Ayvalik-Haylazli Lagoon Fishery

Last Updated: November, 17 2020

1 Part I: Static Analysis - Collective action

The Ayvalik-Haylazli lagoon fishery is located in the Camlik Lagoon which is a part of Yumurtalik Lagoons on the Turkish Mediterranean coast near the town of Adana. The resource units are demersal fish (mullets, groupers, and snappers). The original case, which spans from 1976-1978, catalogues an action situation involving 397 registered fishermen from three neighboring villages. There are user group organizations (referred to as a co-op) and 504 active fishermen are members of those organizations. The charter of the co-op defines rules for membership. The co-op determines access to the fishery, patrols the lagoon boundaries and also, determines the types of permissible technology.

The key resources (natural infrastructure) in the system are the marine food web. The key shared resource relevant to the commons dilemma faced by the community is demersal fish stocks and their productivity (common-pool). The success of the Ayvalik-Haylazli lagoon fishery can likely be attributed to the small size of the lagoon, which allows for easy monitoring, and the existence of their small size cooperative and its clearly defined boundary rules. here.

1.1 The Commons Dilemma

- The problem of potential poor coordination of appropriation is mostly resolved among the local fishermen through the formation of the cooperatives, but it still results in occasional conflict when boats from the outside or sport fishermen from Adana come into the cooperative's area. Illegal trawlers cause overconsumption of fish stocks, as well as fishing immature fish and not letting the fish into the sea for spawning endangers the long term sustainability of the fishery. By law, trawlers are not allowed in bays and in the area within three miles of the coast. When cooperative members catch trawlers inside the bay, they call the coast guard, which issues a fine. There is a good understanding as to who can make use of the resource since the right to fish is legally defined in terms of membership of the cooperative, which has leased the lagoon fishery from the government (The Ministry of Agriculture and Forestry). For the most part, the fishing area's small size allows appropriate monitoring from the cooperative.
- The potential under-provisioning of the soft public infrastructure to mitigate free-riding behavior occurred with the tightening of cooperative membership rules (inferred). When the cooperative was formed in 1974, it initially included members who

lived outside the three fishing villages, as well as people who maintained wage employment. Those rules were later changed, and fishermen outside the communities or holding wage employment who did not move to one of the three villages or give up their employment were expelled from the cooperative. This limitation of membership also keeps fishing costs low.

1.2 Biophysical Context (IAD)

- **Natural infrastructure:** The lagoon fishery of Ayvalik-Haylazli is located near the town of Adana in the Mediterranean southeast coast of Turkey. The Mediterranean Sea consists of biologically-poor waters due to its oligotrophic (i.e. low nutrient levels) conditions leading to low levels of productivity. However, bottom-dwelling species that are of limited abundance but relatively high market value, such as sea breams, basses, mullets, groupers, and snappers, are targeted by the fishery. The enclosed Camlik Lagoon is a part of Yumurtalik Lagoons, which are the most important areas of the biggest delta of Turkey, Cukurova Wetland Ecosystem. The enclosed nature of the lagoon is not enough to effectively exclude all external un-entitled parties. Outsiders can enter the cooperative fishing area but can only be effectively excluded if they fail to provide proof of local residency and lack of wage employment income.
- **Hard human-made infrastructure:** Fishermen use two rowboats and one motorized vessel per small group of four. The rowboats are towed to the fishing area and the motor is then anchored to conserve fuel. The motorized boats used for small-scale fishing are 8 m open boats with a 10-25 HP inboard diesel engine (larger units may use 10 m boats with 3 fishermen). Few boats are equipped with depth recorders or fish finders. The gears used are mostly trammel nets, which are modified gillnets of small or large mesh depending on the target species, which are set on the bottom within the shelf area, and longlines which consist of a series of baited hooks on a main line attached to a float. Fishermen also build a barrier from reeds around the lagoon every year.Boats return to home ports within a day and the catch is marketed locally. Each fisherman in the group has an equal share in the boats and gear, as well as of the day's earnings. The relatively small size of the fishing area makes it possible for the cooperative to police it.

1.3 Attributes of the Community (IAD)

- **Social Infrastructure** As of 2011, the Ayvalik-Haylazli Lagoon fishery and its adjacent waters are harvested by 397 registered fishermen from three neighboring villages. All fishermen are cooperative members, and all cooperative members are fishermen. The resource users appear to be the public infrastructure providers (inferred). Membership in the cooperative charter (contractual obligation), which was founded in 1974, is restricted to those with a minimum of 6 months residency in one of the three villages and have no other wage employment or taxable income.
- **Human Infrastructure** Human infrastructure in the lagoon fishery is assumed to be adequate (inferred). The lagoon fishery is composed almost of all non-traditional fishermen who learned fishing after 1974 and who still remain committed to part-time farming (small-scale farmers who are not required to pay income tax).

1.4 Rules in Use (IAD)

1. **Position Rules:**
    - All 397 fishermen are registered members of the cooperative
    - A significant percentage of licensed part-time fishermen are also part-time farmers.
    - Outside fishermen.
    - Sport fishermen.
    - The illegal trawlers are issued fine by the coast guard.
2. **Boundary Rules:**
    - The Aquatic Resources Act gives priority to cooperatives in the leasing of the lagoon fisheries from the government (Ministry of Agriculture and Forestry) for a certain period of time. The cooperative has the de jure right to regulate access to the lagoon. To be able to gain access to the lagoon fishery resources, a fisherman must be contractually bound under the Charter of Cooperative which accepts members only if they meet the following requirements: (1) Must have at least 6 months of residency in one of the 3 villages; and (2) Must not have wage employment or other taxable income.
3. **Choice Rules:**
    - Cooperative fishermen may engage in part-time farming.
    - Cooperative fishermen must not live outside the three villages.
    - Cooperative fishermen must not engage in wage employment or receive any other taxable income.
    - Non-cooperative members and outside fishermen are prohibited from fishing in the lagoon, which is leased to the cooperative by the government.
4. **Aggregation Rules:**
    - Initial members of the cooperative who were outsiders or engaged in wage labor had to decide to relocate to one of the 3 neighboring villages and give up wage labor in order to retain cooperative membership after the rule change.
5. **Scope Rules:**
    - The decision by the cooperative to tie cooperative membership to residency requirements and lack of other available income directly affect two outcome variables: the resource extraction rate (limited ability to free-ride) and cost of fishing (lowered).
6. **Information Rules:**
    - Not mentioned in the study.
7. **Payoff Rules:**
    - The limitation of membership makes it possible to keep the cost of fishing very low for the members of the cooperative, who receive equal shares of the boat, gear, and day's earnings.

1.5 Summary

The success of the Ayvalik-Haylazli lagoon fishery has been attributed to the existence of their cooperative, which clearly defines fishing rights inside the lagoon fishery area to cooperative members, which decide on the restrictions of membership. This keeps a tight control on who enters and leaves the fishery, but it does not resolve conflicts with outsiders or sport fishermen occasionally fishing in the area. No apparent conflict exists between small-scale fisheries and large-scale fisheries, potentially due to the biophysical infrastructure and small size of the lagoon, which allows effective monitoring and limits access by larger-scale fishing operators. The homogenous community of users (inferred), and its relative small size gives way to reciprocal and mutually reinforcing relationships that facilitate appropriate local-level management. Use of extra-local authority (the cooperative) and enabling legislation (de jure access rights to the lagoon) further facilitates the exclusion of non-members from resource utilization while giving legitimacy to local rules of resource use.

2 Part II. Dynamic Analysis - Robustness

Given the source document, there is insufficient data to make any assessment on the temporal dynamics (resource and social conditions, etc.) of this particular common-pool resource. The contributors thus far have been unable to locate any specific updates for this case study.

3 Part III. Case Contributors

- Burcu Tezcan, School of Sustainable Engineering and the Built Environment, Arizona State University.
- Maria del Mar Mancha Cisneros, School of Life Sciences, Arizona State University.
- Ute Brady, School of Human Evolution and Social Change, Arizona State University.
- Sechindra Vallury, School of Sustainability, Arizona State University.