Appendix 1. Methodological considerations

Table A1.1 Organizations reviewed and documents analysed

Name	Description	Documents
Red Tide Commission (Comisión Marea Roja)	Ad hoc commission of scientists appointed by the government to analyse the origins and development of the harmful algal bloom	• First draft Red Tide Commission • Final Report Red Tide Commission • Press release Red Tide Commission
Marine Biologists Association (Asociación Gremial de Biólogos Marinos)	Independent association of marine biologists in Chile	• Declaration of Marine Biologists
Greenpeace	Non-governmental environmental organization	• Report on the social-environmental crisis in Chiloe
Crea Foundation (Fundación Crea)	Non-governmental environmental organization	• Report on the salmon industry
Association of Artisanal Fishermen (Asociación de Pescadores Artesanales)	Association of Chiloe's sea workers and fishermen	• Declaration of artisanal fishermen (Propositions for conflict resolution)
Sernapesca (National Fishing Service)	Technical agency of the Chilean government in charge of the technical regulation of industrial and artisanal fishing and related matters	• Resolution 1340 on extraordinary measures regarding the dumping of dead fish • Resolution 1359 complementing Resolution 1340 • Audit Report on the Marine Authority Resolution on the Dumping of Dead Salmons
Directemar	Technical agency of the Chilean Army in charge of the supervision of sea affairs and international regulations. Includes Dirsomar (security and maritime operations), Dirinmar (maritime interests and aquatic environment) and Shoa (hydrographical and oceanographic service)	• Technical Report 1/2016 on the dumping of dead fish • Resolution 12,600/05/114 on the dumping of dead fish (grants the permission) • Resolution 12,600/05/124 on the dumping of dead fish (extends the permission) • Technical Report 2/2016 on the dumping of dead fish (audit report) • Technical Report on the dumping of dead fish • Letter sent on 3 March 2016 from Directemar to Sernapesca • Letter sent on 3 March 2016 from Directemar to SalmonChile AG • Letter sent on 11 March 2016 from Directemar to Sernapesca
SalmonChile AG	Association of Chilean salmon industry	• Technical Report on the dumping request • Letter 21/2016 sent on 2 March 2016 from SalmonChile to Dirinmar • Letter 22/2016 sent on 4 March 2016 from SalmonChile to Directemar • Letter 23/2016 sent on 5 March 2016

			from SalmonChile to Directemar
Ministry of Economy (Ministerio de Economía)	Ministry of Economy, in charge of managing the crises through an ad hoc round table	•	Agreement between the Central Government and Chiloe's fishing communities
		•	Press release 9 May 2016
Ministry of Health (Ministerio de Salud)	Ministry of Health, in charge of declaring ban on fishing	•	Resolution 484 on the ban on fishing and shellfish extraction
Ministry of the Interior (Ministerio del Interior)	Ministry of the Interior, in charge of national, public security. Active role during the mobilizations	•	Decree 499 on the declaration of Chiloe as catastrophe zone

Table A1.2 In-depth interviews

	Type of actor	Gender	Type of organisation
1	Secretary of Planning, Municipality of Quellón	m	Political organisation 1
2	Fishing Department, Municipality of Quellón	f	Political organisation 2
3	Technician for dumping of dead salmons, Instituto de Fomento Pesquero (national)	m	Technical organisation
4	Head of the Laboratory of Marine Toxins, Universidad de Chile (national)	m	Scientific organisation 1
5	Head of the Centre for Marine Biotechnology, Universidad de Santiago de Chile (national)	m	Scientific organisation 2
6	Associate Professor in Oceanography, Universidad de Concepción (national)	f	Scientific organisation 3
7	Centro de Estudios de Chiloé, Castro	m	Research organisation 1
8	Greenpeace Chile Chief of Campaigns (national)	f	Environmental organisation 1
9	Director of Greenpeace Chile (national)	m	Environmental organisation 2
10	President of the Commerce and Tourism Chamber, Dalcahue	f	Commerce organisation 1
11	President of the Commerce and Tourism Chamber, Ancud	m	Commerce organisation 2
12	President of the Commerce and Tourism Chamber, Castro	f	Commerce organisation 3
13	Feminist NGO, Castro	f	Activist organisation 1
14	NGO Defendamos Chiloe, Castro	f	Activist organisation 2
15	NGO Defendamos Chiloe, Castro	f	Activist organisation 3
16	NGO Colectivo Varones Antipatriarcales, Castro	m	Activist organisation 4
17	President of Divers Union, Dalcahue	m	Fishing organisation 1
18	President of artisanal fishing Union 1, Dalcahue	m	Fishing organisation 2
19	Union member artisanal fishing, Quellón	m	Fishing organisation 3
20	Union member artisanal fishing, Quellón	f	Fishing organisation 4
21	President of artisanal fishing Union 2, Dalcahue	m	Fishing organisation 5
22	Union member artisanal fishing (representing indigenous communities), Quellón	m	Fishing organisation 6
23	Union member artisanal fishing, Quellón	m	Fishing organisation 7
24	Union member artisanal fishing, Puerto Montt	m	Fishing organisation 8
25	President of the National Federation of Salmon Workers, Puerto Montt	m	Fishing organisation 9
26	Member of the National Federation of Salmon Workers, Puerto Montt	m	Fishing organisation 10
27	Member of Social Assembly, Castro	m	Social organisation 1
28	Provincial Federation of Neighbourhood Associations of Rural Sectors, Ancud	m	Social organisation 2
29	President of the Neighbourhood Associations of Rural	m	Social organisation 3

	Sectors, Quellón		
30	CEO Pacific Star	m	Salmon industry 1
31	Director of Communications SalmonChile	m	Salmon industry 2

Semantic analysis of Twitter data

We used the public timeline API method provided by Twitter to collect information about the non-protected users who have set a custom user icon in real time. In our case, users were placed into four main groups that predominantly relate to four social positions: technical agents (Actors 1), non-governmental organizations (Actors 2), fishermen social organizations (Actors 3), and political authorities (Actors 4). Details of the user, such as IDs, screen name, and date were extracted. We used a Python library called *Tweepy* to connect to Twitter Streaming API and download the data. The dataset is a random sample of 27,935 tweets (including retweets) captured over the period 2013-2017. This sample includes tweets from 11 unique users (see Table A1.3).

Table A1.3 Actors and Tweeter accounts

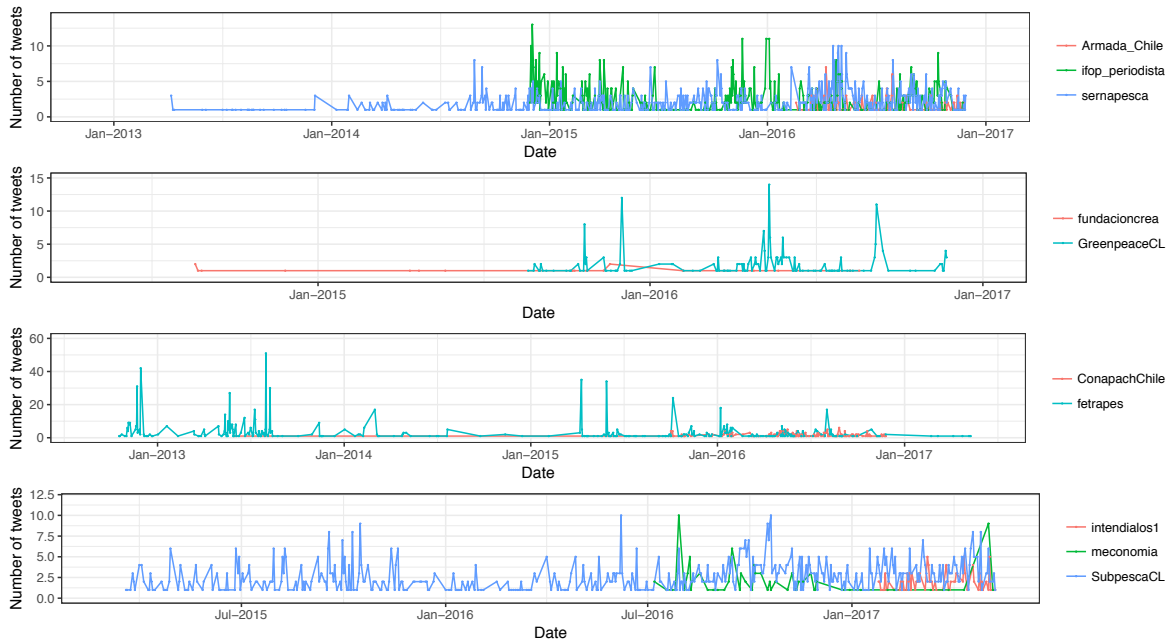| Actors	Twitter accounts	Number of tweets
Actors 1: Technical agents (Fishing National Service, Institute for the Promotion of Fishing, Chilean Army, Association of Salmon Farmers)	@sernapesca @ifop_periodista @Armada_Chile @SalmonChileAG	9794
Actors 2: Non-governmental organizations (Greenpeace, Crea Foundation)	@GreenpaceCL @fundacioncrea	4781
Actors 3: Fishing organizations (National Association of Artisanal Fishers, Federation of Fishermen)	@ConapachChile @fetrapes	3673
Actors 4: Political authorities (Ministry of Economy, Subsecretary of Fishing, Intendancy Los Lagos)	@meconomia @subpescaCl @intendencialos1	9687
Total		**27,935**

After the tweets were downloaded, we created the corpus of 27,935 documents (tweets) to conduct the analysis. This analysis was conducted using the open-source R software environment for statistical computing. Each tweet is treated as a single document. The most common way of organizing the text documents such as Tweeter is to represent them using the *Term Document Matrix*. The matrix records the frequency of keywords along with the document in which these keywords appear (see Table A1.4).

Table A1.4 Keywords for the selection of Tweets

Original words in Spanish	Translation
Crisis, desastre, alga, nocivo, paralización, protesta, floración, verter, vertedero, cambio, climático, ley, pesca, artesanal, muerto, salmón, calentamiento, niño, marea, roja, eutrofización, vertimiento, varazón, molusco, marisco, mariscador, petitorio, sacrificio, deliberado, zona, catástrofe, bono, buzo, mortandad, toxico.	Crisis, disaster, alga, harmful, paralyzing, protest, bloom, dump, dumping zone, change, climatic, law, fishing, artisanal, dead, salmon, warming, Niño, tide, red, eutrophication, dumping, stranding, mollusc, shellfish, shell fisherman, request, sacrifice, deliberate, zone, catastrophe, bonus, diver, mortality, toxic.

In subsequent steps, we removed the punctuation marks, all repeated characters like spaces or repeated vowels, numbers, prepositions and conjunctions from the set of words and URLs from the corpus. Then, to analyse how the actors tweet in relation to the red tide event, we selected only those tweets containing the keywords in Table A1.4. The final corpus for the four groups of actors has 5,104 tweets; it is shown as a time series in Figure A1.1.

Figure A1.1 Time series of actors' utterances 2013-2017

Identification of word associations

In Figures 5, 6 and 7 of the article, we identified word associations by specifying a correlation limit. If two words always appear together then the correlation would be 1 and if they never appear together the correlation would be 0. Thus, the correlation is a measure of how closely associated the words are in the corpus.

Rgraphviz from the BioConductor repository for R (bioconductor.org) is used to plot the network graph that displays the correlation between chosen words in the corpus. Considering the total amount of words for each period, we choose 60, 30 and 50 of the more frequent words as the nodes for the three periods: a) 2013 to February 2016; b) March to May 2016, and c) June 2016 to Jan 2017, respectively. In addition, we considered links between words when they had at least a correlation of 0.01 (links with thicker lines indicate high correlation).