Article:
Ermolin, I and Svolkinas, L (2016) Who owns sturgeon in the Caspian? New theoretical model of social responses towards state conservation policy. Biodiversity and Conservation, 25 (14). pp. 2929-2945. ISSN 0960-3115

https://doi.org/10.1007/s10531-016-1211-x

bbBiodiversity and Conservation

Who Owns Sturgeon in the Caspian? New Theoretical Model of Social Responses Towards State Conservation Policy

--Manuscript Draft--

Manuscript Number:	BIOC-D-16-00131
Full Title:	Who Owns Sturgeon in the Caspian? New Theoretical Model of Social Responses Towards State Conservation Policy
Article Type:	Original Research
Keywords:	compliance, non-compliance, enforcement of anti-poaching measures, sturgeon poaching, Caspian Sea, soft and hard forms of poaching
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Acknowledgements

The authors would like to thank the Mohammed bin Zayed Conservation Fund (Grants no. 12253827 and 13257683) and the Committee for Exploration and Research of the US National Geographic Society (Grant no. W 271-13) for the financial support that made possible fieldwork in Russia. Special thanks goes to Prof. Sandra Bell (Durham University, UK), Dr. Simon Goodman and Dr. Lilya Dmitrieva (Leeds University, UK), Prof. Victor de Munck (State University of New York, USA) and the anonymous reviewers for their useful comments and advices.

INTRODUCTION

The Caspian Sea, with a surface area of 371 000 km, is the world's largest lake or full- fledged sea. It is also the largest reservoir for wild populations of threatened sturgeons, comprising six species (of 26 existing) belonging to two genera (Huso and Acipenser): the Russian sturgeon [Acipenser gueldenstaedtii, russkiy osyotr], Persian sturgeon [Acipenser persicus, persidskiy osyotr], stellate sturgeon [Acipenser stellatus, sevruga], beluga [Huso Huso, beluga], ship sturgeon [Acipenser nudiventris, ship] and the sterlet [Acipenser ruthenus, sterlet]. The IUCN Red Data list of threatened species designates all species of Caspian sturgeon as threatened; vulnerable and critically endangered.

Besides being an obvious threat towards all species of Caspian sturgeon, sturgeon fishing represents an equal threat to the entire ecosystem of the Caspian Sea and has broader implications to the biodiversity of the Caspian Sea littoral. Gill nets and hook-lines that are used to catch sturgeon have had a serious impact on the Caspian Seal [Phoca caspica, Pusa caspica] population, the apex marine predator in the Caspian (Dmitrieva et al 2013). Seals' skins, used for production of various items of clothing, and blubber, valued as medicine against rheumatism and tuberculosis, are appreciated merchandise in fish markets in Dagestan and Kazakhstan. Recently, researchers have documented that partially due to gill nets and hook lines the Caspian seal population had declined by 90% (ibid). Although the main target is sturgeon, high rates of seal by-catch are caught entangled in sturgeon fishing gear (ibid), or taken as illegal catch by sturgeon fishing brigades (SFBs). The removal of two apex predators (beluga sturgeon and Caspian seal) from the ecosystem in the Caspian Sea poses a serious threat towards biodiversity of the Caspian ecosystem generally. The depletion of sturgeon has been described as 'one of the most tragic and representative examples of the destructive influence of humankind on Nature' (Lagutov and Lagutov 2007: 194). Since 2000 beluga and since 2005

Russian and Persian sturgeons as well as stellate can be taken legally for scientific purposes or for artificial breeding only in order to preserve sturgeon's genetic pool (Ruban and Khodorevskaya 2011). Some researchers suggest that by 2010 a share of the farm-raised beluga went up to 99 %, the Russian sturgeon 65 %, the stellate sturgeon 45 % (Khodorevskaya et al., 2012). This leads some researchers towards an assumption that, in 1999-2004 the illegal catch of Caspian sturgeon was up to 35 times bigger than the legal one (Bobyrev et al., 2009).

Various national and international treaties signed up to ban or limit commercial sturgeon fishing in Russia since 1999 as well as international trade in products from the Caspian sturgeon (according to CITES) explicitly aim at protecting sturgeons in the Caspian from extinction. Previous research shows that various factors, such as, ecological pollution and industrial development, habitat degradation (Khodorevskaya et al., 1997; De Meulenaer and Raymakers), overfishing during the Soviet times (Secor et al., 2000) and illegal fishing contributed to the decline of sturgeon. Thus, illegal fishing of sturgeon is but one aspect among others that contributed to the process of decline.

Researchers have been aware of illegal fishing of sturgeon since it began in 1990s (Secor et al., 2000; Ruban and Khodorevskaya 2011; Lagutov and Lagutov 2007). However, little systematic study has been done on why illegal fishing has become so widespread and what makes people to turn to illegal sturgeon fishing (Jaric and Gessner 2012). Some observers suggest, that overfishing has proliferated since the dissolution of the Soviet Union (De Meulenaer and Raymakers 1996: 62). This argument typically implies that the break-up of the Soviet Union, followed by social unrest and unemployment, accelerated economic crises in the Caspian fisheries thus creating favorable conditions for the expansion of unregulated fishing. However, less is known about the effects of recent attempts to improve the fisheries through reforming and enforcing strict sturgeon anti-poaching measures.

Previous studies of poaching deal with 'reasons', 'motivations', or develop typologies of motives (Forsyth and Marckese 1993a; Forsyth, et al. 1998; Eliason 2010; Muth and Bowie 1998). Some focus on the meaning of poaching in local forms of identity construction and in representations of local knowledge (Schama 2004; Hampshire, et al. 2004; Bell, et al. 2007). Neutralization theory is also applied in the study of poaching in an attempt to explain why and how violators justify and rationalize their actions (Eliason 2003; 2012; Forsyth and Marckese 1993b; Sykes and Matza 1957). However, the theoretical models in these studies do not consider social responses towards specific regulatory environment of biodiversity conservation. An analysis of the most recent literature on poaching suggests

that attention is increasingly paid to the different aspects of regulatory compliance in fishing, including social sanctions (Sutinen and Kuperan 1999), feelings of shame or guilt (Grasmick and Bursik 1990) as well as enforcement practices, including frequency of inspections (May 2005), belief congruency between regulators and regulates (May 2005) technical competence of the regulatory agency (Bardach and Kagan 1982) and economic issues such as supply and demand [Wilkie and Carpenter 1999; Bulte and Horan 2002; Kaltenborn, et al. 2005].

THEORETICAL IDEAS AND ANALYTICAL FRAMEWORK

Researchers previously emphasized the significance of local rules-in-use of bio-natural resources in conservation projects. According to Elinor Ostrom, rules are 'shared understandings among those involved that refer to enforced prescriptions about what actions (or states of the world) are required, prohibited, or permitted' (Ostrom 2007: 36). In general one set of rules depends on legal acts, on official legislation, adopted by governments sometimes on the higher level of governance. The second set of rules is set by fishermen themselves and can be best understood as actual fishing practices governed by social norms. Social norms refer to broader understandings than official rules as they encompass local knowledge and cultural understanding of fishing for specific species, fishing seasons and fishing gear (Fabinyi 2012; Gerkey 2011).

Current conservation policies in the Caspian do not recognize or acknowledge communal social norms can lead towards the creation of a 'parallel society' in fishing communities. By "parallel society" we mean negative responses in local communities that counteract national and international treaties, is selfreliant and resilient to change. The parallel society in its core is organized into gangs of young men, and functions outside legal norms, thus relying on its own assumptions and practices that promulgate a negative image of the state and its institutions. This phenomenon hinders the implementation of conservation policy because existing communal social norms (rules-in-use and other features) generate a negative view of the state. We suggest that unregulated sturgeon fishing and other forms of poaching heavily rely on social norms, while regulated fisheries rely on the first set of rules.

We consider the social norms and working rules-in-use of Caspian fishermen against the following regulatory measures: conservation policy, unregulated sturgeon fisheries and enforcement of anti-poaching laws. Analysis of

fishermen's views of regulatory measures shows two outcomes of current sturgeon conservation policies: continuing soft and hard forms of poaching. This two-model approach of 'soft' and 'hard' forms a framework for understanding local responses toward enforcement measures. The separation between the soft and hard forms of poaching allows us to better assess the complex ways by which fishermen adapt to conservation efforts. Another advantage of such a model is what that it sheds light on what was previously obscured by the rational ecological modernism of the policy makers. By extension, this model could be used to understand the impact of state conservation policy in any country, or community where poaching is a major social and/or economic issue.

We consider 'soft' forms of poaching to cover the following practices:

- 'Illegal fishing' or fishing without licenses for household consumption;
- Fishing with fishing licenses but with an intention to catch sturgeon;
- If the intention is absent, sturgeon is caught as by-catch, not reported to the authorities, and is considered by fishermen as legitimate catch.
- Minor violations of fishing rules.

"Hard" forms of poaching refer to the following aspects of illegal practices:

- Specialized commercial sturgeon fishing practices (illegal);
- Intentionally undermining and resisting current fishing rules and state policy;
- Organized in sturgeon fishing brigades (SFBs) on specialized boats ('bayda');

Analysis of sturgeon fishing practices is a good case to look into the limits of state conservation policy and the significance of poaching undermines state efforts at protecting rare species of animals. Our study shows that the Caspian fishermen did not stop practicing sturgeon fishing. However, the conservation policy encouraged the creation of new forms of sturgeon fishing as we have noted in the described cases of SFB.

This article attempts to look deeper into the problem of poaching by analyzing fishermen responses to state imposed regulatory measures. A common assumption that economic drivers alone, such as, high sturgeon meat and caviar market prices and demand for it is sufficient to explain all drivers for poaching. However, our analysis shows that additional socio-cultural factors contributed to poaching activities as significant drivers for illegal activities. In doing

so we consider the fisherman's perceptions of enforcement agencies and conservation measures as essential in understanding the factors leading towards the proliferation of poaching in the region.

State Conservation Policies and present state of fisheries in the studied regions

The conservation policy intends to conserve sturgeon in accordance with national and international treaties. But it also has to make sure that commercial fisheries operate and provide jobs in regions affected by high unemployment rates (exceeding 50% in all three research sites). As we shall see legal fisheries account for only one part of total fishing activities in the area. It became evident that the new systems failed to eradicate illegal fishing. When we speak about the Caspian fisheries we should bear in mind that the illegal forms of fishing of sturgeon will remain a significant sector in the foreseeable future along with the legal fisheries.

Commercial fishing is allowed in the coastal, brackish waters of the Caspian Sea. Since the ban on sturgeon fishing was introduced (for fishing beluga in 2000 and for fishing Russian sturgeon and stellate sturgeon in 2005), the Caspian fisheries target herring [Alosa kessleri**],** sazan [Cyprinus carpio], vobla [Rutilus caspicus], kutum [Rutilus kutum], bream [Abramis brama], catfish [Silurus glanis], shemaya [Alburnus Chalcoides], salmon [Salmo trutta caspius], Volga pikeperch [Sander volgensis], northern pike [Esox lucius], and Caspian tyulka [Clupeonella caspia]. The fishing season opens in early spring and autumn and closes down in late spring and autumn for summer and winter. One exception to this rule is that the fishing of mullet [Mugil cephalus] in Dagestan, is allowed during the summer months. Illegal fisheries typically ignore the seasonal restrictions, especially in summer. In winter, however, illegal fishing is restricted by ice-sheets covering certain areas in the northeastern Caspian.

There is a strict limitation on fishing gear. Typically, legal fishermen are permitted to work on small boats, with fyke nets or seine nets as the most common fishing tools. Gillnets with mesh size of up to 90mm are permitted during a few weeks of fishing in the late spring and early autumn. Fishing is more restricted in Dagestan, where it is permitted during the day hours only. In Kalmykia fishermen are allowed to operate from assembled temporary fishing camps, located at nearby fishing grounds in the water reed areas. A typical camp consists of a cluster of 6-7 boathouses.

Fishing is conducted by small boats, powered by outboard engines ranging from 50hp engines for inshore fishing to up to 1000hp for sea going fishing. The size of a boat ranges from 3m for the boats operating in camps to 11m for boats used in sturgeon fishing. 50hp engines are permitted in coastal fisheries according to the 'Federal Law on Small Size Vessels' (2012). The Law is less explicit about the engines permitted in recreational fisheries and engines of up to 250hp but not more could be used. The size of the engine on the boat can signal to law enforcers whether the boat operates legally or not.

One of the most significant legislative acts in the management of the Caspian fisheries has recently been the 'Federal Law on Fisheries and Protection of Marine Biologic Resources' (further FL on Fisheries and Protection), introduced in 2004 that complemented by a set of decrees and orders as well as the fishing rules for particular water basin (in our case the Volga River – Caspian Sea water basin) aimed at regulating more specific questions. In order to acquire fishing rights, stakeholders participate in tenders announced and organized by Federal Agency for Fisheries and its regional bodies according to Decree of Government of Russia, num. 450 from 15.05.2014. If a stakeholder wins a tender he gains a right to commence either commercial or recreational fishing but always within assigned fishing grounds, commonly known by the Russian acronym RPU ("Rybopromyslovye Uchjastki" or "Specially Designated Areas for Commercial Fishing") (See Figure 1) regulated by 'Fishing rules for the Volga River – Caspian Sea water basin' (further Fishing Rules) introduced in 2009, the Decree of Government of Russia, num. 1183 from 11.11.2014 and the Order of Federal Agency for Fisheries (FAF) num. 338 from 22.04.2009. The rights are formalized by a special agreement signed between the state and a tender winner. The tender is supposed to commit the winners to conduct commercial or recreational fishing on designated fishing grounds (RPUs). If a winner fails to fulfill his commitment by, for example, not fulfilling quota assigned to him or by violating fishing laws his rights might be abrogated. The RPU model is enforced by various governmental enforcement agencies, such as, the Ministry of Environment, FAF, including its regional subsidiaries and scientific bodies (KaspNIRCH), although less so by the Border Guard Services (BGS) under Federal Security Service (FSB) and the Ministry of Internal Affairs. A case in Dagestan exemplifies how the entire coastline, stretching from the international border with Azerbaijan to the Kalmykia, was subdivided into 146 RPU's. 25 RPUs are maintained for recreational fishing and 121 for commercial fishing. The RPU fishing grounds, averaging in length about 5 km into the sea and 2 km along the coastline, makes

fishing possible on a narrow strip of fishing grounds, along the Caspian coastline. A simple GPS device could track down the boundaries of every RPU by projecting its locations towards the general geographic coordinate system. Fishing beyond the boundaries, further from the shore or out of season is banned. Furthermore, a radius of 2 km in the river estuaries (and protected areas in general) exempts the areas from any fishing activity according to the article 30.2.1 ‘Fishing Rules’ and Order of Federal Agency for Fisheries (FAF) num. 338 from 22.04.2009. Extension of the RPU zone is possible, however in theory only. It is up to KaspNIRCH to assess a likelihood of sturgeon catch in the areas intended for extension as it defined by ‘Fishing Rules’ (article 13). If a significant number of sturgeons are caught in the areas, the application for extension will certainly fail. In fact, we are not aware of even an attempt to organize a scientific catch that will allow for the extension because of resistance from fishermen in organizing and due to high costs.

The majority of tender winners are not fishermen but fish producers: Small and Middle Eenterprise (SME) level businessmen, sole proprietors and fishing monopolies. Their activity is regualted mainly by ‘FL on Fisheries and Protection’. They hire fishermen, organized in fishing brigades, to work on the designated fishing grounds. The businessmen issue valid fishing licenses, permissions for accessing of border zones and other documentation if needed. Fishing gear can be owned by an individual fisherman or by a group of related kinsmen or friends. In some cases fish producers provide fishermen with loans to purchase fishing gear, boats, fuel or supplies. SME can hire as many as 60 fishermen, in which case locals consider it as a big enterprise. However, fishermen are not always personally in possession of all documentation that is needed during a fishing season. Several fishermen can share one license, especially, when they are closely related kin. From above discussed examples it becomes clear that the RPU system favors fish producers, not fishermen. Such is also the case of ITQ distribution mechanisms (‘FL on Fisheries and Protection’, Articles 33-38). Federal Agency for Fisheries retained a right to establish fishing quotas for all three regions in the northern Caspian. It issues a general fish quota for every region but leaves it to fish producers to choose how to divide fishing quota (private property regime). Before the start of a fishing season, fish producers meet up to decide on how to split the quota. In Kalmykia the process is manifested through the establishment of a 'Foundation for the Sustainment and Support of Small and Middle Size Businessmen'. This is a formal organization for fish producers as members, while no fishermen representatives participate in such meetings. Fishermen elsewhere in

Dagestan and the Volga River Delta with no such formalized body decide on the quota distribution in a similar way. Quota distribution system seems to work well when the catch is low, however if the catch exceeds quota it can potentially escalate communal conflicts because those who would receive smaller quotas might feel that they are discriminated against. The role that fish producers play in enforcing anti-poaching measures has also increased in that they can loose their fishing rights if the law violations occur systematically. We also have two cases (both in Dagestan) of tender winners declaring bankruptcy because of large fines imposed for poaching. There are several obvious means that fish producers can make fishermen follow the rules: one is by hiring the 'right' (or firing the 'wrong') fishermen; secondly, by directly talking and shaming fishermen into following the rules; thirdly, by indirect means, acting through third actors, who partake in supervising fishing activities, explaining and enforcing regulations. Such measures should be considered as indirect at best in that none of fish producers will be physically present at fishing grounds during fishing season to tell fishermen not to violate rules. Fish producers will have a limited impact in enforcing regulatory measures and this is why we decided to disregard their role in this analysis altogether. Fishermen might develop alternative, non-compliant, views towards fishing regulations and conservation measures not visible to fish producers. However, from what has been described we can see that the new system was put in place with a conservationist thinking in mind. It takes into consideration limiting fishing only to certain seasons and areas. Fishing thus is banned during the summer and winter sturgeon migration seasons, or at river estuaries.

The described fishing practices emphasize the significance of legal fishing practices in local fishing communities. These are important if we want to understand soft-forms of poaching, when and how it occurs. However, these do not account for the fishing practices that we refer to as hard forms of poaching, that target exclusively sturgeon. These fishing practices take little into consideration official fishing rules and rely on their own rules-in-use, alternative views of fishing, fishing seasons and grounds. Typically sturgeon fishermen use 'bayda' boats, powered by up to 1000 hp engines which can take in up to 2 metric tones of fish. Nowadays, SFBs use 'bayda' boats extensively for crossings of the international border between Russia and Kazakhstan to attend to sturgeon fishing grounds that are typically located in Kazakhstan. The scale of sturgeon fishing practices could be represented by the debates on the size of the current illegal sturgeon fishing fleet in Russia.

According to some researchers, in 2007, 2130 sturgeon fishing boats operated in the Caspian (Strukova and Guchgeldiyev 2010). However, others suggest that this number had decreased to about 400 SFBs by 2009 due to strict anti-poaching measures, the decline of catch, the increase of fishing costs (Dmitrieva et al 2013). However, this information, provided by BGS, is not verified by independent observers and therefore may not be accurate. According to information provided by fishermen to the authors of this article, during the fishing seasons of 2013-2014 there could have been as many as 1000 boats. It is interesting that fishermen for some reason provide a larger number of boats operating than BGS.

Agencies that operate to enforce anti-poaching measures in the Caspian are BGS, the local police, fishing inspectorate (under FAF), water police and others. Among them, the border guard units stationed in the vicinity of fishing villages seem to play the crucial role in the enforcement of anti-poaching measures. Partly, the presence of the border guards could be explained by a fact that a clear international border regime has not been established in the Caspian Sea. In the early 2000s, border guards were re-equipped with a new type of boat, modern surveillance technologies, NVDs, video cameras, installed on strategic outposts and river estuaries, combined with material rewards and high salaries as incentives for good work. A new form of ethics was introduced so to discourage, if not ban, border guards from any social bonding with the local population. The technical modernization and new work ethics of the BGS was going along with the expansion of the border zone, which is stretching out for hundreds kilometers in length and tens in width (Amendments to the 'Federal Law on the State Border (1993)' from 2002, article 13). The border zone expansion was accompanied by introducing two other regulatory mechanisms: first, subordination of the BGS to FSB (Decree of the President of RF num. 308 from 11.03.2003), that allowed the border guards to realize their controlling and monitoring authorities much more broadly (including the combat of poaching activities, smuggling and organized crime) over vast territory (Order of the FSB num. 82 from 02.03.2006 and Order of the FSB num. 458 from 10.09.2007); second, delegation of controlling authorities over economic activities within the border zone to border guards (special permits for economic activity in the border areas are required) (Amendments to the 'Federal Law on the State Border (1993)' from 2002, articles 13, 16 (1), 18, 21). Thus, border guards have become the most significant state actor that was delegated the controlling authorities over extraction of the most important marine bioresources (Golunov 2013; Ermolin 2015).

METHODOLOGY

Interviews with fishermen were conducted during 2012 and 2014 in three coastal fishing communities situated along the North/Western Caspian seashore. The situation in each community was studied for two months by a team of two trained in social science researchers and their local assistants. Interviews were conducted in Russian, the language that the informants were comfortable with. The main method used in this research was questionnaire interviewing. Three fishing towns, the first one (pop. 1000) in the Volga Delta River, the second (pop. 7000) in Dagestan and the third (pop. 10500) in Kalmykia were selected as research bases. The selection criteria of research localities included the following factors: the current status of the Caspian commercial fisheries, the intensity of fishing activities, the geographical proximity to the sturgeon migratory routes, geographical variation of ecological conditions, accessibility to the fishing grounds and the proximity of fisheries to protected areas (both terrestrial and marine).

Illegal fishing and especially hard forms of poaching is a criminal offence in Russia. Previous research shows that posing questions about issues, raised in this article, might be sensitive for many informants. Sensitive issues make a response rate for a quantitative survey low (Eliason 2010). Thus, we adopted qualitative approach to data collection. The qualitative approach has been successfully tested in previous studies of similar issues (Eliason 2010; Bell 2007; Forsyth and Markese 1993).

The main criteria for the selection were that the individual should be a practicing fisherman. A total of 60 interviews with fishermen (30 in Dagestan; 20 in Kalmykia and 10 in the Volga Delta areas) were conducted for analyzing responses. The selection of informants was non-random and subjective in that research assistant's views on who is a good informant for interviewing influenced the recruitment process. The bias limitation was especially evident in Kalmykia. We chose to interview individuals from different social settings and in that way sought to increase the validity of information.

The questionnaires were designed so to include open-ended and closed-ended questions. The first part of interview included open-ended questions that required in-depth answers. The topics dealt with current fishing techniques and strategies, target species and gear use. Fishermen were asked to in detail describe the way that he practiced fishing.

The second part of the questionnaire was a short survey where informants were asked to speak about his/her views towards anti-poaching measures based on direct observation we elaborated and developed the set of specific categories that have been used later while creating the questionnaire for interviews. Such specific categories are reflected in the table 1. We proceeded from the assumption that fishers use different fishing gears depending on what anti-poaching measure the state introduced.

Categories were used when coded and subcoded dataset for further processing within MAXQDA program.

FINDINGS

EXPANSION OF BORDER ZONE AREA

Respondents have recognized the border zone expansion and delegation by the controlling authorities over economic activities to the border guards (Amendments to the 'Federal Law on the State Border (1993)' from 2002, article 13, 16 (1), 18, 21) as a major obstacle for fishing. Furthermore, respondents associate this regulatory mechanism with prevailing corruption, rather than with an attempt to save sturgeon from extinction. The expansion process defines the main source of conflict between fishermen in that the fishermen see border guards as overreaching their legal powers in enforcing anti-poaching measures.

In all studied regions, the main conflict line is represented by the shifting perception of the role of border guards. The increased significance of border guards positions them to be in direct contact with local fishermen. The historical perspective of the role of border guards exemplifies a shift in perception of the image of border guards. This process could be represented by two models.

The first model is based on local perception of border guards as an integral part of the fishing community. Such an image attributes positive characteristics to the BGS in that they are active community members, exchange favors and gifts, marry local women, operate in local socio-economic networks. According to our informants, such relations existed during the 1990s, and many local fishermen of older generation expressed their wish to having the status quo

restored. According to local fishermen, such a model would result in reducing the number of conflicts between the local people and border guards. Such an image is consistent with the lax attitude of authorities towards sturgeon fishing, however, the enforcement of new measures brought about a change in this model. We suggest that a new image of border guards started to emerge when the ban on sturgeon fishing was issued and controlling authorities over economic activities within the border zone were delegated to border guards.

Competition and rivalry over fishing resources between the BGS and local fishermen is a typical topic. These sentiments were particularly strong in Dagestan and thus need to be explained. Now, the border guard is perceived as a major enemy of young fishermen, who, while implementing the state policy violate local social norms in day-to-day situations. The most frequent cases when the limits are broken is when border guards confiscate sturgeon, valuable bayda boats and fishing gear, do not show respect to fishermen and humiliate them. Usually fishermen describe this process as action that directly threatens their livelihoods/family relations, and thus encourages fishermen to be involved in hard forms of poaching. Such disregard persuades the community members that the border guards are completely incompetent, thus removing the aura of legitimacy imposed on them by the state.

The local representations of border guards suggest that insiders are preferred to outsiders as enforcement agents. Border guards are not accepted on moral grounds since they are considered outsiders, who avoid any social contact. To many fishermen this fact alone is sufficient to explain a high level of tensions. The presented models suggest that if the border guards were insiders (recruited among the local population) the level of tensions would decrease. However, it is important to note that while outsiders are morally inferior, insiders would be too biased to act as enforcers in full capacity.

Thus, the border zone expansion has been the first regulatory anti-poaching measure that the state introduced in order to fight hard forms of poaching. A bit later, the other measures (RPU's and the ban on the commercial sturgeon fishing) appeared as narrower state regulatory tools for fighting against soft forms as well as hard forms of poaching.

The introduction of RPU's

The introduction of RPUs as an additional a regulatory measure completely failed for several reasons. Firstly, it did not address the problem of unregulated fisheries in the Caspian, although a few articles in 'FL on Fisheries and Protection' imply that the owners of RPUs should be responsible for any illegal activities within their RPU (articles 18 and 33). Secondly, it ignored the existence of the problem altogether.

Our informants were explicit about the impact that the RPU system had on the behavior of sturgeon fishermen. The impact is limited to regulate fisheries, but does not affect the behavior of sturgeon fishermen. Fishermen, operating on SFBs, are either in total or partial denial of the existence of RPUs, despite it being effectively in place for more than one decade. Some senior members of SFBs have claimed to not even being able to understand the problem, when asked whether they agree or disagree with the RPU system in fishery management. According to members of SFBs, the sea belongs to every fisherman working at sea. However, it would be wrong to assume that gill nets or hook - lines could be placed according to individual wishes. From a perspective of the sturgeon fisherman, the Caspian Sea is dotted with sturgeon fishing spots, occupied by fishermen on a more or less permanent basis. Such spots belong either to boat owners or, is 'fisherman's property' in cases where they are owned jointly. Spots change depending on season and water level fluctuations, external conditions and local social relations. Anybody can occupy the fishing spot if it is free. In order to coordinate actions inside their community, the SFBs members elaborated and developed their own set of working rules-in-use, which emphasize the fishermen's right to the use of marine bio-resources independently on which restrictions the state intends to impose on the extraction process (RPUs, ITQ and etc.). Nevertheless, these working rules-in-use do not assume that free communal access to the use of valuable bio-resources will be restricted. This is widely known as the rule of 'first in time, first in right', which is typical for traditional managerial systems and open access resources systems (Ostrom 1990). Thus, introduction of RPUs encountered a traditional view of SFBs members of the sea as a water body without borders, where valuable bio-resources belong to all members of fishing communities. As a result of this view the state becomes the main enemy for fishermen, when they try to impose 'boundaries' in accordance with the states' regulatory measures.

RPUs also failed to curtail soft forms of poaching, but for different reasons in different research sites. Fishermen in Kalmykia expressed feelings of disillusionment with the new regulations, because they force them to fish in areas they perceive as 'swamplands' as a contradiction to what the state defines as a part of "water area where official

fishing activities occur" ('FL on Fisheries and Protection', article 18) without any further specifications. The intense water fluctuations in the northwestern part of the Caspian Sea often turns fishing grounds into muddy pools devoid of water habitable by commercial fish. Fishermen spend time stranded in their fishing camps without getting any work done. At the same time, obtaining an extension of an RPU is expensive and time-consuming procedure. The repeated occurrences of cases where too little is being done to help fishermen encourages sentiments of bitterness and helplessness making fishermen feel as if they do not have any control over own livelihood. Such a situation provides a good ground for justifying minor infringements of fishing regulations as in soft forms of poaching. However, these sentiments do not necessarily lead them to join SFBs.

The situation has become even worse for fishermen, when changes in the demand structure for sturgeon and caviar occurred. The increase in the market demand for sturgeon and caviar meant that fishermen did not stop fishing for sturgeon on RPUs. This was done in order to provide fresh and, thus, more expensive (and profitable) sturgeon for the market. In that sense, RPUs failed to curtail the fishing of sturgeon in the coastal areas (less so in Kalmykia). Such variable outcomes could be explained by an increase in the number of non-licensed fishermen who operated on RPUs. We suggest that the fishing license issuing mechanisms in local communities can influence the appearance of such fishermen on fishing grounds. In Dagestan, where kinship relations (between fish producers and fishermen) is one of the most important criterion for issuing licenses, non- licensed fishermen made use of RPUs for their own purposes. This creates a twofold situation: first, the tender winners are interested in economically supporting their own kin; secondly other fishermen without relevant ties would have to practice fishing without obtaining license at their own risk. Fishermen working without licenses on the same RPUs as licensed fishermen are tolerated by fish producers and licensed fishermen, but if caught by enforcers they will be persecuted for poaching.

LOCAL PERCEPTION OF THE BAN ON STURGEON FISHING

The enforcement of regulatory measures has led towards a formation of SFB, and in some cases entire fishing communities as a 'parallel society' that rely on its own social norms and rules-in-use in extraction of bio-natural resources. Such shared understandings contradict the official anti-poaching measures, since it is based on different

assumptions. In Dagestan and the Volga River Delta, where the assumptions rest on an idea that enforcers operate as competitors or enemies, social norms frame the ban as a contradiction to the common sense of fishing practices. Meanwhile, in Kalmykia, where the implementation of anti-poaching measures is seen as 'a kind of work that needs to be done', people are likely to be accepting the enforcement, but only as a short-term policy. Interviews show that out of six species of the Caspian sturgeon only beluga was considered an endangered species. Surprisingly, even some young members of SFBs justify beluga conservation measures, although they disagree with the application of indiscriminate force against humans to protect 'fish', even the one that is threatened with extinction. Otherwise, fishermen are less aware of other five species of sturgeon as threatened with extinction species of fish. Our respondents saw all six species of sturgeon and products of it as tradable commodities. Household consumption of sturgeon meat or caviar was justified only in situations where such foodstuff was needed as medicine. The case of beluga stands out as a paradox in our analysis in that fishermen held ambiguous views towards it. On one hand, the absence of it signals that things are not the same as they used to be, but on the other hand, beluga was still considered a valuable catch. The paradox could be explained by the fact that various rationalizations could be used to explain why beluga is absent where it used to be a common catch and why it could be still taken as a legal catch despite its special status (typically climate change or industrial development is blamed for its absence and a desperate need for cash in the second case). We also suggest that such rationalizations do not contradict our respondents' association of the ban with the national policies in Russia.

Our respondents perceived the actions of enforcement agents, regardless of affiliation, as an attempt to confiscate sturgeon, in order to keep them, to sell them on the market, or to extort bribes from fishermen while at sea. In these representations, enforcement agencies are not perceived to function as agents for the protection of critically endangered sturgeon. Rather, the protection of critically endangered sturgeon is an opportunity to make a living by extorting fish or money from fishermen. In that sense, agents are positioned as 'true' poachers in fashion similar to that proposed in other studies on poaching (Hampshire et al. 2004).

In Kalmykia the situation is somewhat different. Indeed, some fishermen reported that they acted in accordance with new fishing rules and regulations and released unintentionally caught sturgeon as by-catch (no such cases were documented in the Volga River Delta or Dagestan). In doing so, they hoped their actions help sturgeon recover from

overfishing, although none expected it to happen soon. The fact that local fishermen started to release sturgeon might indicate a more positive view of sturgeon and, thus, it functions as an expression of their support of the ban.

The difference in the behavior of fishermen in Kalmykia could be explained by the fact that in Kalmykia the border zone expansion policy and RPU's were less strictly applied in practice. The RPU policy is less vigorously enforced in Kalmykia, as minor violations of fishing rules are likely to be more accepted there, as compared to Dagestan. The case in Kalmykia also shows that anti-poaching measures could be more efficiently implemented in the areas where geographic conditions favor surveillance. Although life was admittedly difficult, fishermen claimed that the incomes earned during the fishing season were substantial, and could sustain them through several months of obligatory unemployment in-between fishing seasons. Furthermore, we documented that fishing enterprises operating in Kalmykia were more successful than elsewhere because they command better working conditions for local fishermen. For example, local fishermen receive non-interest loans from producers for purchasing fishing boats and gear. However, this does not mean that the fishermen in Kalmykia supported the regulatory measures unconditionally. Actually, their argument was based on the assumption that sturgeon stocks will one day be available as an economic resource and will contribute to the development of local economics. In fact, the identification of sturgeon with economic factors, a common theme in the fishing communities, and the market demand for sturgeon will exert a considerable influence on local social norms. Furthermore, these variables point out towards strengthening social norms of "parallel society" in fishing communities. The situation in Kalmykia also indicates that the shared understandings of the ban are not fixed, but might undergo a considerable change in the future, depending on whether local anticipations will be met, general conditions of local fisheries improve, and how strict enforcement measures will be.

CONCLUSIONS AND DISCUSSION

In this article, we have presented an analysis of fishermen responses towards conservation policies of threatened sturgeon in three fishing towns across three regions of the Russian Federation. Our study suggests a model of soft and hard forms of poaching as analytical tool for analyzing the outcomes of conservation policy in Russia and elsewhere.

We suggest that the model also allows us to think about how the process of implementation of regulatory measures should be made more efficient. Below, we present the main features of soft and hard forms of poaching, and possibility of no poaching against three externalities: fishery management (introduction of RPUs), border zone expansion and shared understandings of the ban.

Soft forms of poaching. This argument for soft forms of poaching should be viewed as an integral part of local fishing practices and working rules-in-use, and can be considered in line with the work of other researchers, which links non-compliant behavior to the issue of resistance (Forsyth et al. 1998; Muth and Bowe 1998; Pendleton 1998; Bell et al. 2007). We have showed how soft forms of poaching counteract sturgeon state conservation policies, and also manifests through various narratives that justify non- compliant behavior. The regulatory measures, border zone expansion, the institution of RPU and the ban are essential toolkits in the sturgeon conservation policy. All of these measures, but especially RPUs, have failed to eradicate poaching activity. Official authorities recognize the ineffectuality of RPU system, and since 2014 pressured the Federal Agency for Fisheries to abandon the system, because it 'promoted corruption', according to officials. However, difficult questions will have to be addressed, such as what will happen to tender winners, who have leased fishing rights for the next 5-10 years. The debates might be an indicator of the forthcoming period of 'stagnation' in the Caspian fisheries akin to the one that existed in 1990s and, thus, the escalation of new forms of poaching.

Hard forms of poaching. Hard forms of poaching have to meet additional criteria in order to be classified as such. The overzealous implementation of regulatory measures created conditions that in Dagestan and the Volga River Delta emerged organized sturgeon fishing brigades, brought in weapons on their fishing vessels and practiced sturgeon fishing across the Caspian Sea, without consideration of international borders (the notion that the sea belongs to every fishermen). Indeed, this form of resistance reflects a much more complex process, than in other cases of poaching occurring elsewhere like in Greece or in the case of the Siberian Evenki (Bell et al. 2007; Davydov 2014), but could be compared to cases of poaching especially in Congo Basin and other African countries, where "parallel society" of poachers emerge due to mistrust and corruption of authorities (Kaltenborn, et al. 2005; Wilkie and Carpenter 1999; Hauck and Sweijd 1999; Beyers, et al. 2011).

It is important to state that hard forms and soft forms of poaching do not become ossified, non-changing, ever lasting expressions of permanent states but can change depending on strictness and acceptance of regulatory measures. Such shifts in responses are dependent on specific anti-poaching measures, and have previously been discussed in literature to show how community-based management (CBM) failed in African countries (Gibson and Marks 1995; Kaltenborn, et al. 2005). However, our case suggests the additional feature of dynamism as an inherent feature of any poaching activity. A good example is the situation in Kalmykia, where more lax implementation of anti-poaching measures led hard forms of poaching to transform into soft forms. Partly, this was done because surveillance measures could be better implemented, though due to the short Kalmyk coastline of the Caspian Sea. However, we were also able to document cases of fishermen releasing unintentionally caught sturgeon, because they saw the fish as threatened. Of course, the process can go the other way around. Cases in the Volga River Delta and Dagestan show how it happens. When the state strengthened the control over the common-pool resources and threatened poaching activities, fishermen adapted by using soft forms of poaching. However, when the state weakened anti-poaching measures, hard forms of poaching appeared again in the areas. This shows that the current state conservation measures are not able to deal with the issue of poaching in the long term.

No poaching. Given the complexity of social tensions in the Caspian, imagining the region without poaching is difficult if not impossible. As our research shows poaching has deep roots in local fishing practices. Although the model for no poaching requires further elaboration one thing is clear that incorporation of what we describe as community feedback into decision-making will be necessary. But what to do if there is "parallel society", which is strictly resource-oriented, targeting threatened species of animals, that presents an example of resistance against any authority in either hard or soft forms. In order to improve situation we suggest combining both common property regime and state property regime. First, it would be reasonable to give the resource extracting community legal status and recognize it as a local decision-making unit. It would allow state to recognize the legal activities of all members independently on their ethnicity (kinship or any other attribute) belonging. All fishing rights (shares of communal quotas and etc.) could be directly allocated to fishers' household by community with further possible reallocation. Herewith the tender system should be abolished. Second, for further fishing law improvement it is advisable not to abolish RPU in coastal fishing. Instead, it is worth doing some steps forward in order to improve its usage. We

suggest additional regulative mechanisms for the mitigation of RPU's usage address adverse weather conditions, fluctuation of the Caspian Sea level, possibilities for the RPU extention and, in general, incorprates community feedback in drafting further changes if necessary. Furthermore, the relevant information on specific RPU must be made available through special internet websites. This should include keeping records of fish species within speific RPU, indication of approximate number of each species and processes of seasonal migration of fish. Topographical maps of all RPU must also be accessible through special websites, wherein the discussion of information reflected on such maps must involve not only the directors of fishing artels but also fishers from official brigades engaged in fishing activities. All information should be reflected in the plot card of specific RPU. When operating RPU, we also advice to use the schemes allowing the exchange of RPU among fishers and possible usage of lottery to determine the order of how these RPU should be distributed among fishers as one see in the cases of common property regimes' regulation in Turkey, India and Sri Lanka [Berkes 1986; Lobe and Berkes 2004]. Third, if in a locality the community heavily relies on own social norms, while authorities rely on set of official rules then the state needs to fill existing gap. In the case of the Caspian we would encourage managers to restore the status of border guards as members of local fishing communities as they used to be. This includes providing housing for border guards in fishing communities, providing employment opportunities for the members of their families in the communities, giving their children the right to attend the local schools and etc. Fourth, all such efforts in the Caspian should be supported through establishment several well-organized small sturgeon hatcheries in fishing communities as economic backup of reintegration efforts.

Compliance with Ethical Standards: The study has been conducted in accordance with the Principals of Professional Responsibility approved by the American Anthropological Association (AAA).

Conflict of Interest: The authors declare that they have no conflict of interest.

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595

						without bait, sallow waters of river estuaries), small boats.
1.1	2.2	**Various forms of Riverine sturgeon fishing**	0	0	3	Fishing without fishing license, using simple rods, or gill nets.
1.2	3.1	**Commercial fishing**	6	10	2	Valid fishing licenses and registered boats as small-boat fishing vessels using either gill net, fykes (max. two fishermen in the fishing crew) or haul seine method.
2.1	3.2	**Commercial fishing**	0	6	3	Fishing from fishing camps, valid licenses, stationary bag nets only.
	3.3	**Commercial fishing**	7	4	0	Coastline fishing (including beaches),

596

					fishing from the shore, mullet fishing,
3.4	**Commercial Fishing**	7	6	6	Valid fishing licenses, licenses for fyke nets, illegal gear usually simple gill nets, or "tjalki".
3.5	**Commercial fishing**	11	8	4	Valid fishing licenses, licenses for fyke nets or gill nets, fishing outside RPUs, or harvesting off-season.
4	**Commercial fishing, without licenses**	4	5	3	No fishing licenses, the target species are not sturgeon, but fresh water fish, bayda boats or ordinary boats used.
5	**Beach fishing, off season harvesting**	6	0	0	Rubber boats, simple gill net, all species are target, individual fisherman.
6	**Electrofishing**	0	0	0	Electrofishing by

					using various electric tools and gadgets.
7	**Vobla angling during the spring season**	0	0	7	No licenses are needed. Practiced during the early April month in the coastal villages in the Volga Delta areas.
	Total number of cases	49	40	31	

Table 1: Type of fishing in accordance with the typology of soft and hard forms

Figure

Click here to download Figure Figure 1 for Who owns the ± sturgeon in Russia.docx

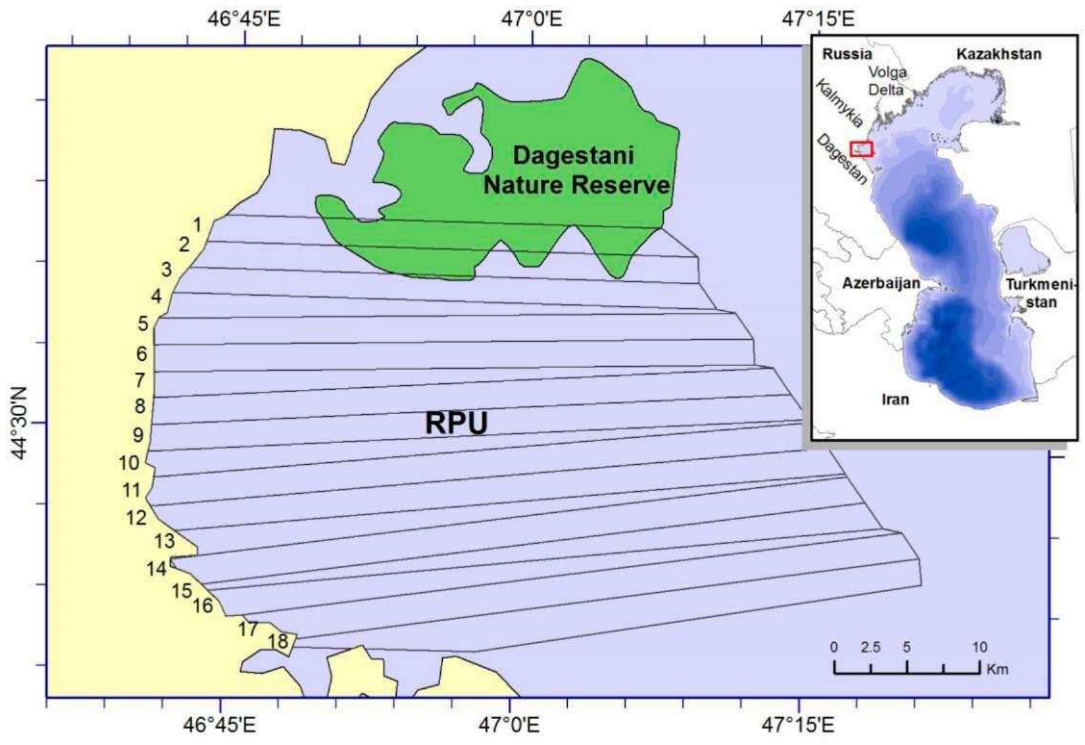

Figure 1: The location of RPUs. The Northern part of the Caspian Sea Coast in the Republic of Dagestan*.

* Coordinates of RPUs lines tied to nautical chart Num. 32005 from March 14, 2004 (The General Directorate of Navigation and Oceanography at the Ministry of Defense of Russian Federation).