

Constraints and Facilitators to Salmon Angling Participation

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Atlantic salmon sport fisheries have declined remarkably in many countries and participation seems to correlate with salmon abundance. We investigated angling participation in the Atlantic salmon sport fishery in Norwegian rivers by incorporating facilitators for participation in a constraint-negotiation model. We specifically look at how resource changes influence the negotiation process and participation. New insight about which factors constrain or facilitate participation, and which negotiation strategies anglers use to overcome them, provides managers and tourism stakeholders with information on how to increase participation and maximize benefits to anglers and local economies.

Method

In this study, we seek new avenues for constraint/facilitator negotiation research. First, researchers have called for looks at other populations and activities to investigate the generalizability of processes identified in previous studies (Hubbard and Mannell, 2001, White, 2008). We address salmon fishing in Norway as a response to this. Second, we use similar constructs and statistical analysis (confirmatory factor analysis and structural equation modeling) as White (2008), who looked at participation in general outdoor recreation activities and visitation of Arizona state parks. However, we expand his model and test it empirically by adding the concept of facilitators from Raymore's (2002) ecological approach to understand the influence on participation, operationalized as being one end of a constraint-facilitator continuum (Kuehn et al., 2013). Our measurement model is shown in Figure 1. For data collection we conducted an Internet survey of Norwegian anglers yielding 3,635 responses, a response rate of 40%.

Results

The structural model confirmed our hypotheses, and support the conceptual constraints-effects-mitigation model of leisure constraint negotiation documented by others. Constraints & facilitators had the strongest impact on participation of all main factors, whereas the structural constraints & facilitator *Quality of fishing* exerted the largest influence on angling participation. The influence of constraints & facilitators was mitigated by use of corresponding negotiation strategies where *Skills, knowledge and money*, but also different substitution strategies were important.

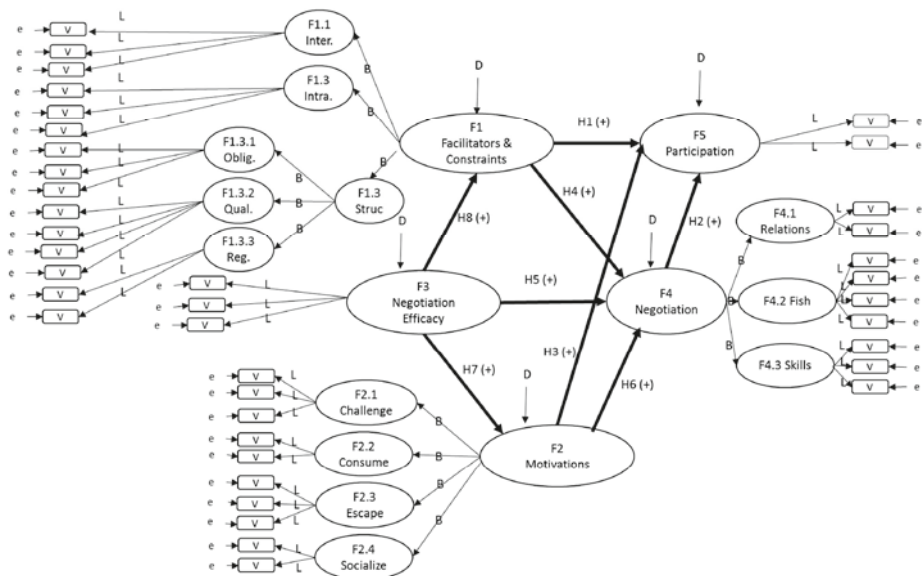


Figure 1. Structural model of fishing facilitators & constraints negotiation with hypotheses and parameters to be estimated

Discussion

Our study pursues and expands the work of White (2008) and Kuehn et al. (2013) by incorporating facilitators in a constraint-negotiation model. The structural model confirmed our hypotheses, and supported the conceptual constraints-effects-mitigation model of leisure constraint negotiation documented by others in a different setting (Hubbard and Mannell, 2001, White, 2008). Constraints & facilitators had the strongest impact on participation of all main factors. The main impact was direct, though some indirect influence through negotiation occurred too. This supports the notion that facing constraints or facilitators triggers two reactions, an inhibitory or furthering reaction on participation by the angler, and a positive indirect reaction on participation from triggering negotiation efforts (Hubbard and Mannell, 2001).

As Schroeder et al. (2012) suggested, the negotiating process may differ between activities and populations. For consumptive activities, the larger spatial-temporal variations in the likely concrete outcomes of the activity (e.g., through quality of fishing and regulations) might explain why motivations played a more important role than negotiation and negotiation-efficacy compared to White's (2008).

Implications for management

To increase participation among anglers in the sample, managers and angling providers/landowners can mainly influence structural constraints & facilitators or enhance the use of negotiation strategies. The structural facilitator *Quality of fishing* can be targeted in two ways: (a) Ensure salmon abundance and natural genetic diversity. Governmental authorities have the means to reduce regional threats to salm-

on stocks both at sea and in rivers. River managers can enhance salmon abundance by maximizing natural smolt production in the rivers through harvest management, habitat management, and habitat improvement (Aas et al., 2011). (b) Provide anglers with longer beats (fishing units) per permit. Angling providers/landowners can collaborate to merge smaller beats into longer, more attractive beats. This also increases catch probabilities as more fish can be targeted, and a longer beat offers possibilities of fishing well at various water levels.

Of negotiation strategies, *Skills, knowledge and money* was the most influential factor. Offering anglers practical fishing courses or guiding services to improve their fishing skills could be one way to increase participation for some. To what degree anglers are willing to pay for such a service or rather want to improve their skills on their own through magazines, websites, films, and fishing buddies is uncertain, as Norwegian anglers are not known for extensive use of guides. The “do-it-yourself” strategy nevertheless indicates usefulness of a website where anglers can find information about how to improve their skills. Salmon angling in Norway is a specialized outdoor recreation activity and a form of niche tourism with thousands of suppliers. Currently there is no main information channel, thus finding information about where to go besides where you have been fishing so far, can be challenging. Information about fishing access should accordingly be gathered and made easier available.



- AAS, Ø., POLICANSKY, D., EINUM, S. & SKURDAL, J. 2011. Salmon Ecological Research and Conservation. In: AAS, Ø., EINUM, S., KLEMETSEN, A. & SKURDAL, J. (eds.) *Atlantic Salmon Ecology*. Oxford, UK: Wiley-Blackwell.
- HUBBARD, J. & MANNELL, R. C. 2001. Testing Competing Models of the Leisure Constraint Negotiation Process in a Corporate Employee Recreation Setting. *Leisure Sciences*, 23, 145-163.
- KUEHN, D., LUZADIS, V. & BRINCKA, M. 2013. An Analysis of the Factors Influencing Fishing Participation by Resident Anglers. *Human Dimensions of Wildlife*, 18, 322-339.
- RAYMORE, L. A. 2002. Facilitators to Leisure. *Journal of Leisure Research*, 34, 37-51.
- SCHROEDER, S. A., FULTON, D. C., LAWRENCE, J. S. & CORDTS, S. D. 2012. An Application and Extension of the Constraints–Effects–Mitigation Model to Minnesota Waterfowl Hunting. *Human Dimensions of Wildlife*, 17, 174-192.
- WHITE, D. D. 2008. A Structural Model of Leisure Constraints Negotiation in Outdoor Recreation. *Leisure Sciences*, 30, 342-359.