status for the bird. In Oregon and Washington it is listed as threatened, and in California it is endangered. The species was designated 32 critical habitat units in Oregon, Washington and California. These units are considered essential to the conservation of the species in the southern part of its range.

FIRE POLICY IN THE 20TH CENTURY & DATA FOR THE 10 A.M. POLICY (1935)

Fire policy in the 20th century largely focused on fire suppression and the removal of fire. Fire suppression policies were introduced with the overall aim of decreasing wildfires and saving money on wildfire recovery. The very limited data that was used in the creation of Forest Service fire policy in the early 20th century was rooted in the idea that humans should prevent fires because of fear that they will get out of hand. There was a notion that if humans do a better job of attempting to eliminate fire from the landscape that wildfires will not occur as frequently.

QUALITATIVE CREDIBILITY ASSESSMENT OF DATA & EXISTING RELEVANT DATA

The 10 A.M. Policy (1935) does not reflect any credibility because it lacked any qualitative assessment of data in regards to legitimately decreasing frequency and severity of wildfires. The 10 A.M. Policy focused on fire prevention which ultimately led to increased frequency and severity of wildfires, we are still experiencing the repercussions of this policy

There was available data in existence at the time that the 10 A.M. Policy was created and implemented because Indigenous communities in the U.S. utilized controlled burning techniques since before Western colonization. Although this data may be harder to quantify, the knowledge had existed, and if Indgenous communities had been consulted (& listened to) as a primary stakeholder I do not think the policy would have been implemented. I speculate that the relevant data was not used because Indigenous people and communities were gravely discriminated against. Also, I think the 10 A.M. Policy was essentially a blanket solution, there was "devastating" fire, so therefore the logic was to prevent all fire, with little to no consideration of the repercussions or other possibilities.

The policy that I am focusing on is the Emergency Planning and Community Right-to-Know Act (EPCRA). This act was passed in 1986, two years after there was an accidental release of methylisocyanate in Bhopal, India that killed or severely injured over 2,000 people. The EPCRA states that the local government must have emergency response plans in place incase of a chemical release, while the state government is required to oversee the implementation of the local government's emergency response plans. Facilities are required to

As far as data goes the EPCRA appears to have been solely implemented based on the incident in India. This being true there doesn't appear to be any sort of required quantitative standard for emergency response based on different levels of potential hazardous chemical accidental release. Based on my research it would appear that most hazardous chemical releases have been due to poor mining practices, pesticides, and nuclear meltdowns. Considering that there hasn't been much quantitative research done to set a standard let alone implement one there is reason to believe that this policy is not as sound as it may seem. To me this policy seems a little arrogant considering there is no sort of belief that there could be another incident where there could be

Willamette Valley Dams and Chinook Salmon

In 1969 the Army Corps of Engineers (USACE) implemented the Willamette Valley Flood Control Project in which 13 dams in Oregon were built (NOAA). The organization is a formation of the U.S. army that specifically regulates dams and flood protection. The dams built are 250 feet tall and have had a hugely negative impact on the chinook salmon species of Oregon. The dams block prime spawning habitat at the Willamette tributaries like the McKenzie River and the Middle Fork Willamette River. Because of these, salmon populations have since been declining.

There was little data I could find on the chinook species or dam impacts before 1969. However, An Oregon State University study reports the estimated decline in the harvests of chinook salmon since the 1940s (pictured below). In addition, Douglas Booth's paper, published in 1989, reports the aggregate linear loss rate of chinook salmon for dams. (pictured below). But, both of these research papers were conducted after the building of the dams. I found no data on the possible impacts of dams on salmon populations before 1969. However, this of data lack should have driven the USACE to conduct their own research on the impacts dams will cause on biodiversity.
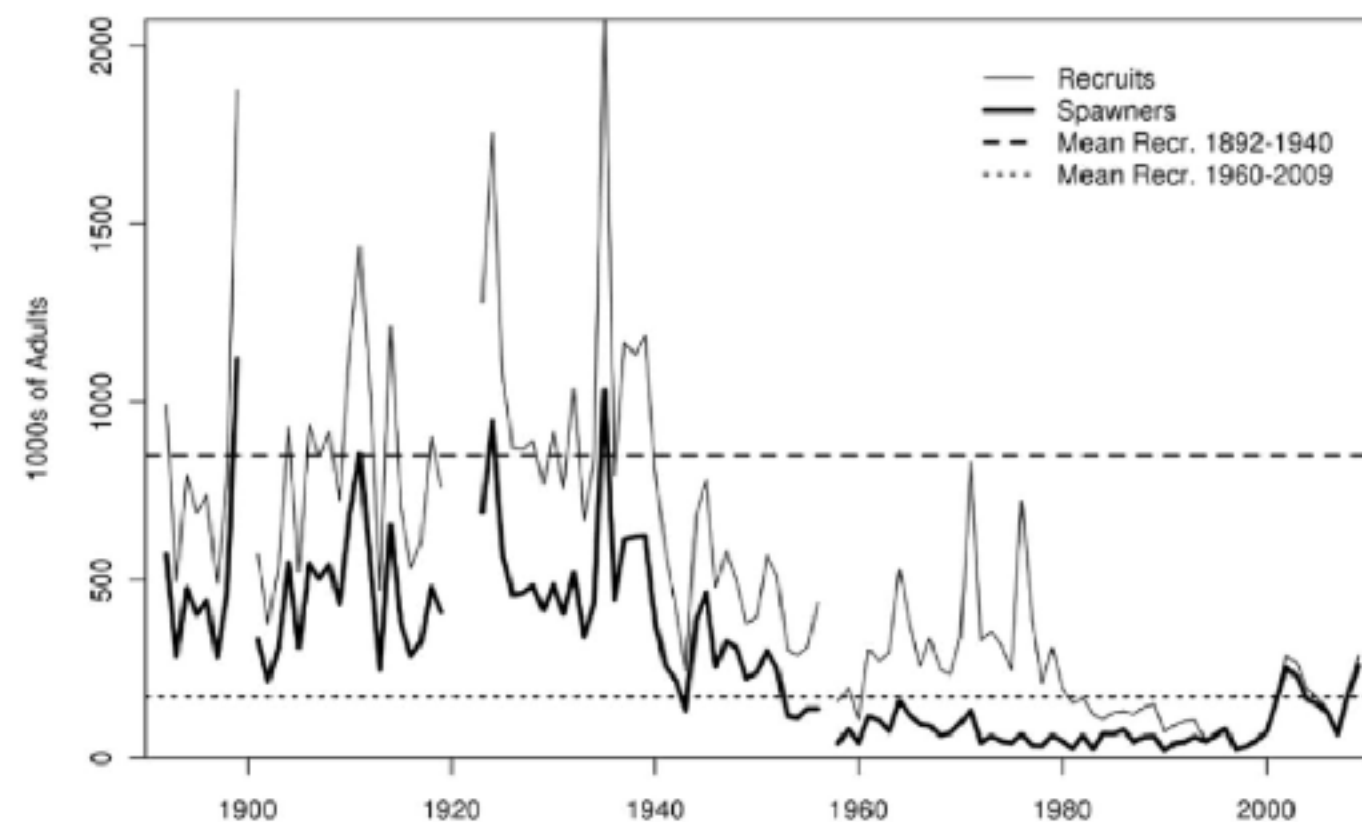

Figure 3. Coastal Oregon coho salmon in numbers of recruits and spawners from 1892 to 2009. Horizontal lines are the mean recruits for 1892–1940 and 1960–2009. (From Stout et al., 2012:29.)

The National Forest Management Act of 1976 amended the Forest and Rangeland Renewable Resources Planning Act of 1974 in response to lawsuits that called out the USFS for unsustainable timber and forest harvesting and management. It came at a good time in forest management history as national parks were becoming increasingly popular, and the post-war industrial boom was starting to adversely affect the amount of timber being harvested and sold, which was increasing at an unsustainable rate. NFMA created more accountability by requiring a zoning process to take place in order to determine the "best" use for some land, as well as a lengthy planning process to develop a sustainable plan involving the local community to identify issues, concerns, and opportunities (ICO's). In terms of data used to pass the legislation, I found more evidence pointing to the use of data in passing the law that the NFMA succeeded, the Forest and Rangeland Renewable Resources Planning Act of 1974, which first outlined the basic need for the Forest Service to manage and sustain its timber reserves.

While I found that the use of data was minimal in the actual words of the legislation, the NFMA calls for the use of data in determining the ICO's for a specific tract of land, so there was a little credibility giving to data and statistical analysis in the document. Data did not drive the creation of the act, but it certainly plays a role in the implementation. Relevant data that could've