

# Institutional Analysis of the Ayvalik-Haylazli Lagoon Fishery, Turkey

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## 1 Part I: Static Analysis - Collective action

The Ayvalik-Haylazli lagoon fishery is located on the Turkish Mediterranean coast near the town of Adana. The resource units are demersal fish (mulletts, groupers, and snappers). The original case, which spans from 1976-1978, catalogues an action situation involving 103 registered fishermen from three neighboring villages. There is only one user group organization (referred to as a co-op) and all active fishermen are members in it. 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). This case study is part of the original Common-Pool Resource (CPR) database. A summary of the original CPR coding conducted in the 1980s by Edella Schlager and Shui Yan Tang at Indiana University may be found [here](#).

### 1.1 The Commons Dilemma

- The problem of potential poor coordination of appropriation was mostly resolved among the local fishermen through the formation of the cooperative, but it still resulted in occasional conflict when boats from the outside or sport fishermen from Adana come into the cooperative's area. 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. For the most part, the fishing area's small size allows appropriate monitoring from the cooperative.
- The potential under provision of 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 Ayvalik-Haylazli lagoon and its small size facilitate effective monitoring by the cooperative. However, its enclosed nature 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 boat 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. 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 1983, the Ayvalik-Haylazli Lagoon fishery and its adjacent waters are harvested by 103 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)

**Position Rules:** 1) All 103 fishermen are registered members of the cooperative, 2) A significant percentage of licensed part-time fishermen are also part-time farmers, 3) Outside fishermen, 4) Sport fishermen.

**Boundary Rules:** The Aquatic Resources Act gives priority to cooperatives in the leasing of the lagoon fisheries from the state. 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.

**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.

**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.

**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).

**Information Rules:** Not mentioned in the study.

**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**

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