

Appendix 1. Ecological and social findings: extended summary from key RCA literature (see Table 5 for brief summary)

Key RCA Literature	Ecological Summary	Social Summary
Yamanaka and Logan	<p>RCA Site Selection: Information on model used to create RCAs. Use of people to pick out key rockfish habitat</p>	<p>Collective Choice: Important consultation process, very good, but no follow up included in RCS</p> <p>Commercial Fishers: Initially, the implementation of the RCAs had a large impact on the commercial groundfish industry. In addition to restricting fishing areas, the integration of the entire groundfish fishery and the reduction of TAC rockfish quotas caused major changes in the way the commercial fishery operated (Yamanaka and Logan 2010).</p>
Haggarty	<p>Remote Operated Vehicle (ROV) Survey Results: 31 RCAs were surveyed using ROV transects from 300m to 900m in length depending on RCA size. The Control-Impact model was used in this study, whereby transects within RCAs are compared to transects outside RCAs to calculate reserve response. The results of this study did not present a significant reserve response, however, the mean density of inshore rockfish within RCAs was slightly higher than in unprotected areas.</p> <p>SCUBA Survey Results: Scuba surveys were conducted in 2010 and 2011 in Barkley Sound. The study used 30m by 3m transects and surveyed 30 sites in 6 locations. The study found a non-significant trend towards greater copper rockfish density both inside and outside the RCA in the Broken Islands Group as compared to other</p>	<p>Recreational Fishers: Many recreational fishers do not know about RCAs due to a lack of information dissemination. RCA boundaries are clearly marked on fishing manuals but they are often not posted at marinas and are only available as an online resource. RCA guidelines also do not state what fishing activities are prohibited within RCAs, only mentioning what is still permitted. This could lead to the assumption that popular activities such as salmon and halibut fishing are still permitted. There is also tension between recreational fishers and aboriginal fishers who are permitted to fish within RCAs as a traditional harvesting right. Some recreational fishers feel that this could impact the ability of RCAs to rebuild rockfish stocks.</p> <p>Commercial Fishers: This user group is generally supportive of the RCAs as a conservation tool,</p>

locations within Barkley Sound.

however, they do not appear to support the expansion of RCAs. They also largely understand that RCAs offer the chance for “spill-over” benefits which could improve future fishing activities. Many commercial fishers did express concern over recreational fisher behaviour and a perceived lack of compliance to RCA regulations. They believe this could impact RCAs ability to rebuild rockfish stocks.

Overall, a lack of trust, understanding and knowledge among user groups could be impacting the perceptions of RCAs and their real and perceived effectiveness.

Aboriginal Fishers: Supportive of RCAs as an ecological insurance policy. Feel they were not consulted, or not adequately consulted during RCA creation. Some feel that fishing pressure has decreased in RCAs, some feel that recreational fishing remains unchanged. Some fishers feel a pressure not to fish in RCAs despite their constitutional right. They desire better information on RCA effectiveness and education for other sectors on First Nations right to harvest.

Challenger
and
Marliave

Scuba Survey Results: In 2006 the Vancouver Aquarium surveyed 3 sites in Howe Sound. The surveys did not detect a reserve effect, although this was not expected as the RCAs were newly established. These surveys were intended to serve as baseline data for future assessments of RCA effectiveness.

Collective Choice: Ardron and Wallace (2005) had shown that final RCA selections for the initial designation series in 2004 reflected the public process, in addition to scientific modeling, and therefore were not as equally representative of optimal rockfish habitat and abundance as the original proposed

	Side-Scan Sonar Results: This study also determined that rockfish are strongly associated with piled boulder habitats that cannot easily be detected by the type of bathymetry data that was originally used to select RCA sites. This study concluded that these optimal rockfish sites can be detected using side-scan sonar.	RCA's based on the model only.
Cloutier	Scuba Survey Results: This study was the first to research the effectiveness of RCA's in replenishing rockfish stocks. 15 sites were surveyed in Howe Sound, the Southern Gulf Islands, and the Central Strait of Georgia combined. The study found that RCA's had an average of 1.6 times more rockfish than unprotected sites. This study also accounted for differences in habitat. There was no correlation between rockfish density and age of RCA's. There was a significant difference between regional rockfish density, with Howe Sound showing the lowest levels of rockfish density.	Not Applicable
Chalifour	Scuba Survey Results: Two RCA's around Galiano Island were surveyed using the Control-Impact method and 30m by 1m transects. The study found that rockfish density was much higher outside the RCA's, however, habitat variability was not considered in the research design which could impact results. The study also showed that some of the Galiano Island RCA's are located in unsuitable rockfish habitat, especially when compared to some unprotected survey sites with	Recreational Fishers: In addition to misunderstanding RCA regulations, recreational fishers are often unaware of where RCA's are located due to a lack of information dissemination. This lack of knowledge and understanding has led to confusion and at times ill-will towards the RCA's as fishers are reprimanded by DFO officers or community members for fishing in areas they believe to be open access.

optimal rockfish habitat.
