Policy Brief Outline

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# Title

1. Fishing for Profit: A Legacy of Rough Fish Management in Iowa

# Executive Summary

1. Policy Issue Overview
   1. Commercial fishing for “rough fish” can be leveraged as a lake restoration tool, if species-specific management goals are incorporated into fishing contracts.
   2. This requires more research and labor on behalf of the Iowa DNR, thus comes at an expense.
   3. It could, however, be self-sustaining through the competitive bidding process for contracts, if funds were used to increase effectiveness of lake restoration program.
2. Policy Process
   1. Change the harvest contract system so that commercial fishing outfits are financially encouraged to reach benchmarks, or face a financial penalty otherwise.
   2. Test policy across a number of lakes of different size, watershed attributes, and rough fish abundance levels.
   3. Adapt and adjust contracts on year-to-year basis to concentrate commercial fishing efforts across the state of Iowa.
3. Recommendations/Suggestions
   1. Continued adaptive management, with significant input from DNR, is essential to determine how this program affects native buffalo and invasive carp.
   2. Extending from a., determining how those fish populations might affect water quality, and
   3. Build program resilience against market fluctuations, unreliable contractors.

# Policy Issue

1. History of rough fish management in Iowa
   1. Buffalo has sustained native peoples of North America for many years, Lewis and Clark dined on buffalo. (Lackmann, Andrews, Butler, Bielak-Lackmann, & Clark, 2019)
   2. Iowa DNR encouraged introduction of Eurasian Common Carp in late 1800s, but by 1911 the American palate for carp had waned. (Polton, 2018)
   3. Carp have a negative effect on aquatic ecosystems (Weber & Brown, 2009) and shallow, natural lakes of Iowa were likely in clear-water state before European settlement and introduction of Common Carp.
   4. Both species have been managed by removal for over a century in Iowa. (Meerbeek, 2018) and Stoller Fisheries, in Spirit Lake, Iowa used to process carp into fertilizer and food products, had a rabbi on staff to bless the catch as kosher.
   5. Current management regime is to contract commercial fishing outfits to remove rough fish from Iowa lakes. (IADNR, 2018)
   6. However, improvements to water quality can be lacking. Iowa DNR is interested in finding out if incentivizing harvest can improve water quality.
2. Under Lacey Act, the interstate commerce of wild fish and game is illegal, however, it may be permitted under state law
   1. The legal taking of fish is left to the states, so if an organism is ­commercially taken in a legal manner the transport and sale of such fish across state lines is permitted.
   2. “Nothing in this subsection preempts or supersedes the authority of a State to regulate wildlife species within that State.”
   3. High penalties for offenses, including fines and civil asset forfeiture. (USC, 2020)
3. Commercial harvest program carries risks, and is heavily market-driven, not natural resource driven
   1. Fish are transported live to NYC, Chicago (somewhat), Minneapolis. Fish must be given oxygenated water to arrive alive.
   2. Price negotiated at market may vary, based on supply and demand. COVID-19 has halted all 2020 sales. Generally, Buffalo are worth 4-5x what carp are worth.
   3. Seasonal demand varies (e.g., Christmas Carp) and limitations to harvest.
4. Careful and judicious management is required for best use of this as lake restoration tool
   1. While many experimental and observational studies have shown carp negatively impact shallow lake ecosystems (Weber & Brown, 2009) the effects of buffalo are unknown.
   2. In addition, they may be the longest living teleost fish (Actinopterygii Class, including catfish, salmon, pike and walleye, carp) (Lackmann, Andrews, Butler, Bielak-Lackmann, & Clark, 2019)
   3. Therefore, management objectives for these species may differ if over-exploitation of buffalo threatens the species; alternatively, there might not be enough carp harvest to improve water quality. Managing the species together could be problematic.

# Policy Process

1. Problem formation and identification
   1. A pilot project was carried out at Lost Island Lake (Palo Alto County, Iowa) at the request of an association of lakefront property owners: Our lake is impaired, and where are the bluegill? (Meerbeek, 2018)
   2. Fish managers used three tools for lake restoration, all focusing on carp management: stocking of carnivorous species to suppress juvenile carp and stocking of bluegill which actually eat carp eggs, installing fish barriers to prevent carp from spawning successfully, and incentivized commercial harvest (quotas on number of fish removed, with cash bonuses paid by Iowa DNR) (Meerbeek, 2018)
   3. Lake water quality improved, and the fishery improved. Lake associations were happy with the results. Commercial harvest has maintained low carp abundance in that lake.
   4. The problem is if this process is appropriate for all shallow, natural lakes of Iowa and to what extent buffalo harvest can improve lake quality while maintaining a natural fish population.
2. Policy agenda
   1. The Lake Restoration Program of the Iowa DNR administers the commercial harvest program across inland Iowa Lakes.
   2. Improving water quality and fishery opportunities for the public is a major goal of the Lake Restoration Program. Rough fish removal could improve water quality but likely needs to be incentivized and species-specific.
   3. Change contract format(s) so that harvest is incentivized and minimum harvest quotas are lake-specific (status quo: contractors may take as much or as little carp or buffalo as they like, so long as they remove every carp and buffalo individual that they capture.)
3. Policy Formation
   1. The harvest regulations differ in bordering waters of the Mississippi and Missouri Rivers (Commercial Fishing, 2020).
   2. Competitive bidding process generates revenue for the program (research, monitoring, and evaluation) and can also fund the bonuses paid for benchmarks of fish biomass reduction.
   3. Is this model fiscally and ecologically sustainable?
4. Policy Adoption
   1. ISU research grant executed to study effects of policy change:
      1. Develop a monitoring and evaluation protocol.
      2. Evaluate biological responses: sustainability of buffalo, eradication of carp.
      3. Compared to traditional contracts and reference systems with no harvest.
   2. Quota contracts implemented for 2019 calendar year, extended into 2020.
      1. Many stakeholders involved:
         1. Iowa DNR Lake Restoration administrators
         2. Local Iowa DNR Fisheries Biologists
         3. Commercial fishing operations
         4. Lake associations, municipalities.
      2. Contracts and modifications have to be run past Iowa DNR Lawyers.
   3. Policies changed still exist within framework of the Iowa Natural Resource Commission regulations on inland commercial fishing (Iowa Code Section 571.82, 2020)
5. Policy Implementation
   1. Selection of lakes was decided by many factors:
      1. Lake association influence, and communities with restoration projects in the works.
      2. Hyper-eutrophic lakes in need of renovation.
      3. Significant-Publicly-Owned-Lakes (SPOL) that are priority lakes for Iowa recreation and management.
   2. Carp incentive at Center Lake:
      1. Remove 10,000 lbs of Carp, get paid a per-pound bonus from DNR in addition to whatever it sells for at market.
      2. Find and enter winning bid price.
   3. Buffalo incentive at North Twin Lake:
      1. Remove 100,000 lbs of Buffalo, get paid cash bonus and further bonuses at 125,000 and 132,000 lbs of removal.
      2. Find and enter winning bid price.
6. Policy Evaluation
   1. Buffalo incentive successful at North Twin:
      1. Over 200,000 lbs buffalo removed. Make weight comparison to consumer products and or agricultural products.
      2. Anecdotal reports of improved fishing.
   2. Carp incentive unsuccessful
      1. Two fishing efforts, less than 2,000 pounds removed total.
      2. Anglers abandoned the contract, accepted a penalty from Iowa DNR for failing to meet quotas.
   3. “Lake Restoration” will be evaluated further
      1. Lag effect expected to show improvements in years after removals.
      2. Looking for differences in repeated, but low harvest effort vs. pulsed, but high incentivized fishing effort.
      3. Do watershed inputs degrade water quality?

# Recommendations

1. Steps forward to address potential policy alternatives
   1. A single-species approach has benefits for incentive, restoration:
      1. Carp are blamed for degraded water quality, not buffalo. Perhaps buffalo are just successful when carp are abundant.
      2. Markets may keep demand for buffalo higher than carp.
      3. Adaptive management model – monitoring populations to set quotas helps map species trajectories.
   2. The status-quo model has some limitations:
      1. Harvest subject to a multitude of variables: weather, livelihoods, markets, pandemics (interstate commerce).
      2. May not reduce carp below “nuisance” levels, while native buffalo are exploited.
      3. Buffalo may be extirpated locally as flood pulses and routes of dispersal have been altered since their evolution across the Great Plains.
   3. Fisheries Induced Evolution could occur
      1. Harvest equals genetic bottlenecks.
      2. Metapopulations of buffalo may be at risk.
      3. In Carp, we wish to induce a fishery collapse. In Buffalo, we don’t!
2. Monitoring and Evaluation
   1. Development of relationships between catch-per-unit-effort and biomass density; either from DNR sampling or by commercial fishing success.
   2. Identifying biomass density thresholds when fish become a nuisance, and how to prevent carp population growth.
   3. SPOL water quality monitoring from ISU limnology lab.
   4. Ongoing restoration projects across the watershed and landscape.

# References

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