

# Understanding the role of traditional media about human-beaver interactions

A case study of the Tayside, Scotland



MSc Thesis

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# UNDERSTANDING THE ROLE OF TRADITIONAL MEDIA ABOUT HUMAN-BEAVER INTERACTIONS

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# Preface

Being a forest- and nature conservationist student with a deep passion for nature it felt only natural to study human-beaver interactions in Scotland. I chose this topic as I personally believe that if we, as nature conservationists, want to protect nature, we need to communicate and cooperate with the people in the field that encounter problems with wildlife. It is important to first understand the whole story, by listening to the diverse views of the stakeholders, which I did during my fieldwork in Scotland. This broaden my perspective about interactions between wildlife and humans, by finding out that the real problems are not only visible on the surface (impacts of wildlife on the environment), but that they often go much deeper. I also wanted to find out how much of the stories I gather in the field are reflected in the media. This is important to know as the media plays a major influence on people's thoughts and worldviews. All in all, these interests resulted in this MSc thesis topic that you are about to read.

I would like to thank some people that have guided and help me throughout the process of writing my MSc thesis. First, I want to show gratitude to my two supervisors Arjen Buijs and Koen Arts who have guided me through the research process, provided me with constructive feedback and taught me the skills of performing social qualitative research. I would also like to thank my boyfriend, family and friends, who believed in me from the beginning and encouraged me during difficult times. Furthermore, I want to thank the interviewees for their trust, participation and providing me with valuable information. Finally, I want to thank the people that I have met in Scotland and helped me with my research in many ways possible.

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## Abstract

Human-wildlife conflicts are almost unavoidable in a world where humans are one of the most dominant species. This case study performed in the Tayside in Scotland, shows an example of human-wildlife conflict, due to the increased interactions between humans and beavers in the area. Additionally, the reintroduction of the beaver in this area went quite chaotic as they were not officially reintroduced, which caused some tensions among stakeholders. These types of human-wildlife interactions are often framed in a negative light by the media. Often, the media plays a big role in public' attitude towards wildlife, which can result in protest actions or support. This study performed 25 interviews with relevant stakeholders in the Tayside and completed a content analysis of 55 news articles published between January 2016 and December 2018, to understand to what extent the stakeholders' views about the establishment of the beaver in the Tayside are reflected in the newspapers. This provided me with an overview of the topics (themes) that influenced the stakeholders view forming of the establishment of the beaver in the Tayside. These main themes are: the reintroduction of the beaver in the Tayside, the impacts of the beaver on the environment, the interaction between the government and the stakeholders in the field (policy), management solutions and some other themes that did not fit into the previous mentioned themes, including the notifications of increased beaver numbers and unofficial culling activities. The main findings indicate that most of the stakeholders in the field show concerns and often reveal negative feelings towards the establishment of the beaver in the Tayside, while the overall impression of the Scottish media was that they seem to be in favour of having the beaver back in Scotland. To illustrate, in a lot of articles the need for a protection status was mentioned and not only the negative impacts of the beaver on the environment were highlighted, but also the positive impacts. Here, framing techniques used by the media were used as sometimes specific word choices illustrated particular feelings and views. All in all, it can be concluded that certain views shared by the stakeholders did come forward in the media, while some of their views remained in the background as views from pro-nature organisations/people were highlighted as well. It is recommended to study the effects of the media on the public to find out the media's influence. This is important to know as conservationist might learn how to respond and contribute to the media portrayal of human-wildlife interactions.

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# 1 Introduction

## 1.1 Background and problem description

The largest rodent in Europe, also known as the Eurasian beaver – *Castor fiber* –, is an important ecosystem engineer (Rosell *et al.*, 2005; Law *et al.*, 2017). This species and its family member the North American beaver *Castor Canadensis*, can recreate, modify or maintain a natural ecosystem by building dams and thereby changing both the biotic and abiotic factors in the habitat, which is not only beneficial for them but also for other species, such as the otter, amphibians and invertebrates (Rosell *et al.*, 2005; Law *et al.*, 2017; Pereira & Navarro, 2015; Dewas *et al.*, 2012). This change in (a)biotic factors can increase biodiversity levels (Scottish Government, 2017; Campbell-Palmer *et al.*, 2018). Furthermore, the beaver is able to increase the water quality by filtering the water due to their building works (Puttock *et al.*, 2017; Gaywood, 2018). Yet, besides the benefits the beaver can bring to natural processes, there are negative impacts as well. For instance, the fish migration and spawning habitat of the salmon can be obstructed due to dam building activities (Kemp *et al.*, 2012).

During the 16th Century the Eurasian beaver declined rapidly across Europe, due to a high hunting pressure and ecosystem loss, with as a result almost an extinction of the species (Puttock *et al.*, 2017; South, *et al.*, 2000; Kitchener & Conroy, 1997; Nolet & Rosell, 1998; Macdonald *et al.*, 1995; Dewas *et al.*, 2012). Only some populations in France, Germany, Norway, Belarus, Ukraine, Russia and Mongolia/China survived these happenings (Čanádý *et al.*, 2016). Now, beaver populations across Europe have been recovered and grown in numbers, mainly because of the reintroduction programmes, a given protection status and new hunting guidelines (Gaywood, 2018; South *et al.*, 2000; Batbold, *et al.*, 2016; Puttock *et al.*, 2017; Campbell-Palmer *et al.*, 2018; Kemp *et al.*, 2012). Consequently, beavers have not only spread in natural areas, but also to human-dominated land, which created in some cases human-wildlife conflicts (HWC) (Jacobson, *et al.*, 2012). Here, conservation management of the beaver is challenging, as the beaver can easily adapt to new or changing habitats, even in cases of human disturbances (Nolet & Rosell, 1998). For instance, often the dams that are manually removed are quickly replaced by the building of new dams. Therefore, the beaver becomes an increasing management concern due to its adaptable character (Campbell-Palmer *et al.*, 2015).

Scotland has two main areas famous for its beaver populations: Argyll and the Tayside. The first Scottish Beaver Trial in 2009 took place at the Knapdale forest in Argyll, where the beaver was studied for five years. This research was done to find out the effects of the beaver on the environment and how it would perform in the Scottish nature. Furthermore, this trial was used to decide about the future of the beaver, whether it could stay or not and whether it should be managed. In 2016, the decision was made to keep the beaver in the country and that it will receive a protection status in the following years (Gaywood, *et al.*, 2015; Scottish Natural Heritage, 2015). Yet, while the Scottish Beaver Trial took place in Argyll, there were already notifications of the presence of beavers in the Tayside before the trial even started (Campbell-Palmer *et al.*, 2018). Nevertheless, the decision was made to release beavers in Argyll and study them instead of the already existing populations in the Tayside. A few years later, in 2012,

research in the Tayside started as well, as beaver numbers increased rapidly, with as result an increase in human-beaver interactions (Gaywood *et al.*, 2015).

This study focuses on the beaver in the Tayside. This is a particular case as the beaver was not officially reintroduced, but it is thought that the beaver was escaped from private collections or was illegally released into the wild (Campbell, *et al.*, 2012; Scottish Natural Heritage, 2015; Campbell-Palmer, *et al.*, 2015). This different type of reintroduction of a species caused a mix of opinions about the establishment of the beaver in the Tayside (Gaywood, *et al.*, 2015; Scottish Natural Heritage, 2015). Currently, beaver densities have increased even more and made the beaver population in the Tayside the largest of Scotland, counting between 400-500 beavers (Campbell-Palmer, *et al.*, 2018). The effects of beavers on human-dominated land remained not unnoticed and some unofficial culling took place by landowners to reduce the negative effects on private land (Scottish Natural Heritage, 2015).

The establishment of the beaver in Scotland went not without a struggle. The government promised in 2016 to give the beaver a protection status and implement culling licenses for landowners in case of highly negative impacts (Gaywood *et al.*, 2018). Furthermore, the Scottish ministers agreed that: “*The beaver should be actively managed to minimise adverse impacts on farmers and other landowners*” (pp. 2) (Scottish Government, 2018b). Yet, the beaver is not protected, not actively managed and licenses were still not given. During that time frame, there was and is a lot of unclarity how to deal and cope with the beaver, which caused unsatisfied feelings among several stakeholders (Gaywood *et al.*, 2018). Although, the Scottish Natural Heritage (SNH), a governmental body working for nature, is there to give advice about mitigation measures that can be implemented to reduce impacts on land caused by the beaver (Campbell-Palmer *et al.*, 2015). Usually, the reintroduction of a ‘new’ species needs to be extensively studied beforehand to properly inform stakeholders (Kemp *et al.*, 2012). Since, this was not the case in the Tayside human-wildlife interactions (HWI) quickly started to change into HWCs (Scottish Natural Heritage, 2015).

If conflicts start to arise, then it won’t be long before the media is involved as well (Caple and Bednarek, 2016). The way the beaver was reintroduced and how it has colonized new areas or changed habitats was and is published in news articles. The framing of this iconic species by the media differs from ‘problem beaver’ to ‘functional beaver’ or just ‘beaver’, depending on the beaver’s impact and interaction with humans. On the one hand, the beaver is framed as functional beaver, because this ecosystem engineer increases the local biodiversity of an ecosystem. Furthermore, tourists like to see the tracks and building work of the beaver in the wild, this in turn brings economic and social advantages (Gaywood *et al.*, 2008). At the same time, the species might flood agricultural land, use valuable fruit and production trees from landowners to feed themselves or to construct dams, which results in high economic costs (Gaywood, 2018; Swinnen, *et al.*, 2017). In this case, the beaver shifts from functional beaver to problem beaver or in other words from human-beaver interactions to human-beaver conflicts. Human-beaver interactions is further defined in the report as HBIs and human-beaver conflicts is further defined as HBCs.

Recognizing the importance and influence of the media on human attitude towards wildlife is essential to know as the media often shapes our worldview towards a certain topic, object or



happening (Alexander & Quinn, 2011). Here, it all comes back to the word choice of the writer, the perspectives and views the writer choose to represent in the article and the type of newspaper he/she works for (Soulsbury & White, 2015). This means that the media can choose to write most information about economic losses and thereby highlight the negative aspects of having beavers in the environment, or it can choose to focus on the natural wonders a beaver can bring to the environment (Jacobson *et al.*, 2012; Rust, 2015). Yet, there can still be a variety of frames about one topic and thereby highlighting both the negative and positive aspects of beavers on the environment. Yet, if wildlife emerges in news items, it tends to have often a negative image as the media seems to focus on sensations and dramatic events (Siemer *et al.*, 2007). Therefore, it is important to find out how the beaver is framed in the Scottish newspapers and to what extent this agrees with the stakeholder's views about the establishment of the beaver in the Tayside.

## 1.2 Research objective and research questions

The re-colonization programme of the beaver throughout Europe is a well-studied domain. Especially, the Eurasian beaver is one of the most researched reintroduced species in Scotland (Gaywood, 2018; Arts *et al.*, 2012). Yet, little is known about how the stakeholders' views about the establishment of the beaver in the Tayside come forward in the media. Furthermore, more research has been performed on how wildlife is portrayed in the media, but this was most often limited to a content analysis (Houston *et al.*, 2010; Alexander & Quinn, 2011). This study wanted to add an extra dimension by going into the field and interview the stakeholders that are in direct interaction and/or conflict with the beaver. This way it becomes clear how the stakeholders experienced the reintroduction of the beaver and what they feel and view towards the current establishment of the beaver in the Tayside. Additionally, a content analysis of the traditional media was followed to understand how these views of the stakeholders were reflected in the newspapers. This could indicate whether there is a friction between what the media publishes and what the stakeholders view, feel and think of the situation.

This study is important to carry out, as the way the opinions of the stakeholders and the situation itself are reflected in the media plays a major role in the public's opinion and thereby the public support for protecting wildlife (McCombs & Shaw, 1972; Briggs, 2018; Nyhus, 2016; Rust, 2015; Sabatier & Huveneers, 2018). For instance, a negative portrayal of the beaver by the media can create a negative attitude towards the beaver among the public (Alexander & Quinn, 2011). Now, this study did not research the public's attitude towards the beaver but aimed to find out how the beaver and its interactions with stakeholders are represented in the media. Furthermore, by understanding the role of media in HWIs conservationists and governmental agency bodies might learn how to better outreach and communicate to the stakeholders about their management choices and decisions (Jacobson *et al.*, 2012; Sabatier & Huveneers, 2018; Lopes-Fernandes *et al.*, 2018).

The main research question formed for this research is:

To what extent are the stakeholders' views about the establishment of the beaver in the Tayside reflected in the traditional media?

For answering the main research question the following sub-questions were formulated:

1. What are the stakeholders' views about the establishment of the beaver in the Tayside and which themes within this beaver discussion are most mentioned?
2. How does the media portray the establishment of the beaver in the Tayside and which themes within this beaver discussion are most mentioned?
3. What differences can be found between the stakeholders and media's opinion about the establishment of the beaver in the Tayside?

The first sub-question is answered by performing interviews with the stakeholders in the field. Stakeholders in the field refers to the people who are in direct interaction with the beaver and faces its impacts. For answering the second sub-question, digital archives of traditional media were used as secondary data. The data collection for sub-question one and two was used as input to answer question three; to make comparisons between the views of the stakeholders and the media. Here, it becomes clear to what extent the stakeholder's opinions come back in the media.

The overall structure of the study takes the form of six chapters. Chapter 2 begins by laying out the theoretical dimensions of this study and looks at the main concepts; 'human-wildlife conflicts' and 'framing by the media'. Chapter 3 describes the used methods for the data collection part and the data analysis. Chapter 4 analyses the results of the interviews and media content to provide answers to the four sub-questions. In chapter 5 these results are interpreted and discussed by making comparisons to other related studies about the same topic. Furthermore, a reflection on the methodology and theory are discussed as well. The last chapter entails the conclusion and further recommendations.

## 2 Theoretical framework

This study draws on the main theories of HWC and the framing theory.

### 2.1 Human-Wildlife Conflict

A better understanding about the HWCs in the Tayside can be achieved by making a clear distinction between HWCs and human-human conflicts (HHC), by finding out the driving forces and the possible approaches to change HWC towards human-wildlife coexistence.

#### **Definition**

Human-wildlife conflicts (HWCs) usually start as interactions between human and wildlife, yet HWI results not always in conflict (Morzillo, *et al.*, 2014). Conflicts between humans and wildlife start when there is competition for food or space, especially in areas where animals disperse to land with high human density and a lot of agricultural land (Jacobson, *et al.*, 2012; Kaphegyi *et al.*, 2015; Dayer *et al.*, 2017; Madden, 2004; Jung, 2017). Since humans have become the most dominant species on earth, most species lost the competition, and some have even become extinct (Balčiauskas *et al.*, 2017). Now, certain species have earned a protective status which prohibits hunting those species (Nyhus, 2016). The challenge for conservationists is to find a balance between protecting the rare species and satisfying the local people's needs, to reduce HWCs (Nyhus, 2016; Patana, *et al.*, 2018).

HWCs are often defined in two ways; first the impact wildlife has on private land and second, the conflict between several stakeholders about wildlife (Young, *et al.*, 2010; Redpath *et al.*, 2013; Madden, 2004). This study draws on the above-mentioned approach because this allows to make a clear separation between the two different forms of conflict, especially because different types of conflicts require different kinds of solutions. In the case of human-wildlife impacts solutions are often on a technical base, for instance, creating barriers, making use of repellents or even trapping, translocation and culling are frequently used as methods. Solving conflicts between groups of stakeholders is often more complicated (Redpath, *et al.*, 2013). Here, HWC is often between the conservationists who raise their voice for wildlife and other parties that are negatively influenced by wildlife (Redpath, *et al.*, 2015).

#### **Driving forces human-wildlife conflict**

A model made by Nyhus (2016) is used as inspiration to determine a few of the main driving forces that lead to HWC. Nyhus (2016) refers to impact, interaction and frequency as main driving forces. Here, wildlife can have an impact on humans and their land, where the impact might vary from severe effects as death, injury and aggression to minor effects such as nuisance (Rust, 2015; Nyhus, 2016). The interaction between wildlife and humans ranges between positive and negative, whereas recreation, game keeping and subsistence are beneficial for humans but socio-economic concerns as property damage and economic costs are regarded negative (Morzillo, *et al.*, 2014; Jung, 2017). Last, the frequency of an event refers to how often an interaction and or impacts occur, which can be common or rare (Nyhus, 2016). To illustrate, an animal might interact more with farmers when the environmental

conditions are ideal for the species, such as edible crops and accessible crop fields (Dickman, 2010). The driving forces as impact, interaction and intensity could be related as well to population size. Notifications of increased population densities often results in an increase in impact, interaction and intensity as well. Yet, this also depends on where animals decide to spread, in case this spread occurs in human-dominated land, agriculture for instance, then the chance on conflict increases (Kaphegyí *et al.*, 2015). Although, the stakeholders in the Tayside are impacted by the beaver, this study mainly draws on the theory of HHC.

### **Driving forces human-human conflict**

Numerous studies found that HWCs are often more complicated than only a conflict between an animal and human, as it is often related to deeper lying reasons (Dickman, 2010; Redpath, *et al.*, 2013; Jacobson, *et al.*, 2012; Colyvan, *et al.*, 2011). Young *et al.* (2010) identified several typologies of different underlying reasons that can cause HHCs. This study elaborates upon the typologies 'beliefs and values', 'interest', 'process' and 'information' to gain a better understanding about the human-beaver conflicts in the Tayside.

The first type of conflict is often related to the beliefs and values of a person, causing possible differences in perception about HWIs (Young *et al.*, 2010). Several studies emphasised that the majority of the HWCs are in fact HHCs as the type of conflict depends on the interaction between the involved stakeholders, often between the stakeholders in the field and the authorities (Dayer *et al.*, 2017), and to what extent their views clash with each other (Colyvan, *et al.*, 2011; Young, *et al.*, 2010; Redpath, *et al.*, 2015; Redpath, *et al.*, 2013). These views are often related to a cultural and social past (Redpath *et al.*, 2013). For instance, if in the past some unpleasant experiences have taken place between different groups of stakeholders than building up trust might be a major problem for collaboration (Redpath *et al.*, 2013).

Second, conflict of interest means that stakeholders differ in their ideas of solutions and approaches to a specific problem (Young *et al.*, 2010). Especially, interests might differ between the different levels such as, local but also national and/or international scales (Redpath *et al.*, 2013). Here, conflict increases when different parties are involved with different interests, values or perspectives, such as the conservationists that encourage biodiversity and natural processes and the private companies as farmers that need arable land for their food production (Young, *et al.*, 2010; Redpath, *et al.*, 2015; Redpath, *et al.*, 2013; Dayer *et al.*, 2017, Nyhus, 2016). Furthermore, a species might be for conservationists of high value, while for the indigenous people that species has the same value as other species (Redpath, *et al.*, 2013). In addition, parties might aim for impractical goals and thereby not listening to the other party's arguments and interests (Redpath *et al.*, 2013).

Third, conflicts become more complex when they are operating at different levels such Third, conflict over process means to what extent the stakeholders are included and listened to in the decision-making process (Young *et al.*, 2010). Conflicts between stakeholders start when both parties do not understand each other views, missions and solutions (Redpath *et al.*, 2013). This is unfortunate, as each stakeholder could contribute in decision making by sharing their knowledge, especially stakeholders in the field who experience often the direct effects of wildlife on their lands compared to scientists who have often a more indirect role as they study wildlife from a so called 'distance' (Hage, *et al.*, 2010). Conflict over process increases when a

group of stakeholders refer to scientific evidence as most important and true outcome and dismiss other ideas and world views (Arts *et al.*, 2014). This seems to be in line with Redpath *et al.* (2013) who mentioned that some parties are more powerful or dominant than other parties, and therefore these powerful organisations/stakeholders have a high chance to 'win' the conflict. Especially, conflicts between conservation biologists and the local inhabitants tend to be unequal, as conservationists can have the power to enforce legislations on the indigenous people to protect a vulnerable species (Redpath, *et al.*, 2013).

Last, conflict over information refers to what extent stakeholders are informed about changes in the environment that might influence them. It is crucial in conflict mitigation that the objectives of a process/event are clearly formulated, which in turn increases the transparency (Arts *et al.*, 2014; Ewen *et al.*, 2014).

### **From human-wildlife conflict towards human-wildlife coexistence**

Based on the type of conflict adaptive management strategies for the target species can be made. Here, adaptive management means adjusting and improving management implications to a specific case, which makes it a flexible approach (Kimball & Lulow, 2018). Management options include; killing as most extreme, translocation, making use of repellents, fertility control, and disease management and with creating barriers as least extreme. Although, these solutions are all on a technical base, there are also solutions that focus on HHC. Here, conflict management tries to find alternative outcomes to satisfy most of the parties, instead of letting one win and the other lose. For solving a conflict, it is crucial that the parties recognize the conflict as a shared problem and thereby shared solutions (Redpath, *et al.*, 2013). In the end, it is important to take every perspective and view into account by involving multiple disciplines, where different kinds of sciences, such as natural or social sciences, are combined (Redpath, *et al.*, 2013). The government could also reduce conflicts by having an effective law enforcement related to the economics, cultivation and nature conservation (Nyhus, 2016). Yet, according to Colyvan *et al.* (2013) being dependent on authorities to reduce conflict is not necessarily the best way to reduce conflict.

HWIs are often framed as HWCs in the media, based on the type of impact of wildlife on private land and the interaction between wildlife and humans but also the interaction between different stakeholders with clashing views are often mentioned. Often the media lays emphasis on the conflict or even sensationalize it instead of laying emphasis on possible solutions (Redpath, *et al.*, 2013). The next chapter focuses on the way the media frames HWCs and interactions.

## **2.2 Framing theory**

The purpose of this chapter is to introduce the concept framing, as it plays a major role in the communication between the public and the media. The concept of framing is important for this study as there is a difference in interpretation between HWIs and HWCs. To understand the framing theory, first the definition of framing is explained, then a comparison is made

between framing and agenda setting, followed by the process of framing, the different framing techniques and last how framing relates to HWCs.

### **The definition of framing**

The framing theory is often used by researchers as an approach for media content analysis but also as tool to understand how journalists communicate with the people. A frame is useful in a way that it represents an interpretation network that contributes to the understanding of what is at stake and what is the central idea (Brüggemann, 2014). This study draws on the definition of framing formed by Entman (1993):

*“to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described”*  
(p.52).

In other words, when a journalist makes use of framing to represent a reality they often need to prioritize some perspectives above others and thereby represent only some sides of the story (Lecheler & De Vreese, 2011; Alexander & Quinn, 2011; Jacobson *et al.*, 2012; Terkildsen & Schnell, 1997; Brewer *et al.*, 2003). Expected is that a journalist makes use of reliable sources to produce reliable information and to reduce the chance of forming prejudice and stereotypes (Sabatier & Huveneers, 2018). Yet, as each author has her or his own worldview and word choices, it might become clear in its publications what this writer finds most relevant (Gamson & Modigliani, 1989; Dewulf *et al.*, 2011; Brüggemann, 2014). Framing by the media can be performed in different manners by choosing a particular use of language and word choice, by representing only a few stakeholders in the story and the way the journalist interprets a story (Zhou & Moy, 2007).

### **Framing theory and agenda setting**

Framing theory gets often confused with agenda setting. Here, agenda setting is related to the external factors such as how the public awareness, the media itself and politicians are connected to each other (Zhou & Moy, 2007). The agenda setting theory means that only certain news items are covered in the media, which depends on the newsworthiness of a topic/event and certain news values. Yet, framing emphasizes the internal factors by finding out the factors that are under the surface, such as the different interpretations of one ‘event’ (Brüggemann, 2014). Framing becomes important when an issue represents multiple perspectives and are therefore multi-dimensional (Tai & Chang, 2002; Terkildsen & Schnell, 1997). This study elaborates on agenda setting as well, since those two concepts are often related to each other. To what extent agenda setting and framing are related to each other depends on the news article (Zhou & Moy, 2007).

According to Tai & Chang (2002) the framing process also depends on the public’s interest. It is the journalist’s task to write something that is in interest of the public. This makes the interest of the public one of the most important factors driving what is interesting enough to publish. One way to gather information about the public’s preferences for news items is by sending questionnaires to the public. However, as this can be time consuming, often journalists relay on experiences from the past and a bit of gut feeling. Here, they need to find a

balance between the public's interest and news items that deserve priority according to news values. Nevertheless, this might be a tough task as journalist's views might differ from the public's views, without being aware of it (Tai & Chang, 2002). Furthermore, during the framing process journalists have the choice to gain inspiration by considering the frames that other media forms make use of (Chong & Drickman, 2007; Brüggemann, 2013; Gamson & Modigliani, 1989).

All in all, the media, the journalist and the public are all connected to each other by influencing the selection of news items. While the media can influence people's perceptions and views about a phenomenon, the people also play a role in which news items are selected to publish (Tai & Chang, 2002). Expected is that this leads to a self-fulfilling prophecy, which means that expectations lead to true happenings, if the expectations lead to change in behaviour (Haimenl & Fries, 2010). In this case, the media kind of expects which news items are 'popular' and will therefore emphasize these news items in their article. This leads to different types of newspapers that all have their own public and political view, where they might frame a happening different than other newspapers (Tai & Chang, 2002).

Caple & Bednarek (2016) & Brüggeman (2014) add to the findings of Tai & Chang (2002) that some prominent news values often determine agenda setting as well. News values indicate the 'newsworthy' of an event, topic and phenomenon. One of the values to indicate the 'newsworthy' is negativity as negative news items gain more public attention than positive ones. Second, the timeliness of an event as something that happened recently will have priority above old news. Third, proximity plays a role as writing about a topic that is related to culture or someone's neighbourhood will be of high interest to local inhabitants. Additionally, news items with some personalisation will create more involvement of the reader in the news article. Furthermore, news items about prominent persons are highly selected by journalists as well. Another important factor that influence the selection of news items are the power of institutional politics, which play a major role as it often has priority over other news items and is part of the agenda-setting. The way news items are constructed is important to know as it gives insight in how one story differs from another story, although they are both about the same topic (Caple & Bednarek, 2016).

### **Framing process**

Boesman *et al.* (2017) found that the framing process often consists of multiple phases. A new event that has not yet reached the public's attention and which has not been discussed before in the media but becomes worthwhile to spread around is often considered as the first phase. This could be in the form of exclusive information. This phase is also considered as the most influential one on the public's opinion, as expected is that most of the public is not familiar yet with the new topic. After a while the newsworthy of a topic decreases but might still be important. In that case the journalist needs to frame the news in a way that it becomes interesting for the reader to read. This second phase is also called the definition phase, as often the perspectives of multiple key actors do come forward. This interaction between the reporter and the source can cause a reframing process. Therefore, it is important to consider that framing is not necessary something static. On the contrary, a journalist might be driven by the information sources that provide all the time new information, which makes framing a dynamic process (Boesman, *et al.*, 2017). Where Boesman *et al.* (2017) mentioned the different

phases of a framing process, Brüggeman (2013 & 2014) referred to the factors that influence this framing process, which can be seen in Table 1. This study might mainly focus on how journalists make use of actor frames.

*Table 1. Factors that influence the framing process, Brüggeman (2013) & Brüggeman (2014)*

<b>Definition</b>	<b>Explanation</b>
<b>Journalist frames</b>	The journalists own world view and perspectives towards a certain topic. To illustrate, a journalist with a particular interest for the economy might write something from an economical perspective
<b>Newsroom frames</b>	Frames related to the editorial guidelines within a company
<b>Actor frames</b>	Meaning to what extent the stakeholders' opinions are included in the media
<b>Interventionism</b>	Represents the type of role (passive or active) of the journalist
<b>Power distance</b>	Meaning to what extent the journalist is influenced in his writing by policies and government
<b>Market orientation</b>	Focuses on interests of the public societies or on commercial outcomes

### **Framing techniques**

This study mainly draws on the framing techniques used by Brüggemann (2014). Journalists can make use of a variety of framing techniques to construct the media content. Important to consider is that journalists are a heterogenous group and may therefore differ on the use of framing techniques and to what extent these are used (Brüggemann, 2014). According to Brüggemann (2014) three main framing practices can be differentiated. First, the writer might choose to select certain perspectives and/or stakeholders in the story that are in line with his/her own views, causing often a one-way interpretation of the text by filtering out some other perspectives. Second, what the journalist publishes might be based on different perspectives, meaning that it is not necessary the case that what the author writes is in line of what he thinks and feels. To illustrate, if the author chooses to represent certain stakeholders in the story, then quotes used by them might differ from what he views. Here, different frames are often represented but the emphasis on these frames might differ among each other. Third, all different views involved in a debate are equally paid attention to in an article, meaning that the reader is not framed in one direction (Brüggemann, 2014).

While in general the news content might be related to a defined problem, the cause, consequence and solution of that problem, the way these phenomena are framed depend on several framing devices. Beside word choice, Boesman *et al.* (2017) found several other framing devices used by journalists such as, the use of metaphors, exemplars, depictions, and visual images, use of contrast, quantifications and expressions. The visual images used in news articles indicate how a topic is represented, depending on what and how something is



visualized. How an image is framed depends as well on the technical aspects, such as a zoom, colour and focus (Caple & Bednarek, 2016).

### **Framing effects**

People often read, watch or listen the news to gain information about what is going on in the world (Terkildsen & Schnell, 1997; Brewer *et al.*, 2003; Sabatier & Huveneers, 2018). Every day news items are chosen for the topic of the day, where journalists can interact with multiple stakeholders as the public, scientists and the government (Di Gregorio *et al.*, 2015). Although the media does not decide for us what we should think, their selection of news items gives us enough topics and items to think about. Some topics gain more attention than others due to big heading front sizes or providing enough space to write the article (McCombs & Shaw, 1972). Here, the media plays a major role in how people view or perceive the world (McCombs & Shaw, 1972; Rust, 2015; Nyhus, 2016; Brewer *et al.*, 2003, Sabatier & Huveneers, 2018). This can also be called the media discourse. According to Gamson & Modigliani (1989) the media discourse is the most dominant discourse that influences the opinions formed by the public. It can be seen as a bundle of different interpretations of the reality (Gamson & Modigliani, 1989).

The public's opinion plays a big role in the way policies are formed, as public support makes things happen while protest might delay or even cancel certain actions (Brewer *et al.*, 2003). For the publication of an article, usually only a few stakeholders are selected and/or interviewed to represent the story. These stakeholders are in most cases the representative bodies of the government but could also be experts and special-interest groups (Jacobson, *et al.*, 2012). This process might be biased as not the whole story is told, but only one side of the story is showed. This has to do with a maximum amount of news item coverage and thereby selecting the most interesting news items (Rust, 2015).

The public opinion is shaped by a lot of different factors, with as most important factor someone's personal values (Kilburn, 2009). Framing is all about a person's feelings, emotions, interpretations and views which are linked to a person's past and previous experiences. All these characteristics influence a person's attitude or behaviour towards something (Arts & Buizer, 2009). A person might be flexible and easy in changing her/his opinions or he/she might be more traditional and steadfast in the formed opinions. This differentiation in the prioritisation of personal values is important to know as they explain a lot about a person's attitude and behaviour (Kilburn, 2009).

According to Chon & Druckman (2007) not only personal values shape the public opinion, but also framing plays a major role. Framing cause effects on the public opinion if changes in the framing process changes a person's attitude towards something (Chong & Druckman, 2007). Most of the people do not have strong arguments about a topic that they are not familiar with, or they might even have no opinion at all. In this case, the media might be their first source about the topic, thereby forming opinions about the phenomenon (Gamson & Modigliani, 1989). People with strong opinions are not easily influenced by other opinions due to their consistency and the opinion remains stable through time. There are also people that are motivated to compare different frames about one topic with each other, instead of believing one side of the story. However, not only the comparison of different frames creates their views but also the people's history and previous experiences with a certain topic. Framing affects a

person's mind by showing new sides of a story, by triggering old memories about a topic or by strengthening the person's attitude towards a topic (Chong & Druckman, 2007). Finally, social phenomena play a role as people might influence each other during conversations (Gamson & Modigliani, 1989).

### **Role media in framing HWC**

Previous research on HWIs found that interactions between wildlife and humans are usually framed more negatively than positively (Jacobson *et al.*, 2012). Negative framing by the media influences the risk perception of the people, as people might start to see the species as a threat to their lifestyles (Nyhus, 2016). To illustrate, extreme cases of HWCs, as death and injury, can lead to drastic solutions as killing the species (Sabatier & Huveneers, 2018). For instance, the coyote seems to be a wildlife species that is often in conflict with humans. Alexander & Quinn (2011) found very negative portrayals of the coyote in the Canadian media. They highlighted the problem that these highly negative framings of the coyote can lead to anxiety, misinterpretations of the animal and in the end a negative attitude toward the species (Alexander & Quinn, 2011; Jacobson *et al.*, 2012). Nature's new image becomes scary and intimidating, which cause problems and challenges in nature conservation (Redpath *et al.*, 2015). However, these kinds of extremes are not expected for species that do not form a direct threat to the public. Especially, in cases where direct encounters between the public and wildlife does not happen that often, which is most often the case when the species of interest is a 'shy and/or night animal' (Jacobson *et al.*, 2012).

The publishing of extreme events is often referred to as episodic events, where the species is often framed as source-of-blame (Dayer *et al.*, 2017). Thematic frames often focus on the bigger picture and can include multiple aspects related to that event (Jacobson *et al.*, 2012). Problems in HWIs are often framed as HWCs. For instance, Nantha & Tisdell (2008) found that the conflict between conservationists and farmers from oil-palm cultivation was defined and framed as 'orang-utan-palm oil conflicts'. This type of framing might cause problems as it looks like the conflict is between the animal and the land use instead of between the different interests of stakeholders (Peterson, *et al.*, 2010). Furthermore, the word conflict already implicates something negative, other than the word interaction with a more neutral value. The focus here is now on the problem instead of possible options for solutions (Redpath *et al.*, 2015; Balčiauskas *et al.*, 2017). This shows the power of language selection by the journalist on the public (Sabatier & Huveneers, 2018). Besides word choices, pictures might influence the people's perception about wildlife as well. A high-quality picture of a 'cute' animal in its natural habitat or a parent animal with a young might result in a positive attitude of the people towards the animal, while a highly threatening picture of an animal (preying on other animals, showing its teeth etc.) might cause an increase in risk perception (Jacobson *et al.*, 2012).

Furthermore, it is often the case that negative newspapers sell better than the positive ones (Alexander & Quinn, 2011). Here, high intrinsic values or scientific, historical, ecological and educational values that are related to wildlife are quite difficult to quantify (Macdonald *et al.*, 1995). Often the positive impacts of wildlife on the ecological processes and different kinds of ecosystem services, such as, supporting, cultural, regulating, and provisioning services, are outweighed by the negative impacts of a species on the environment (Soulsbury & White, 2015).

## 2.3 Conceptual model

Figure 1 shows the conceptual model, which is based on the main theories, explained in the theoretical framework. First, the distinction is made between the concepts HWC and HHC. This distinction was made as both processes are influenced by different underlying driving forces and solutions towards these different types of conflicts differ as well. Therefore, a different approach is required. The conflict between humans and wildlife often depends on the main driving forces as impact, interaction and the frequency of wildlife on private land. Whereas, HHCs about wildlife often depends on the beliefs and values of a stakeholder, their interests, their involvement in the decision-making process and to what extent stakeholders are informed about changes in their environment. These interactions between humans and wildlife but also between the different stakeholders involved in the human-wildlife conflict could be portrayed and/or framed by the media. This can be performed using several framing techniques, such as selecting certain views above others or by using particular word choices. External factors influence the framing by the media as well, since newsworthiness and the interest of public play a role. The framing of news content affects often the publics opinion and/or their attitude towards a phenomenon (framing effects).

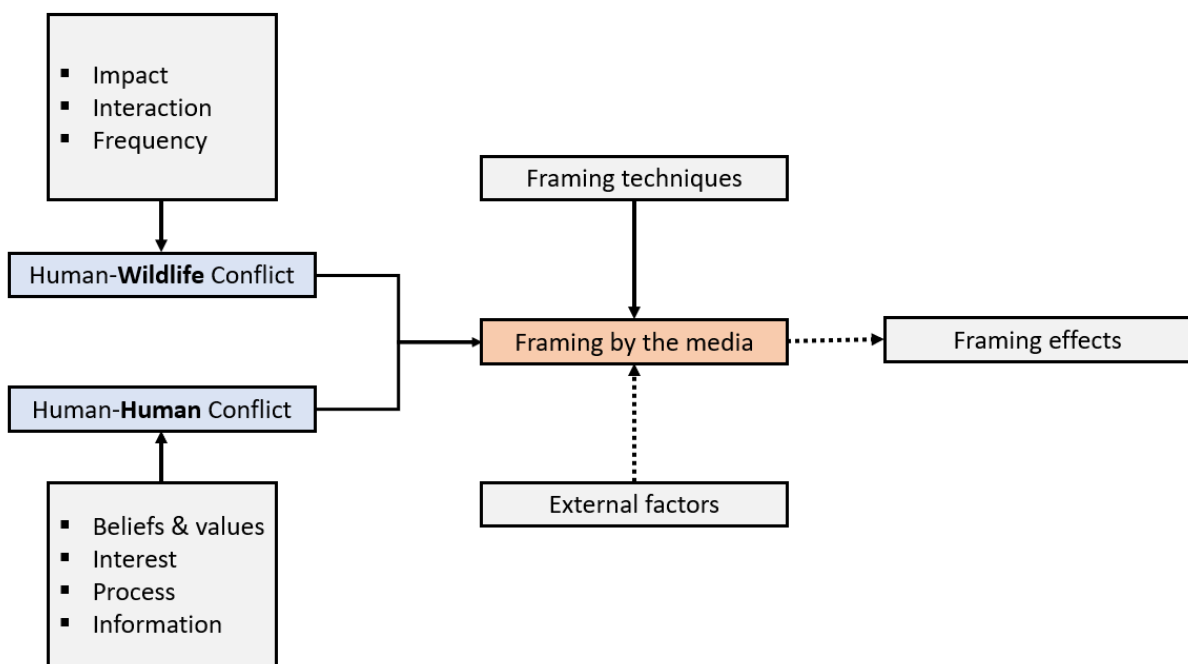


Figure 1. Conceptual model, which represents the main theories (represented in colour) explained in the theoretical framework. Driving factors behind the main phenomenon are represented in grey.

## 3 Methodology

This chapter describes the research strategy, case study design and instruments used for the different methods. Here, data was collected between the second week of September and the first week of October in 2018. Collected data included semi-structured interviews and news articles about HBIs in the Tayside of Scotland. The stakeholder analysis is based on primary data as the landowners, fisherman, ghillies, farmers and organisations were interviewed, while the media analysis is secondary data and derived from text. The main goal is to find out to what extent the views of the stakeholders involved in the HBIs are represented in the media.

### 3.1 Research strategy

This study made use of a social science approach where views, opinions and feelings of people were analysed. Furthermore, a mixed method approach was used as well. Due to qualitative research, in the form of interviews, in-depth information was gathered about the stakeholders' views. This in depth-information was converted into quantified data to find an overview of the main themes and sub-themes that might contribute to the frame-forming of the human-beaver interactions in the Tayside by the media. This approach made it possible to compare the data found in the field with the data found in the news articles content. The epistemological position of this research is interpretivism by looking into the linguistic interpretation of the stakeholders and media views towards HBIs. This is in line with the definition of interpretivism according to Goldkuhl (2012):

*“The core idea of interpretivism is to work with these subjective meanings already there in the social world; that is to acknowledge their existence, to reconstruct them, to understand them, to avoid distorting them, to use them as building-blocks in theorizing”* (p. 138).

A case study approach was used to allow a detailed understanding of the complex social issues in a natural setting, in this case the Tayside, and to perform an in-depth analysis to interpret all the different views of stakeholders (Harrison *et al.*, 2014). The semi-structured interviews and the content of news articles are analysed according to the classic content analysis. Here, qualitative data was converted into quantitative data, as words were turned into numbers to make comparisons between the data found in the interviews and in the news articles.

This study made use of different research strategies. The theoretical framework, including the concepts ‘HWC’ and ‘framing by the media’ provide the theoretical backbone of this study. The first concept is used to understand the interaction between humans and wildlife and the interaction between different groups of stakeholders. The second concept about framing by the media is important as it creates understanding about how the media select news items and portray or even frame these news items.

### 3.2 Study area

The two main districts in Scotland that are occupied by the Eurasian beaver are the Tayside and Argyll. The Tayside consists of beaver populations originated from beaver escapes or releases from private collections, while the releasing of the beaver in Argyll & Bute – Knapdale – in 2009 went officially (Gaywood, 2018). This case study was conducted in the Tayside area (Figure 2), which consists of the three main districts: Perth and Kinross, Dundee City and Angus (Undiscovered Scotland, 2018). HBIs were studied here because the intensity, impact and interactions between the beaver and humans are higher than in the Argyll area, which resulted in more HBCs (Gaywood, 2018). Here, most of the land close to the rivers is human-dominated and cultivated. In 2014, statistics showed that agricultural land use in the Tayside contributes for 10 % to the total amount of agricultural land in Scotland, mostly focussing on crops and fallow but also grass and rough grazing (Scottish Government, 2014). The Perth and Kinross area is specialized in arable agriculture, such as soft fruit and barley (The James Hutton Institute, 2014). Together with the Highlands (34%) and Grampian (11%), these are the main districts that contribute to agricultural land purposes (Scottish Government, 2014).

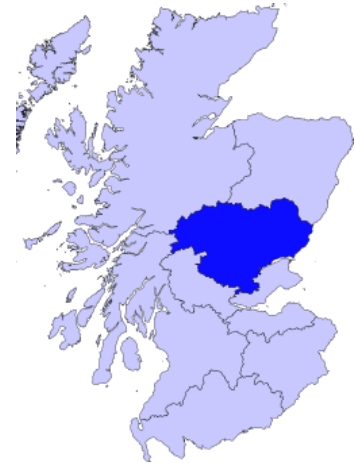


Figure 2. Tayside area marked in dark blue (Wikipedia, 2019)

The main water courses in the Tayside are the Tay, Tummel, Isla, Almond and the Earn. Beaver populations have established and spread themselves along these water courses (Campbell-Palmer *et al.*, 2018). For this research several towns/villages and one city in a close distance to these rivers was visited. The sampling points include: Pitlochry, Dunkeld, Kinloch Rannoch, Grandtully, Aberfeldy, Kenmore, Logierait, Meikleour, Blairgowrie, Alyth, Coupar Angus, Perth, Bridge of Earn and Crieff. These locations are indicated as a yellow dot in Figure 3. The selection of these areas is described in the next section.

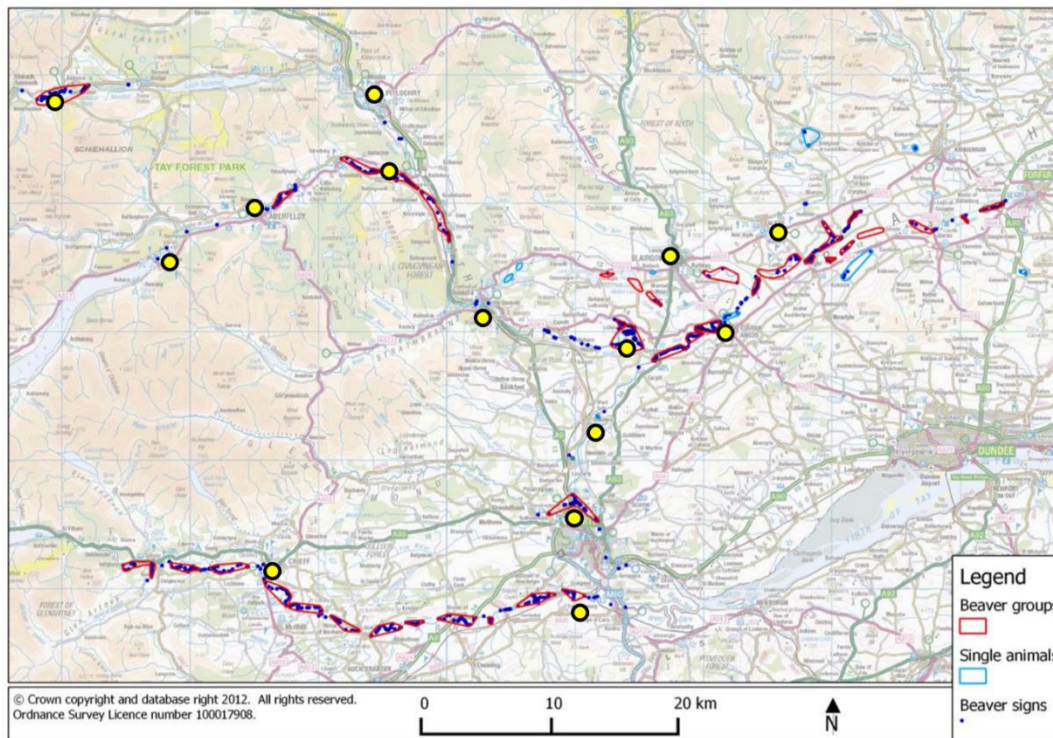


Figure 3. Beaver distribution map of 2012 in the Tayside area (Scottish Government, 2018), dots in yellow indicate the places visited to perform the interviews.

### 3.3 Data collection

This section represents three paragraphs, where each paragraph explains the used methodologies to gather relevant data. First, a literature research was performed, second semi-structured interviews were held with the stakeholders and third news articles were selected.

#### 3.3.1 Literature research

Two types of literature have been used for this study. First, a literature review of (mostly) peer reviewed papers was conducted to gain knowledge about the reintroduction of the beaver and current situations between humans and beavers in Scotland. This type of information was used as background knowledge to create the interview guidelines. The systematic literature research of the scientific papers was done on the web databases Wageningen University digital library and Google Scholar. Key terms that were used in the search engines were: "reintroduction" AND "beaver" AND "Scotland". Here, Gaywood (2018) was used as starting point and from there on a snowball effect was used as citations made in this source provided further relevant studies that could be read as well. Besides papers also reports were read. The reports, often written by governmental agencies, were found by using Google as search engine. Here websites from the Scottish government and SNH were used to download the reports. These reports were often based on monitoring programs and suggestions on how to manage beaver populations.



The literature review of the reports showed the most recent developments and obstacles in the current beaver debate in the Tayside. Therefore, questions 1 and 5 from the interview guideline were mainly focussed on governmental decisions that were recently made. The interview format can be found in appendix A. Furthermore, the literature study showed that beavers cause both positive and negative impacts on the environment. Question 2 of the interview format refers to this topic by asking which impacts are most experienced by the stakeholders. Additionally, the question appears which management applications are preferred by the stakeholders to limit negative impacts (question 3). Therefore, it is first important to know which management implications are suggested by the literature and are therefore possible as well. Here, controlling the numbers was mentioned as one of the more extreme solutions in the literature. However, do stakeholders also see this as the solution (questions 4 & 6)?

Another purpose of this literature review was to select the stakeholders in the field that are in direct interaction with the beaver and to find out which aspects seem to play an important role in the beaver debate. The reports written about the beaver in the Tayside provided some information on which stakeholders face most interaction with the beaver (Scottish Natural Heritage, 2015; Gaywood *et al.*, 2015). Here, the most prominent stakeholders who are in direct interaction with the beaver came forward, such as the farmers, landowners, and the fishermen.

Additionally, the Tayside contain several villages/towns and cities that are located close to rivers and its tributaries. Yet, not every suitable location could be visited due to time and budget constraints. Therefore, a literature research was done to find out the locations close to water courses with beaver populations. The study by Campbell *et al.* (2012) showed a map of beaver populations in the Tayside that were present in 2012. This map was used as a basic to select villages/towns and cities close to these beaver populations. However, important to consider is that these analyses were performed in 2012 and that a lot can change in 6 years. Therefore, in advance several organisations were contacted to find out if they could provide new information. The following organisations provided further information about the presence of beaver groups in the Tayside; SNH, Scottish Wildlife Trust (SWT) and the Scottish Gamekeepers Organisation. For instance, the places known to have most HBIs mentioned by personal communication with the SWT were visited, these include; Coupar Angus, Aylth, Pitlochry, Bridge of Earn and Birnam/Dunkeld. Sampling points were selected based on these suggestions done by the organisations and the map of 2012.

Due to a literature research triangulation is improved as the background information provides useful insights for creating the interview guideline. This improves the chance to find underlying thoughts about what the stakeholders feel, experience and think of the beaver debate in the Tayside.

### 3.3.2 Semi-structured interviews

The main method used to gather the data in the field was by performing semi-structured interviews with the participants. This method allows an interview format with some structure and follows some guidelines but is not too strict as there is still opportunity to ask questions

that the interviewer has not thought of during the initial phase of the research. This gives the opportunity go in depth on a subject when necessary and thereby gathering detailed information. Furthermore, the participant can ask questions in case of any unclarities (Bernard, 2011).

### **Sampling method**

Participants were recruited from villages, towns and one city (Perth) close to the river the Tay, Tummel, Isla, Almond or the Earn that are known for having beaver populations. Yet, only sampling points that were easily accessible were visited. This means that the location was reached by public transport or in bicycle distance (25 miles was the maximum) from place of residence (which were Pitlochry and Perth). The stakeholders recruited were the people overseeing that field (landowners, ghillies) or making use of that field (fishermen, famers). Interviews were performed with more than one farmer, landowner, fisherman and ghillie, as the impact, intensity and interaction of the beaver on private land depend on multiple factors. In addition, one wildlife tour operator, two NGO's and one councillor were interviewed, as I encountered them on my path and were included as an extra information source. It was not necessary to interview more stakeholders within one organisation as the whole organisation represents the same vision, mission and aims from the company. Not all stakeholders found in the literature were interviewed, as not everyone had the time to participate in this research or referred me to other organisations. For instance, the gamekeepers were not available during the period of my fieldwork, due to the busiest hunting season of the year. The number of stakeholders interviewed for each group is shown in Table 2. These stakeholders are divided in the three main groups; government, private sector and the civil societies/NGOs.

*Table 2. Number of interviews held per stakeholder group in the Tayside*

<b>Sector</b>	<b>Stakeholder groups</b>	<b>Instrument</b>	<b>Total number of interviews</b>
<b>Government</b>	Perth & Kinross Councillor	Semi-structured interview	1
<b>Private sector</b>	Farmers	Semi-structured Interview	7
	Landowners	Semi-structured Interview	4
	Wildlife tour operator	Semi-structured Interview	1
	Ghillies	Semi-structured Interview	3
<b>NGO's/ civil society</b>	Fishermen	Semi-structured Interview	7
	Scottish Wildlife Trust	Interview questions by email	1
	John Muir Trust	Interview questions by email	1



The selection of the stakeholders for this research went non-random as it was not possible to give each stakeholder an equal chance of being selected. Some stakeholders were easier to contact than others, such as the NGO's and governmental organisations, which contact details can be found on the internet. Therefore, the stakeholders that were easily accessible were contacted first by sending them a request for an interview by email. In case I did not receive a response on my request I called them or visited that organisation during my fieldwork period.

Snowball sampling was used as main sampling method, as it was hard to find the stakeholders required for this study. For instance, it is often not possible to find contact information about farmers, landowners, fishermen and ghillies. Therefore, during my fieldwork I encountered a lot of villagers, who I asked if they knew some people in their surroundings who are in interaction with the beavers. This resulted in some good references. In case, people could not refer me to the right stakeholders I decided to visit farms and private estates myself and asked if they encountered interactions with beavers. Some farmers were not in direct interaction with the beaver themselves but could still provide some insights about the HBIs in the Tayside. Three farmers were therefore interviewed as well to find out if they were particularly framed towards the beaver or remained neutral as the beaver is not impacting their land.

### **Interview format**

In general, the same type of questions were asked for each stakeholder as the same interview format was used each time with sometimes some extra questions when necessary. Yet, the interview formats from the stakeholders in the field slightly differed from the stakeholders as the NGO's and the councillor (Appendix A). Here, some extra questions were asked to the NGO's and a councillor as they were regarded as experts regarding the beaver situation, may this be on ecological level (NGO's) or political/social level (the councillor). The farmers, ghillies, fishermen, a wildlife tour operator and the landowners were all asked the same type of questions.

The interview started with informing the participants about the FPIC that protects the right to participation. Subsequently, I introduced myself and mentioned the purpose of this study, which is gathering the stakeholder's opinions about certain beaver related topics in the Tayside. Yet, I did not mention that I studied forest- and nature conservation, to prevent socially desirable answers from the stakeholders. To illustrate, if the stakeholder knew my background in ecology, he/she might feel uncomfortable when providing arguments that are against the beaver. The occurrence of this type of bias was therefore excluded. In addition, the places where interviews were held differed a lot, for instance, some of the interviews were done on the street or in nature, others inside people's homes or even in a public space (café).

The interview questions were based on different actual topics related to the HBIs in the Tayside, which are: impacts of the beaver on the environment, management of the beaver, media importance and governmental decisions. Most of the interviews lasted not longer than 20 minutes, as stakeholders were often contacted during working hours. Yet, sometimes it was possible to make appointments in advance and then there was no time limit. For instance, some stakeholders took me to places to show the work of beavers and talked during a walk, which could last for an hour. Questions were asked, and notes were made during these walks. Due to background noises or personal preferences, recording was not always possible. Yet, the

interviews that were recorded were fully transcribed in the form of: question and answer. Furthermore, the two NGO's used in this study could not meet in real life and therefore, an interview guideline was sent by email.

### 3.3.3 Selection of news-articles

The second part of this data collection was performed after data from the field was gathered. Here, the main themes could now be identified and could be used as well for the content analysis of the newspapers. These newspapers include local newspapers but also national newspapers that are published in Scotland and/or in the UK. This study only focused on traditional media and not on social media, as social media contains a very large domain, thinking of BBC online, twitter, Facebook, Instagram, LinkedIn, MySpace and so on. Even on one social media channel there are a lot of different groups providing news topics. This study made use of a systematic literature review approach by using a content analysis. According to Kitchenham (2004) a systematic literature review is defined as:

*“A means of identifying, evaluating and interpreting all available research relevant to a particular research question, or topic area, or phenomenon of interest” (p.1).*

This approach is therefore a secondary study, as it identifies, evaluates and interprets the content of news articles about HBIs. The following guidelines from Brereton *et al.* (2007) and Merino (2018) were used to select the most relevant information from the news articles for this study:

1. (Set up research questions)
2. Specify search strategy
3. Define important criteria
4. Quality assessment data
5. (Collect required data)
6. (Analyse and interpret data)

The guidelines between brackets are not mentioned in this section. Guideline 1 is already mentioned in header 'Research Objective and Research Questions'. Guideline 5 and 6 are mentioned in the next paragraph 'Data analysis newspapers'.

#### **Specify search strategy**

Only traditional media, in this case newspapers, that have digital archives were used for this analysis, to identify beaver topics. In some cases, digital archives did not contain a search bar, such as The Times and The Scotsman, therefore, they were excluded from the literature research. The search term “beaver” was used to find related news articles. The next step was to look at; if the word ‘beaver’ was mentioned in the headlines or the openings sentence of the introduction and/or whether a picture of a beaver was provided. In the first place, the term “Tayside beaver” was used, but this increased the amount of hits with irrelevant articles. Furthermore, the word ‘Tayside’ was not added, because this area can be named many ways and includes many different villages/towns and cities that would be excluded otherwise. In the

end, all articles about the beaver topics were selected, which resulted in a lot of hits and made it impossible to analyse all of them in the amount of time available for this study. Therefore, a time frame of 2016-2018 was used to focus on the most recent published articles. First, I also selected news articles from the years 2014 and 2015, but as this resulted in more than 100 articles the decision was made to only consider the articles published in the last three years.

### Define important criteria

Articles were selected, sorted and coded in a consistent manner to analyse the media content. The search term “beaver” resulted in a lot of irrelevant articles. Therefore, new criteria were formulated. First, the word beaver needs to refer to the animal beaver and not to a club that carries the name ‘beaver’. In addition, the topic needs to be related to the beaver in the Tayside. For instance, places or areas within the Tayside had to be mentioned, examples are: The Tayside, Perthshire, Angus, Crieff, Pitlochry, rivers Ericht and Isla, Dunkeld etc. In other words, articles about the beavers in other parts of Scotland or other countries were not analysed as the HBIs might be completely different there. Last, stakeholders that are in interaction with the beaver had to be mentioned. Examples of stakeholders mentioned in the news articles were: SNH, farmers, fisherman, Scottish Government, Campaigners, Scottish Wild Beaver Group, RZSS, NFU, landowners, public, biologist, SPCA, Natural Trust for Scotland, John Muir Trust, researchers, experts, University, Scottish Gamekeepers Association. To find some of these stakeholders the content of an article was quickly scanned by looking at the title, introduction and first sentences of paragraphs.

### Quality assessment data

The news articles that were chosen for this research all needed to fulfil the previous conditions and needed to be published in the time-frame of 2016-2018. This exclusion of news articles eventually resulted in 55 articles relevant for this study and time frame (Appendix B, Table I). This research focused on the following 10 newspapers: The Evening Telegraph, The Courier, The Scottish Herald, The National, Daily Record, The Guardian/Observer, Scottish Farmer, Telegraph and The Scottish Sun (Table 3). An important note to make is that one news article appeared in three different newspapers (Article 2, Appendix B) with almost the exact same content. The choice was made to use this article three times, because it is published three times as well.

*Table 3. Newspapers used for the traditional media content analysis. Sources: 1: Wikipedia, 2018a; 2: J. Buchan, Personal Communication, October 1, 2018. 3: Wikipedia, 2018b, 4: Media Bias Fast Check, 2018, 5: BBC, 2015.*

Nu.	Name newspaper	Scale of publishing	Political Party Association	Number of found articles
1	Evening Telegraph	Local (Dundee)	Conservative Party <sup>1</sup>	4
2	The Courier	Local (Dundee)	Neutral <sup>2</sup>	6
3	The Scottish Herald	Scotland	Scottish National Party <sup>3</sup>	11

4	The National	Scotland	Scottish National party <sup>3</sup>	7
5	Daily Record	Scotland	Labour Party <sup>3</sup>	7
6	The guardian	Scotland	Labour Party <sup>3</sup> Liberal <sup>4,5</sup>	3
7	Scottish Farmer	Scotland	Unknown	8
8	Daily Mail	UK	Conservative Party <sup>3,4,5</sup>	4
9	Telegraph	UK	Conservative Party <sup>3,4,5</sup>	4
10	Scottish Sun	UK	Scottish National Party <sup>3,5</sup>	1

### 3.4 Data analysis

The content analysis of both the interviews and the news articles are described in the same section as the approach was the same. A content analysis was necessary to interpret the interviews and the text of news articles. The program QDA Miner Lite was used to analyse 25 interviews and 55 articles. The text is analysed by making use of a combination of inductive and deductive coding. Deductive coding was used as some main themes were already covered in the interview questions, based on the previous literature research. Yet, not only deductive coding was used as approach to analyse the data, but also inductive coding played a role by creating some new sub-themes, based on new information that emerged from the text. To illustrate, the categories: 'impacts', 'management' and 'policy' were used a-priori before the data analysis even started. Yet, the themes: 'portrayal of the beaver' 'reintroduction' and topics that did not fit into pre-defined main themes, also referred to as 'other' were added later, as these themes seemed to be apparent in texts as well. The theme 'representation of stakeholders in the media' was analysed differently and is explained in the last paragraph. A complete summary and explanation of the themes and sub-themes can be found in the first section of the result chapter (Table 4). These themes are the puzzle pieces for answering the research questions. To compare the stakeholder analysis with the media analysis, the same themes were used for the media content analysis. Here the focus was on the stakeholders' and media views towards the HBIs in the Tayside.

Qualitative data was eventually converted into quantitative data to find out to what extent the stakeholder's views of the establishment of the beaver in the Tayside is represented in the media. However, important quotes made by the stakeholders and/or journalists were still added to the results as an extra dimension. These quotes were added as they entail detailed information that would otherwise get lost in the quantitative dataset.

The data analysis part was performed in several steps. First, all transcripts and news article were quickly scanned for a first impression and some slide notes were made. Second, every text was read thoroughly, and important text fragments were labelled and given a colour. The focus was on the stakeholder's and journalist's word choices and interpretations of the situation.

Every piece of text that mentioned something about one of the previous mentioned main themes was highlighted. Here, the most prominent sub-themes of each main theme became clear and were highlighted as well in a specific colour. The colouring of that specific sub-theme could be performed on a whole sentence, a part of that sentence or even a whole paragraph, since that sub-theme could cover a lot of different subjects. For instance, the main theme 'impacts' covered multiple sub-themes, such as 'nature', 'private land' and 'fish. Even these sub-themes covered a whole bunch of other topics. Yet, it was not necessary to go that much in detail and when necessary these details were provided as quotes in the results chapter. Here, it became clear that topics that were apparent during the interviews did not always come forward in the media or the other way around. Therefore, it is possible that some sub-themes were not covered by both the stakeholders as the media.

An overview was created in Excel of all the different codes mentioned in the texts. The reason that the data was transported from QDA Miner Lite to Excel was because the functions in QDA Miner Lite were limited. The coding procedure in QDA Miner Lite only counted how much every code was mentioned in all the interviews and news articles together. In other words, differences between the different groups of stakeholders and different newspapers could not be identified. Therefore, excel comes in handy. The overview showed the mentioned sub-themes for each stakeholder and each news article by making use of a zero and one counting system. Here, the zero meant that a topic was not mentioned by a specific stakeholder or article and a one meant that the topic was discussed by a stakeholder or an article. Eventually, by counting all the ones the totals for each different group of stakeholders and different types of newspapers were known and comparisons could be made. These numbers were eventually transferred into percentages to make reliable comparisons between the different groups. For example, impacts on private land were mentioned by 6 fishermen out of the 7 fishermen, by dividing 6 by 7 and multiplying this with 100, the percentage was calculated. This approach was used for each different group of stakeholder and newspaper. Additionally, it was possible to calculate which sub-theme within one main theme was mentioned the most by all the stakeholders together and all newspapers together. For example, every stakeholder that mentioned something about private land as impact was counted, which were 20 stakeholders, divided by 25 (total stakeholders who participated in this study), multiplied by 100. Important to consider is that one stakeholder/news article could chose more than one sub-theme within one main theme. Therefore, total percentages within one main theme were barely 100 %. In the end, these percentages were shown in tables and figures to represent the findings.

This research focuses as well on the mentioned stakeholders in the articles. This is important to know as it showed which stakeholders were most prominent in the human-beaver discussion. The analysis of the last theme: 'representation of the stakeholders in the media' went separately from the analysis described above. This theme was added as an extra dimension to compare with the findings of the previous analysis. The previous analysis shows to what extent the stakeholders' opinions are represented in the media, while here there is specifically looked at how often stakeholders are mentioned in the newspapers. In other words, to find out if stakeholders are under- or over- represented in the news articles, and, if so, which stakeholders are then under- or over- represented. To answer this question 55 articles were scanned on the words mentioned in Table 4. These words represent the stakeholders used in the media and its synonyms. Eventually, the same calculations were performed as described

above, with the same 0 and 1 counting system. For example, fishermen were mentioned by 6 articles, by dividing this number by 55 and multiplying this with hundred, the total percentage was calculated.

*Table 4. Used words, synonyms and/or name of groups that represent the stakeholder*

<b>Stakeholder</b>	<b>Synonyms and examples</b>
<b>Fishermen</b>	Fisherman, fishermen, fisheries and anglers
<b>Farmers</b>	Farmer
<b>Ghillies</b>	Ghillie
<b>Landowners</b>	Landowner, land manager, land owner, owner, manager, owners Kinnordy Estate and Bamff
<b>Tour guide</b>	Tour guide
<b>Councillor</b>	Government, SEPA, minister, Cunningham, council, MSP, policy officer, environment secretary
<b>Nature NGO's</b>	SNH, environment agency, SWT, SSPCA, RSPB, Scottish Wild Beaver Group, RZSS, NTS, trees for life, Onekind and the John Muir Trust

### 3.5 Ethical considerations

There is a lot more behind the surface when talking about HBIs, therefore the FPIC was used. During the fieldwork some sensitive information was released by the informants. Important ethical considerations were to promise anonymity and when they asked me not to publish something about what they have told me, I had to keep my promises. For instance, I was allowed to share the sensitive information that statistics of beaver numbers are not correct and are way underestimated, but I was not allowed to share the number of beavers that they have counted and, in some cases, shot on their field. In this case, I do not break their trust by keeping that promise, or in other words mentioned by Bernard (2011):

*“Once that decision is made, you are responsible for what is done with that information, and you must protect people from becoming emotionally burdened for having talked to you” (p.167).*

Furthermore, I decided to not make use of any names even while some participants told me that it was all right to use their name for this research. Therefore, when providing a quote in the text, I referred to that source as a number, such as fishermen 1 and famer 6. This way their anonymity was assured so that other people cannot reach out to them.

## 4 Results

55 News articles were read and 25 interviews with stakeholders were performed to answer the main research question: *“To what extent are the stakeholders’ views about the establishment of the beaver in the Tayside reflected in the traditional media?”*. To answer this main research question, it is important to know the stakeholder’s perspective and the media’s perspective about the establishment of the beaver in the Tayside. Now, possible differences between the different groups of stakeholders and between the different newspapers can be identified. Besides the main themes; portrayal of the beaver, reintroduction, impacts, policy, management and others, an additional theme is added about how the stakeholders themselves are represented in the media.

### 4.1 Themes contributing to the Tayside beaver discussion - explained

This first section of the results represents the general overview of the themes and its sub-themes found during the data analysis. To illustrate, each categorization is formed by several sub-categorizations, which contribute to the frame building of the HBIs in the Tayside. Every sub-categorization is shortly explained in Table 5, but an elaborated description follows in the next paragraphs. Quotes used from an article are indicated by a number and can be found in Appendix B, Table I.

The portrayal of the beaver focus specifically on the word ‘beaver’ and how this word is represented during the interviews and texts in news articles. Adjectives and adverbs could be added to the word beaver to indicate special feelings towards the animal. Here, the outcomes differed from ‘pest species’ and ‘feral beavers’ to ‘functional beaver’, ‘remarkable animals’, ‘clever animal’ to just ‘beaver’. These statements were either positive oriented, neutral or negative.

The reintroduction categorization was added when at least half of the stakeholders mentioned something about the reintroduction phase of the beaver. These statements were formed on speculations about how the process went, because until this day it remained unknown whether the beaver escaped from private properties or was illegally released. Here, the stakeholders shared their own ideas and knowledge about the subject. First, escapes were mentioned as theory. The councillor shared the following: *“In that sandy area there are a lot of small rivers and with a lot of wetland and marshes, so the landowner wanted to see the effects of the beaver on the land. There was a group of landowners interested in this ... Obviously; beavers are quite well in escaping”*. The councillor was a witness of the first views of the beaver in the Tayside area. Yet, not everyone thinks that the beavers accidentally escaped, as highlighted by ghillie 3: *“There are really weird places where beavers have established. Places that you would not expect that they have colonized naturally”*. He has the theory that people worked together to spread the beaver in the Tayside area. This is one of the examples that beavers are illegally released in the Tayside, meaning without an official reintroduction program. This in contrast to

mentioning the reintroduction of the beaver as an authorized release, mentioned by some news articles. Although, the first releasements of the beaver were not authorized it could be that the articles refer to a later phase where some authorized releasements took place as well. Last, wildlife crime was added to the list, since some stakeholders showed deep dissatisfaction about the law system. Farmer 4 mentioned for instance: *“It is an extraordinary abandonment of the law”* and *“The people who have let them go have got away with murder”*.

Not only was the reintroduction phase described by the media and stakeholders, but they also shared their views about whether they were happy or disappointed that the beaver was released/escaped in the Tayside. Landowner 2 mentioned for instance: *“They were wiped out for a reason”*, while farmer 5 mentioned: *“It is nice that the beaver has made a comeback”*. This in contrast to the NGO’s who are more than happy about the comeback of the beaver, where the John Muir Trust even encourages the rising beaver populations in the Tayside.

Several impacts came forward during the interviews and in the newspapers. These impacts could be divided in impacts on private land, nature, fish, eco-tourism, public resources and human safety. The sub-categorization *private land* was mentioned the most and covers a lot of different impacts, including: flooding, collapsed riverbanks, damage to drainage systems, the felling of trees, crop damage, soil bank erosion, fence damage and a threat to livestock (cattle can step in a hole and break a leg or get stuck). Impacts focusing on *nature*, include the impacts on biodiversity, wetlands, other wildlife species, water quantities and qualities, trees etc. The Daily Record illustrated this as follow: *“Beavers promote biodiversity by creating new ponds and wetlands, which in turn provide valuable habitats for a wide range of other species”* (Article 9). Trees are mentioned as well, but now focused on the positive impact to an ecosystem. For instance, as stated by the tour guide: *“Trees regrow when there is light created in the canopy. Furthermore, when a beaver has cut down a tree, usually new sprouts will develop. Beavers do not touch the root system of a tree”*. Third, impacts on fish were also mentioned by most of the fishermen and ghillies. Here the focus was on the fish species salmon and trout, and how their migration route is negatively impacted but also their spawning behavior seemed to be negatively influenced. An example mentioned by ghillie 2: *“They tend to start back the salmon; salmon see them as a direct threat and exact same as it would see an otter”*. Besides the impacts on fish, positive impacts on eco-tourism were mentioned as well by the newspapers. This was quoted by the Daily Mail as: *“Conservationists believe the beavers will boost wildlife tourism in Scotland”* (Article 48, Daily mail). Yet, instead of the benefits the beaver brings for the locals it can cause problems as well on the *public resources*. Fishermen 5 illustrated this as follow: *“A good example was the old mill pool in Pitlochry a couple of years ago, where they have caused flooding of the street by building a dam in a small stream”*. Finally, impacts on human safety include the beaver fever that beavers can bring with them and the erosion of the riverbanks that became a dangerous place for the fishermen.

The next categorization *policy* came forward during the interviews and in the texts of the media. Here, the stakeholders mentioned that most of them had the impression that the government is ignorant to the HBIs/conflicts in the Tayside. Landowner 3 shared his opinion here: *“The government did not do anything. This whole phenomenon is ambiguous. There is no legislation, which means a lot of unclarity”*. This means that if the situation in the Tayside is not recognized as a problem, then the government will not be in a hurry to take actions. The same



applies regarding the protection status of the beaver, which comes forward in many of the news articles. The Scottish herald referred in some of its articles to the urgency of the protection status as illustrated here: *“Further delay in deciding their legal status only exposes more animals to suffering due to mis-shooting or killing during the breeding season”* (Article 25). Yet, according to a minority of the stakeholders, making the beaver a protected species is not the solution to the problem.

The *need for management* and specific applications were mentioned by both the stakeholders and the media. First, *mitigation measures* were mentioned in most newspapers. Examples given were: deterrent fencing, tree guards, piped dams, culvert and flood bank protection. These solutions focus on how to limit beaver impacts on human properties, while other methods focus directly on the beaver itself. For instance, *translocation* was mentioned a couple of times, meaning that they would not like to see the beaver being shot, but rather being transported to an area where it can do no harm. To illustrate, farmer 3 mentioned, *“They are in the wrong place. Rather than in the Tay, higher up in the hills they wouldn't do any damage”*. Nevertheless, most of the interviewees agreed on that the numbers need to be controlled in the Tayside, or as ghillie 1 said during the interview: *“Not shy away from lethal control methods, where necessary”*. Here, the government wants to implement licensed culling when the beaver becomes protected. This license should prevent unnecessary shootings of the beaver, but only allows the landowner to shoot when there are no other solutions and to shoot during a certain time in the year. Finally, some wished to see no management implications at all. Farmer 2 illustrated this as follow: *“I think we should just give it a bit of time and I think there are lot of improvements that they can make to the environment that we haven't yet seen personally”*. Last, full removal came forward during the data analysis as well, meaning that measurements need to be put in place that get rid of the entire species in whole of Scotland.

A main categorization ‘*others*’ was added as well, to include all categorizations that did not fit into the previous categorizations. First, some stakeholders wish to receive compensation for the consequences on their land due to beavers. Farmer 1 illustrated it as follow: *“I am very happy to have beavers galore provided, but if they destroy my livelihood you will compensate me for that”*. Compensation from the government towards the landowners/farmers would show that the government recognizes the HBCs as real. Yet this is not the case. The most mentioned consequences for farmers and landowners due to beaver activities in the Tayside were: reduced food production, reparations of fences and flood banks and the high costs associated with these changes in the environment. Due to these consequences some farmers and landowners find no other solutions than to cull the animals, in order to reduce the problems on their lands. Farmer 1 told me: *“There is nothing wrong with beavers but say people don't like what I do, I will shoot them, because I cannot continue to run the land that I occupy”*. The councillor shared his concerns as well: *“My concern now is that the gap between protected and not protected is where they shoot them”*. Furthermore, the beaver populations in the Tayside keep expanding (cited in Table 6 as *increased populations*), which rise concern as well among several groups of stakeholders. Farmer 4 shared here: *“The beavers have been very successful. They have been released just outside Alyth and within 15 years they are entirely through the watershed”*. Counting done by the SNH were also shared in several newspapers, showing indeed increased populations. In addition, the *communication* aspects were highlighted as well by a minority of the stakeholders. Something was coded under communication when stakeholders mentioned

that they miss communication between each other, when they highlighted the importance of communication or when they told me that they have no idea that beavers are managed. The latter shows a lack of communication. Ghillie 3 highlighted the importance of communication as follow: *“It’s important for everyone to work together, farmers, fisheries, landowners and the wildlife bodies as to understand the needs of each other regarding damage caused by beavers and mitigation if required”*.

The sub-categorizations *beaver blames*, *protest actions*, *threats* and *beaver charity* were not that much highlighted, only by some stakeholders and newspapers. *Beaver blames* for instance mean that some beavers were blamed for damage that they have not even caused. The most famous example was the flooding in Alyth back in 2015, which most people thought was caused by beaver dams, but later on showed that this was not the case. The sub-categorization *protest actions* was added as the HBCs tend to be emotionally loaded, in particular among ‘pro-nature people’, as beavers are being shot in the Tayside. To illustrate, the Scottish Herald referred to it as follow: *“Thousands have signed a petition backing moves to close a legal loophole and safeguard the aquatic mammals amid reports that pregnant beavers and two nursing cubs, known as kits, were among those culled”* (Article 19). This in turn might cause *threats* to landowners and farmers who kill the animals. For instance, fishermen 7 shared: *“In this area, one farmer was already threatened and because farmers became scared they keep the beaver information for themselves”*. Last, *beaver charities* were added as at least 4 newspapers shared information about how beavers were nurtured when injured.

Last, besides looking at all different opinions and views from the stakeholders regarding the HBIs in the Tayside, this study also looked at the representation of these stakeholders in the media. Therefore, the question was first asked to the stakeholders whether they find themselves represented in the media. Yet, as some stakeholders did not know if they are represented in the media or some stakeholders did not at all answer this question an extra theme was made (Stakeholder feels indifferent or did not give an opinion). Subsequently, all news articles were analysed to look at which stakeholders came forward. Most of the stakeholders did not feel represented in the media. Yet, the NGO’s who aim to protect nature, the government, farmers and landowners were represented almost equally by the media.

Table 5. Theme of the human-wildlife interactions in the Tayside, followed by several sub-themes.

Theme	Sub-theme	Definition
<b>Portrayal beaver</b>	Positive	Adding a positively framed adjective or adverb to the word beaver.
	Neutral	No adjectives/adverbs are added to the word beaver.
	Negative	Adding a negatively framed adjective or adverb to the word beaver.
<b>Reintroduction description</b>	Escapes	Seeing the reintroduction of the beaver in the Tayside as a process that neither went legal or illegal, as the animals

		escaped from private properties.
	Authorized releases	Seeing the reintroduction of the beaver in the Tayside as a legal process, where authorized authorities have released the beaver into the wild.
	Illegal releases	Seeing the reintroduction of the beaver in the Tayside as unauthorized releases, as there was no official reintroduction program in the Tayside for the first releasements.
	Wildlife crime	Seeing the reintroduction of the beaver in the Tayside as an illegal act of crime and should be punished.
<b>Reintroduction approval</b>	Should never have happened	Stakeholders disagree with the reintroduction of the beaver in the Tayside.
	Glad it happened	Stakeholders are happy that the beaver is reintroduced in the Tayside.
	Encouraging the process	Stakeholders wish to see that the beaver spreads itself to other parts of Scotland and/or the UK.
<b>Impacts</b>	Private land	Impacts of the beaver on private land of landowners/farmers, including the effects on the land, the water systems and the trees at the private property.
	Nature	Impacts of beaver focused on natural processes. These impacts were mostly positively framed.
	Fish	Impacts of the beaver specified on fish population dynamics and migration. These impacts were mostly negatively framed.
	Eco-tourism	Focussed on the benefits of the presence of the beaver to local economies.
	Public resources	Damage of the beaver on public resources, which could be flooding of a town/village, trees that fall on roads/paths and even forming a threat to golf courses and a festival (Article 8).
	Human safety	Impacts of beaver on human safety, as beavers can bring with them 'beaver-fever' or the erosion of the riverbank could create dangerous situations for fishermen.
<b>Policy</b>	Lack of problem recognition	The government does not recognize the human-beaver interactions in the Tayside as a problem, nor for the stakeholders nor for the beaver.

<b>Management</b>	Need for protection status	Stakeholder agrees that the beaver should be a protected species in Scotland.
	No need for protection status	Stakeholder disagrees that the beaver should be a protected species in Scotland.
	Full removal	The beaver needs to be removed in the whole country.
	Hands-off	Providing space to the beaver, meaning that there are no management implications and just watch what happens.
	Need for management	Participant agrees that the beaver needs to be managed, meaning management implications need to be executed.
	Mitigation measures	Referring to small scale actions that can be performed by landowners themselves or an agency, according to a mitigation scheme.
	Translocation	Meaning that the beaver can still live but needs to be moved to another area where it can do no harm or damage.
<b>Other</b>	Controlling the numbers	Meaning that the beaver populations need to be under control, in most cases this means culling, but controlling the numbers could also be by implementing a method that reduces the reproductive capability.
	Licensed killing	An option recently proposed by the government and still needs to be implemented. Meaning that landowners can kill the species under certain conditions and with a licence.
	Compensation	Stakeholder agrees that the government should give a landowner/farmer a compensation (money) for loss of land or damage to crops due to beaver activities.
	Unofficial culling	Culling of the beaver done by landowners and farmers themselves, as there are currently no clear laws about the beaver.
	Consequences	Consequences due to beaver activity is about what the impacts of the beaver on land mean in the end to the stakeholder, often referring to costs.
	Beaver blames	About situations where beavers were blamed for a happening (such as a flooding) although this was not necessarily the case.
	Protest actions	Protest actions are added as some stakeholders and newspapers mentioned that protest actions might start when they hear about the unofficial shootings in the Tayside.

	Communication	Giving attention to the lack of communication between different groups of stakeholders and that this needs to be improved.
	Threats	A stakeholder feels threatened by the public when they have to shoot animals that are causing damage on the land.
	Beaver charity	Bringing the beaver to a charity, where it is taken care for.
	Increased populations	Refer to the numbers of beavers in the Tayside that have grown in the last couple of years.
<b>Representation of stakeholders in the media</b>	Stakeholder feels represented	Stakeholder feels that his/her opinion is heard in the media.
	Stakeholder does not feel represented	Stakeholder feels that his/her opinion is not heard in the media.
	Indifferent	Stakeholder has no idea if his or her opinion is heard in the media or stakeholder's opinion remains unknown.

## 4.2 Themes contributing to the Tayside beaver discussion – similarities and differences

The following paragraphs provide answers to the sub-questions 1,2 and 3. Each section is divided in the main themes: 'portrayal of the beaver', 'reintroduction', 'impacts', 'policy', 'management' and 'other'. First, the views of the stakeholders are represented, and which sub-themes are most mentioned by them. Here, the differences in views between the several groups of stakeholders are also indicated. Second, the media's view towards the establishment of the beaver in the Tayside is represented for each theme and how this might differ among the different newspapers. Last, comparisons are made between the stakeholders' views and the media's portrayal of the beaver and its interactions with humans.

### 4.2.1 Portrayal beaver

#### Stakeholders

In most cases, the stakeholders (80%) mentioned 'beaver' without any adverbs or adjectives. Of all stakeholders, 29 percent of the farmers and all the NGO's have added something positive to the word beaver (Figure 4). Farmer 1 even mentioned: *"The beaver is a quite remarkable animal and I think we should cherish them"*. Farmer 4 mentioned almost the same but added something about the reintroduction phase as well: *"They are small animals to be admired, about what they have done and what they have achieved. But the people who have let them go have got*

*away with murder*". Not all the stakeholders thought of the beaver as a remarkable animal, as was mentioned by fishermen 1: "*They are a pest*".

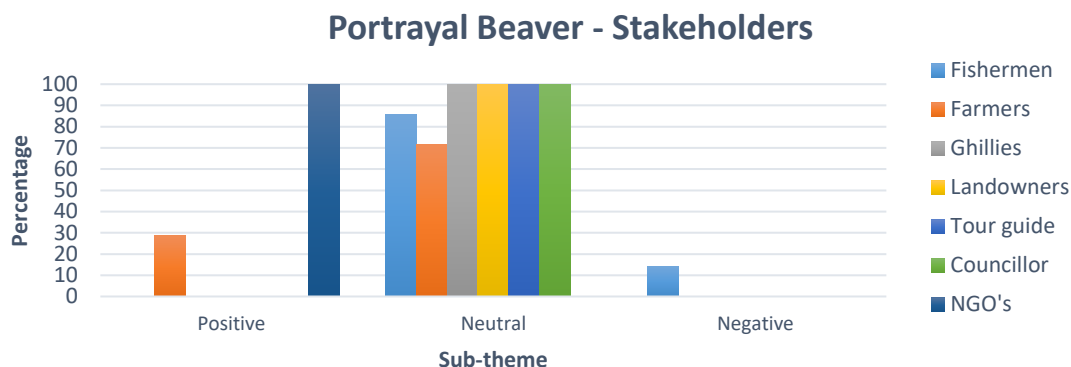


Figure 4. Portrayal of the beaver represented in percentages (y-axis) by the interviewed stakeholders (see legend), the portrayal of the beaver could be framed positive, neutral or negative (x-axis)

## Media

As can be seen in Figure 5, the way the media frames the beaver differs between the different media sources. Most news articles (62%) mentioned the word beaver without adding adverbs or adjectives. Interestingly, expected was that the Scottish Farmer would probably be more negative oriented to the beaver than other newspapers. Yet, this was not the case as The Scottish Farmer tended to be more neutral than for instance the Telegraph, which scored high on negative framing of the beaver. Examples of negative portrayals of the beaver mentioned by the Telegraph were: 'feral beavers', 'controversial' or 'industrious rodents' and 'exotic species'. Furthermore, the very negative term 'pest species' was not to be missed and was mentioned once by the Courier and The Scottish Herald. Yet, positive references to the beaver were mentioned as well. For instance, the Guardian made use of some positive word choices, such as: 'eager beavers' and 'ecosystem engineers'. Interestingly, in several news articles the beaver was personalized and given a name, such as 'Bertie/Timber the beaver'. Last, it seems like that the Guardian and the Scottish Sun represents most the views of nature supporting organisations by being positively framed towards the beaver.

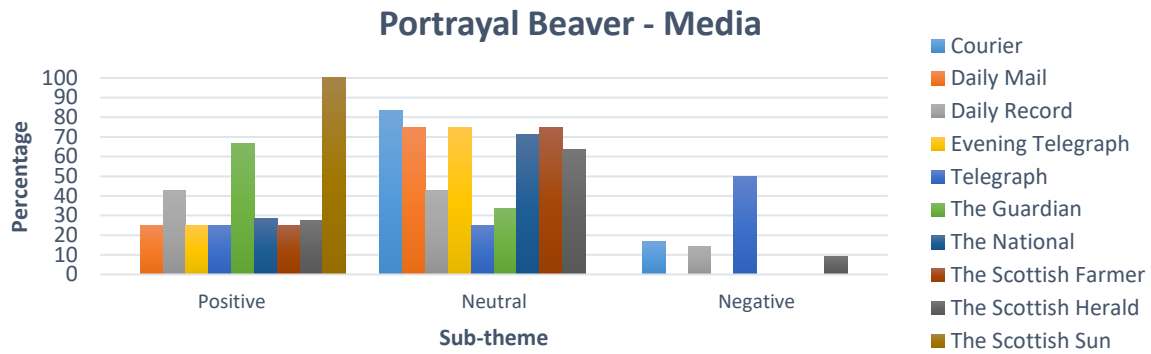


Figure 5. Portrayal of the beaver represented in percentages (y-axis) by each newspaper (see legend), the portrayal of the beaver could be framed positive, neutral or negative (x-axis)

### Comparison between the stakeholders and the media

Table 6 shows that both the media as the stakeholders mention in most cases the beaver without adding any adverbs or adjectives. Occasionally, some positive references were made towards the beaver and very rarely some negative references towards the beaver.

Table 6. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.

Sub-theme	Stakeholders (%)	Media (%)
Positive	16	29
Neutral	80	62
Negative	4	9

## 4.2.2 Reintroduction description and approval

### Stakeholders

Stakeholders were not specifically asked a question about their thoughts regarding the unofficial reintroduction of the beaver in the Tayside. Still 56 % of the stakeholders came up with this topic by themselves, indicating the importance. Figure 6 shows that most of the stakeholders (mainly the ghillies, farmers and fishermen) referred to the reintroduction process as an illegal happening. Furthermore, 20% of the stakeholders attached an emotional loading towards it by referring to the reintroduction as an act of wildlife crime. Escapes were mentioned less, only by a councillor, a fisherman and a landowner.

Figure 7 shows that much less stakeholders shared their opinion on whether they approved the reintroduction of the beaver or not. Yet, some stakeholders came up with this topic themselves as 43% of the fishermen, 14% of the farmers and 25% of the landowners never have approved

the reintroduction of the beaver (Table 7). Farmer 4 even mentioned: “*Because they have been reintroduced to a habitat where they have become extinct for four or five hundred years. It is not right*”. This argument shows a lot of confusion about the question why they have been reintroduced to a place where they got extinct. In turn this shows a lack of communication. On the other hand, the NGO’s and one farmer were glad that the reintroduction of the beaver has taken place.

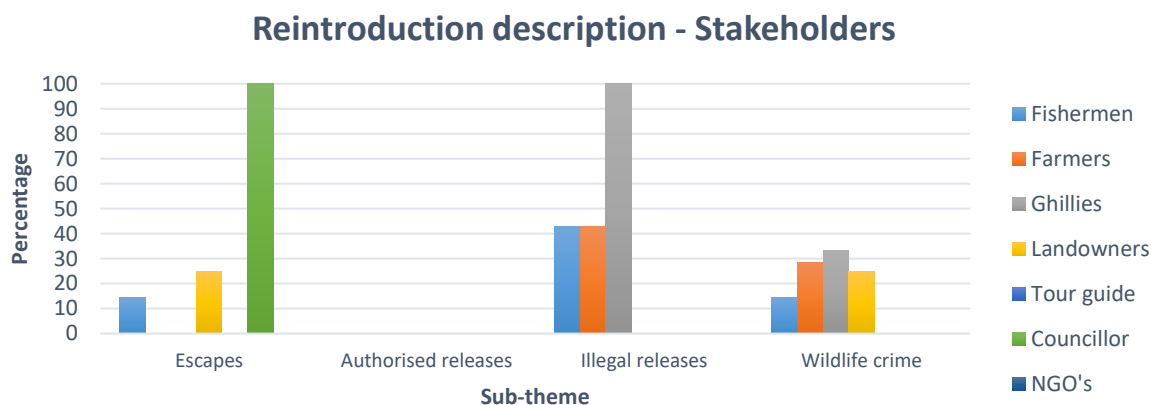


Figure 6. Description of the reintroduction phase of the beaver represented in percentages (y-axis) by the interviewed stakeholders (see legend), the reintroduction of the beaver could be mentioned as an escape, authorized release, illegal release or wildlife crime (x-axis)

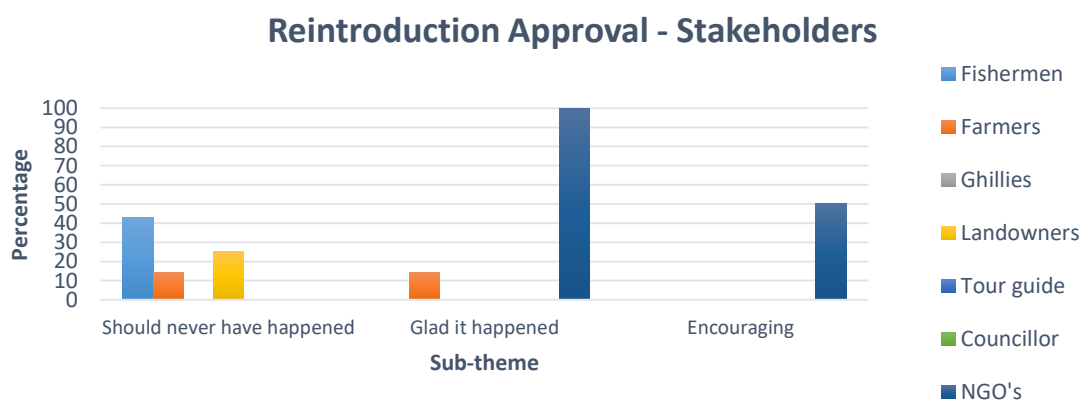


Figure 7. Approval of the reintroduction of the beaver represented in percentages (y-axis) by the interviewed stakeholders (see legend), indicating whether they wish the reintroduction never has happened, or being glad that it has happened or encouraging the reintroduction of the beaver in other parts in Scotland as well (x-axis)

## Media

Every newspaper, with exception the Scottish Sun, mentioned in at least one of the analysed articles the reintroduction of the beaver. The reference made to the illegality of the reintroduction process happened most often (44%) (Figure 8. Although, newspapers usually referred to unauthorised releases as a neutral statement, in some cases an emotional load was attached. For instance: “*A pandora’s box had been opened...*” (Article 12, Courier), “*private owners releasing the animals into the wild*” and “*... rogue release...*” (Article 13, Courier), “*illegal deliberate releases*” (Article 17, The Scottish Herald), but also more positive framed as “*Beavers*



were not to blame for their unauthorised presence on Tayside” (Article 25, Courier). Wildlife crime was mentioned as well by almost every newspaper, although this was still a small proportion of the total amount of articles (22%). Here, often the journalists quoted Roseanna Cunningham, the Environment Secretary, who warned citizens that further unauthorized releases of the beaver in Scotland will be seen as an act of crime.

The reintroduction approval section shows that most of the newspapers represented stakeholders in their articles who are happy that the beaver is reintroduced in the Tayside (Figure 9). To illustrate, “Jonathan Hughes, chief executive of the SWT, said: ‘This is a major milestone for Scotland’s wildlife and the wider conservation movement’” (Article 48, The Daily Mail). Interestingly, only the Scottish Farmer mentioned in one of its articles “NFUS believes the release of beavers into Tayside was illegal, should never have happened, and should not have been allowed to lead to the situation we have today” (Article 43, The Scottish Farmer). Some journalists of newspapers mention that the beaver should be reintroduced to other places as well. Here, among others The Scottish Herald mentions that: “Pressure to spread beavers is already growing, with conservation charity Trees for Life raising cash so it can introduce them under licence to the north-west Highlands” (Article 17). This view was in line with 9% off all articles (Table 7).

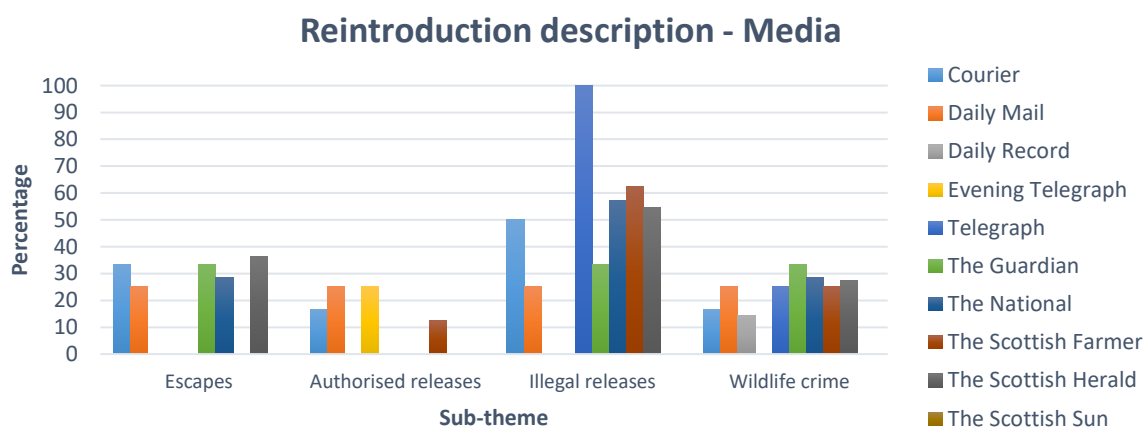


Figure 8. Description of the reintroduction phase of the beaver represented in percentages (y-axis) by each newspaper (see legend), the reintroduction of the beaver could be mentioned as an escape, authorized release, illegal release or wildlife crime (x-axis)

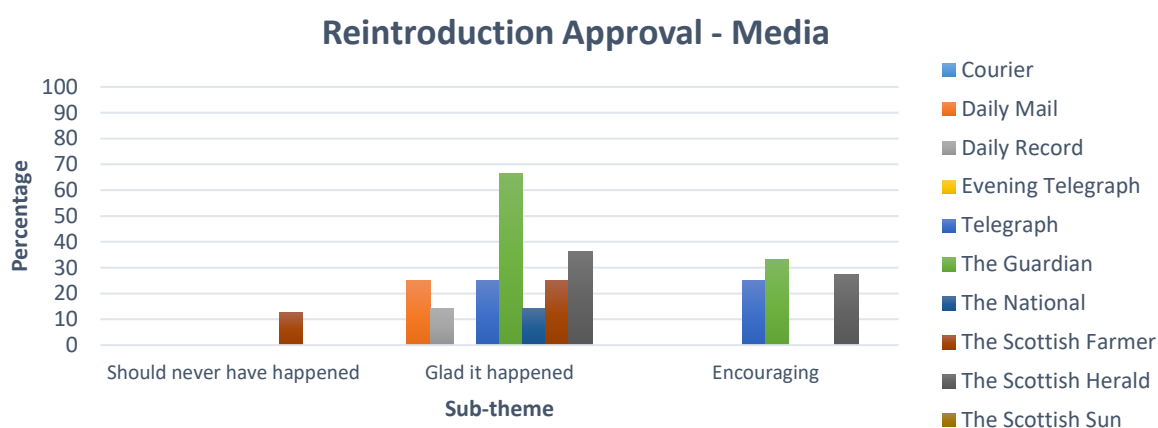


Figure 9. Approval of the reintroduction of the beaver represented in percentages (y-axis) by each newspaper (see legend), indicating whether they wish the reintroduction never has happened, or being glad that it has happened or encouraging the reintroduction of the beaver in other parts in Scotland as well (x-axis)

### Comparison between the stakeholders and the media

Table 7 shows that while 20% of the stakeholders wish the reintroduction never has taken place, 22% of the articles seem to represent stakeholders that are glad the beaver was reintroduced in the Tayside. Yet, the way the reintroduction is described is quite similar between the stakeholders' opinions and the media's views. Here, the main focus is on the illegal way the beaver was reintroduced in the Tayside, followed by referring to the reintroduction of the beaver as a wildlife crime. Only some articles refer to the reintroduction as an authorized releasement, which was not mentioned once by the stakeholders.

Table 7. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.

Main theme	Sub-theme	Stakeholders (%)	Media (%)
<b>Reintroduction description</b>	Escapes	12	18
	Authorised releases	0	7
	Illegal releases	36	44
	Wildlife crime	20	22
<b>Reintroduction approval</b>	Should never have happened	20	2
	Glad it happened	12	22
	Encouraging	4	9

### 4.2.3 Impacts

#### Stakeholders

What seems apparent from Figure 10 is that every stakeholder (with exception the NGO's) mention impacts of beaver activities on private land. Interestingly, one farmer mentioned: *"This year they have quite damaged some cereal crops ... Yet, they have flattened cereal crops by walking through it and eating it"*. A minority of the other stakeholders confirmed that beavers eat crops as well. Besides impacts on private land, impacts on fish and nature were mentioned by 40% and 36% of all the stakeholders. Impacts on eco-tourism, public-resources and human safety were not that much mentioned. The positive benefits of beaver presence in the Tayside for the tourism industry was mainly highlighted by the tour guide: *"Beavers attract tourists as well. Over the last 7 years, I have attracted 1900 visitors that wanted to see beaver activities in the Tayside. In addition, local communities benefit as well, since tourists bring money, and stimulate the local economy"*. Furthermore, it seems like that the ghillies and the tour guide reflect most on a diversity of impacts that the beaver is causing in the area, including both positive and negative.

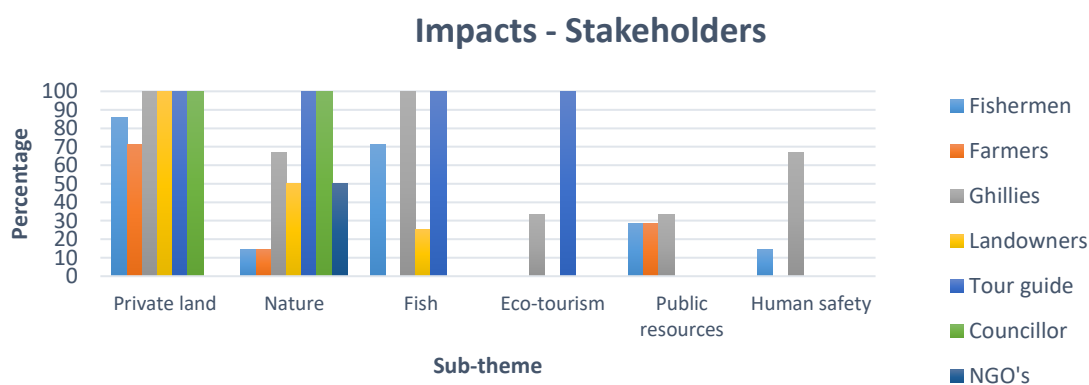


Figure 10. Impacts of the beaver on the environment represented in percentages (y-axis) by the interviewed stakeholders (see legend), indicating the impacts on private land, nature, fish, eco-tourism, public resources and human safety (x-axis)

#### Media

As shown in Figure 11, all newspapers mention in some or most of their articles both the impacts on nature and private land. This means that there seems to be a balance in mentioning positive (impacts on nature) and negative (private land) impacts. Yet, to what extent these positive and negative impacts are mentioned differs among the different types of newspapers. For instance, the Telegraph seems to be highly negatively framed about the beaver impacts, as illustrated here: *"A dramatic rise in the number of feral beavers has been blamed for extensive damage to farmland in one of Scotland's most productive agricultural areas"* (Article 49). Here, the adverbs and adjectives such as; 'dramatic', 'feral', 'extensive' and 'most productive' indicate the framing techniques used by the journalist to indicate some special views towards the topic. This compared to the Guardian, which seems to highlight the bright side of having beavers in

the Tayside, as mentioned here: “*The extraordinary ability of eager beavers to engineer degraded land into wildlife-rich wetlands has been revealed by a new study in Scotland*” (Article 36). The same framing techniques as word choice seem to happen here as well, indicating the enthusiasm of having beavers in Scotland. In addition, the Guardian appears to be the only newspaper paying attention to the impacts of beaver on fish in most of its articles. Besides private land and nature, eco-tourism is mentioned by 40% of the articles as well, or as referred to in the Scottish Herald: “*beaver tourism is giving a boost to the local economy as the presence of these animals is proving to be a strong draw for visitors to mid-Argyll*” (Article 23). Impacts of the beaver on public resources and human safety were mentioned very occasionally.

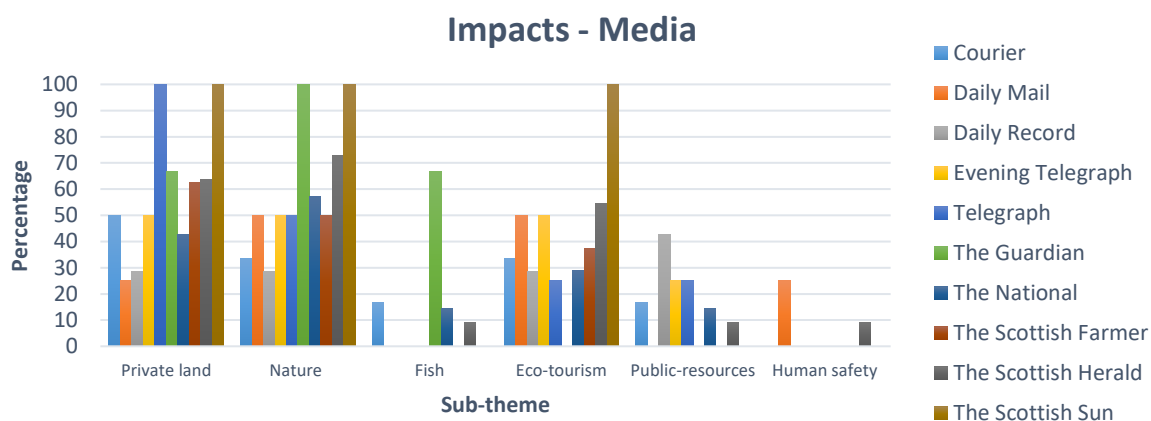


Figure 11. Impacts of the beaver on the environment represented in percentages (y-axis) by each newspaper (see legend), indicating the impacts on private land, nature, fish, eco-tourism, public resources and human safety (x-axis)

### Comparison between the stakeholders and the media

Comparing the results of the stakeholders with the media, both have in common that impacts on private land are mentioned the most, by 55% of all the news articles and by 80 % of the stakeholders (Table 8). Subsequently, the effects of beaver activity on nature and eco-tourism were more highlighted by the newspapers than the effects on fish, public-resources and human-safety. Here, a big difference can be found as 40% of the stakeholders mention the impacts of beaver on fish instead of the impacts of beaver on eco-tourism. This means that the opinion of the fishermen barely comes forward in the media. Just 9% of all news articles mention something about this topic, with a high contribution from the Guardian (67%). Furthermore, eco-tourism is mentioned much less by the stakeholders, as only the tour guide would benefit from the eco-tourism opportunity.

Table 8. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.

Sub-themes	Stakeholders (%)	Media (%)
Private land	80	55

Nature	36	55
Fish	40	9
Eco-tourism	8	38
Public resources	20	15
Human safety	12	4

## 4.2.4 Policy

### Stakeholders

As can be seen in Table 9, 52% of the stakeholders shared that the government does not recognize the presence of the beaver in they Tayside as a problem with consequently not much governmental support either. Figure 12 shows in addition that this view is particularly shared among the farmers, ghillies and landowners. This can even be recognized by the view of the councillor: *“I think we have more like a problem with the forestry in Scotland. Overpopulation of deer. That is more of a problem then the beavers are ... That is a much bigger effect on forestry than beavers do”*. This view of the councillor, representing the government, indicates what 52% of the stakeholders are trying to say, as mentioned by farmer John: *“The problems are small-scale, as it is only in the Tayside and not in the whole of Scotland. The government is ignorant”*. Furthermore, ghillie 1 highlighted that: *“My personal opinion is that the beavers would always get government approval. SNH already had a trial reintroduction in Argyll - this showed government willingness to accept the animals in our country”*. This means that the stakeholder felt left out in the decision making process of the reintroduction of the beaver. In addition, only 16% of the stakeholders mentioned something about the protection status of the beaver, differing from wanting it to be protective to not becoming protective at all.



Figure 12. Policy of the beaver represented in percentages (y-axis) by the interviewed stakeholders (see legend), indicating the lack of problem recognition, the need and no need for a protection status (x-axis)

## Media

Figure 13 shows that every newspaper has written something about the upcoming protection status of the beaver. This news differs from mentioning the announcements made by the government to give the beaver its protection status and the growing pressure to make this announcement happening. In other words, newspapers represent stakeholders, such as campaigners and nature protection organisations, who are angry about: “*Scot Gov's perceived delay in making a decision about the animal's future*” (Article 10, Daily Record). Besides the mentioning of a protection status a minority of the newspapers (27%) also mention the lack of problem recognition. The Courier and the Scottish Farmer seem to be the only newspapers paying attention to this problem in more than 50% of its articles. For example: “*For a long time the Tayside beaver problem has been seen as an issue for a few whingeing farmers in Strathmore,*” he said. “*We've tried to point out the impact over the years, but people have chosen to look the other way*” (Article 15, The Courier). The Scottish Farmer added to this: “*The farmers struggling with collapsed beaver burrows along a riverbank deserve both financial support and sympathy in dealing with a problem not of their making*” (Article 42, The Scottish Farmer).

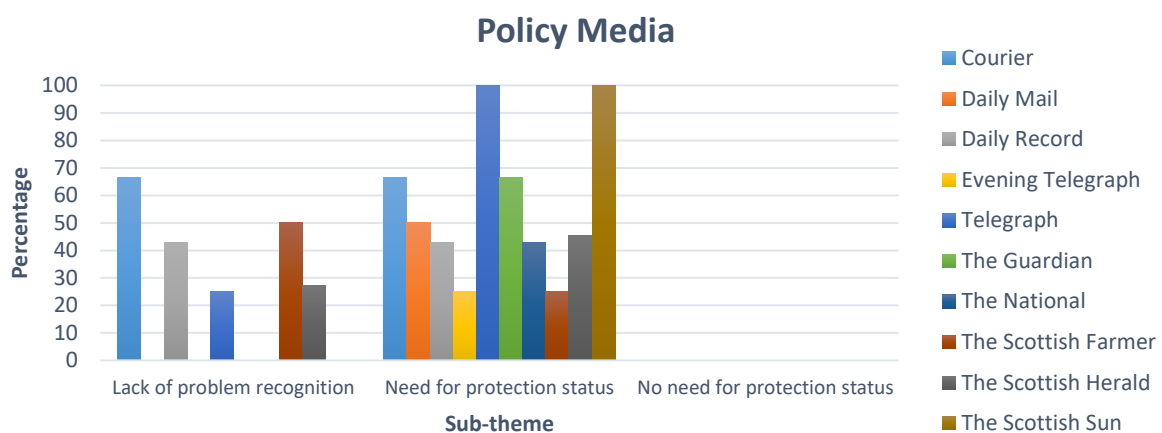


Figure 13. Policy of the beaver represented in percentages (y-axis) by each newspaper (see legend), indicating the lack of problem recognition and the need for a protection status (x-axis)

## Comparison between the stakeholders and the media

It can be seen in the data from the figures 12 and 13 that it seems that the focus lies differently between the opinions of the stakeholders and the overall opinion of the media. The majority of the stakeholders mention that they feel not supported by the government in case of HBCs and that they feel that the government does not recognize it as a big problem (52%). In contrast to the media who highlight the necessity of making the beaver a protective species (49%). Furthermore, although both the stakeholders as the media mention a lack of problem recognition by the government, the problems differ. With ‘problem’ the stakeholders referred to the problems the beaver is causing on land, whereas the media refers as well to the problem that the beaver is in danger, but the government is not taking actions.

Table 9. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.

Sub-themes	Stakeholders (%)	Media (%)
Lack of problem recognition	52	27
Need for protection status	8	49
No need for protection status	8	0

## 4.2.5 Management

### Stakeholders

Most of the participants agreed that there is a need for proper management implications (Figure 14). Yet, the moment when management needs to be implemented differs a bit between the stakeholders, as some just mention there is a need for management while others say implement management when necessary as quoted here by farmer 7: *“Happy to have wildlife in our country as long as the destructions are limited”*. Additionally, 60% of all the stakeholders indicated a control of the numbers as main management implication, which could be by implementing licences with certain conditions for culling activities (52%), which can be seen in Table II. Although half of the stakeholders approved with this approach, some of them were also a bit sceptic: *“It depends on the conditions. The details of those licenses are what matters. It will be quite challenging to prove that damage was done by beavers and not by something else. Therefore, licenses might not be handy as there is also a lot of office work involved, who will do that?”* (Landowner 3). Other management implications as full removal, mitigation measures, translocation and hands-off were mentioned much less by the stakeholders.

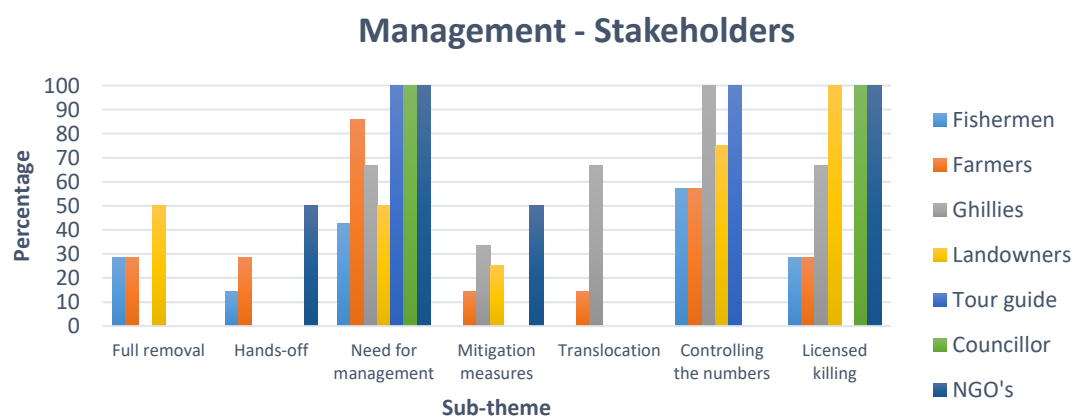


Figure 14. Management of the beaver represented in percentages (y-axis) by each stakeholder (see legend), indicating the options: full removal, hands-off, the need for management, mitigation measures, translocation, controlling the numbers and licensed killing as method (x-axis)

## Media

What seems apparent from the data in Figure 15 is that most newspapers mention in some of their articles the need for a management regime and if so by performing mitigation measures. These mitigation measures are well summarized in the Evening Telegraph: *“These include techniques used across Europe, such as deterrent fencing, tree guards, piped dams, culvert and flood bank protection, as well as trialling new methods”* (Article 1). Yet, the percentages are still quite low (respectively 38% and 40%), which means that the topic management is not mentioned that much in news articles, although management can be seen as a tool to reduce HWCs. Only the Scottish Farmer, the Telegraph and the Scottish Sun pay more than 50% of its articles on management related topics. The Scottish Farmer summarized it as follow: *“If beavers were going to stay, we asked the government to commit to a range of tools to be made available to farmers and land managers that would provide advice and strategies to mitigate beavers' negative effects, both through non-lethal and lethal management”* (Article 43). Another interesting finding was found in the Telegraph: *“Scottish farmers 'considering cutting down trees' to stop feral beavers causing havoc”* (Article 50). This illustrates that some farmers even decided to cut down trees on their land to prevent beavers from establishing on their ground. This is often seen as a last attempt to reduce the negative impacts of beaver on land. Other topics as controlling the numbers, licensed killing, translocation and a hands-off approach come forward in some articles only occasionally.

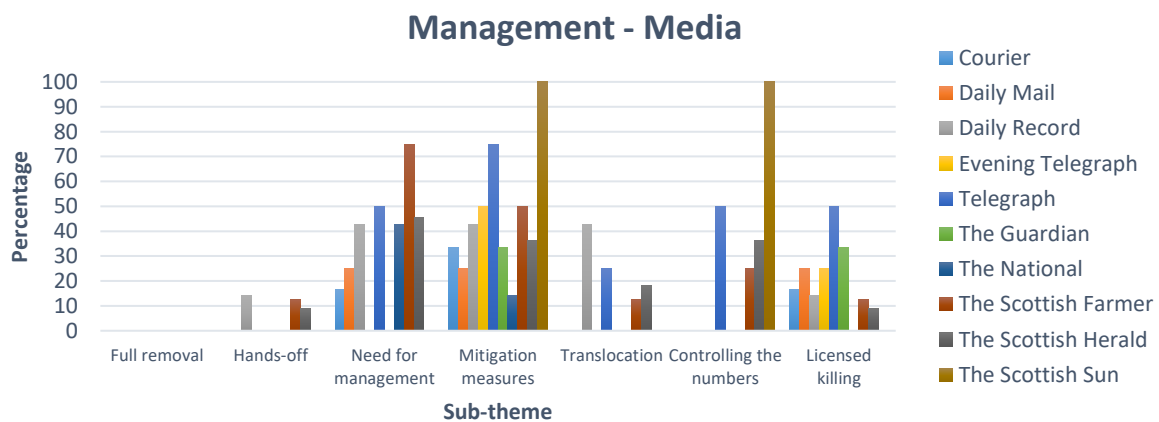


Figure 15. Management of the beaver represented in percentages (y-axis) by each newspaper (see legend), indicating the options: full removal, hands-off, the need for management, mitigation measures, translocation, controlling the numbers and licensed killing as method (x-axis)

## Comparison between the stakeholders and the media

The main difference between Figure 12 and 13 is that the stakeholders propose controlling the numbers and making use of licensed control as main method while the newspapers seem to highlight mitigation measures as solution. In other words, the media present solutions as deterrent fencing, tree guards, piped dams, culvert and flood bank protection, while most of



the stakeholders propose to see more drastic solutions to the problem, by for instance killing the species. Furthermore, 24% of the stakeholders told me that they wish the beaver became fully removed in Scotland (Table 10). This opinion was not shared by the newspapers. Last, the stakeholders and the media have in common that translocation and a hands-off method are probably not a realistic solution to the high beaver populations in the Tayside.

Table 10. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.

Sub-themes	Stakeholders (%)	Media (%)
Full removal	24	0
Need for management	68	38
Mitigation measures	16	40
Translocation	12	13
Hands-off	16	5
Controlling the numbers	60	16
Licenced killing	52	16

#### 4.2.6 Other related themes that contribute to the beaver debate in the Tayside

##### Stakeholders

As can be seen from Figure 16 and Table 11, the topics increased populations, compensation, unofficial culling and communication were mentioned the most. The increased beaver populations in the Tayside did not remain unnoticed by some stakeholders, in particular by the fishermen, ghillies and some farmers. Ghillie 3 even mentioned: *“Regarding the Tayside, there are really weird places where beavers have established. Places that you would not expect that they have colonized them naturally ... Estimated, I think there are between 700 and 1000 beavers present in the Tayside”*. This number is way higher than estimated by researchers from the SNH. Subsequently, 19% of the stakeholders (especially, the farmers and ghillies) mentioned to wish to see some compensation for loss of land or damage to own properties caused by the beaver. Although, landowner 3 mentioned that compensation would probably not work as *“Compensation would not be possible as we are talking about high amounts of money, 2 million pounds of damage... The government won't finance that”* (landowner, anonymous). In addition, the stakeholders made comments about the unofficial culling method happening in the Tayside. Ghillie 3 started his own research and found out: *“2 years ago, there were at least 280 beavers removed in 1 year in a 15 miles area. More recently are 63*

shot in a 3 week time period”. Yet, the SNH remained sceptic about the numbers. This statement is in line with what has been said by fishermen 4: *“People don't understand how many beavers were released and are culled. The numbers are chocking. Hundreds were killed. Everybody shoot them. It is a divisive thing”*. Last, communication was mentioned as well by most of the ghillies and the tour guide and a minority of the fishermen, farmers and landowners. When talking about communication, the stakeholder referred to the lack of communication between different groups of stakeholders, mainly between the government/NGO’s and the stakeholders in the field. Some of them mentioned as well that they would like to see communication being improved and worked on. Other topics as consequences due to beaver activity, beaver blames, protest actions, threats and beaver charity were only mentioned occasionally.

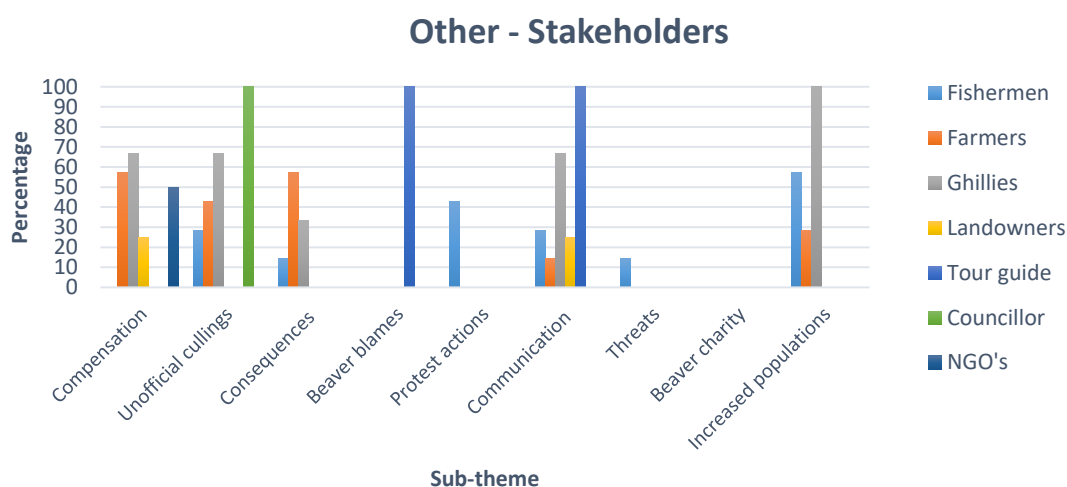


Figure 16. Other beaver related topics represented in percentages (y-axis) by the interviewed stakeholders (see legend), indicating the topics: compensation, unofficial culling, consequences, beaver blames, protest actions, communication, threats, beaver charity and increased populations (x-axis)

## Media

Regarding the media analysis, the topics that have a high contribution to the content of news articles are: increased populations, unofficial culling and consequences due to beaver activity. The Telegraph, The Guardian and The Scottish Sun seem to pay most attention of all the newspapers to the notification of increased beaver numbers found in the Tayside (Figure 17). Most newspapers here mention the outcomes of a survey done by the SNH or give the word to stakeholders who emphasize the dramatic increase of the animals in a short time period, as illustrated here: *“They are anywhere in Tayside and Angus and heading towards Montrose, they are all over the place, including the centre of Perth on the Tay”* (Article 50, The Telegraph). Furthermore, the unofficial culling happening in the Tayside remained not unnoticed by the newspapers as can be seen in Figure 15. These notifications were either a neutral statement or emotionally charged. Examples of the latter found in the text were: ‘slow death’, ‘starve to death’, ‘slow painful deaths’, ‘cruel legal killing’, ‘inexpertly shot’, ‘inhumane killing’, ‘slaughter of animals’, ‘disturbing findings’ etc. Last, some of the newspapers paid attention to the

consequences of beaver activities in the Tayside for landowners. As illustrated in The Telegraph: “Adrian Ivory, a livestock and arable farmer in Strathmore, said it was costing him up to £5,000 year to remove dams” (Article 49). Further examples of consequences for the landowners, other than high costs are the reduced food production, reduced acre of land and even some farmers purposively cut down their trees to test if the beaver would move from their land. Other topics as beaver blames, protest actions, communication, threats and beaver charity did not come to the front that much. Beaver blames was only mentioned by 4% of the news articles, this percentage could be low, as the major blame of beavers happened in 2015 and the news articles that I analysed were between 2016 and 2018.

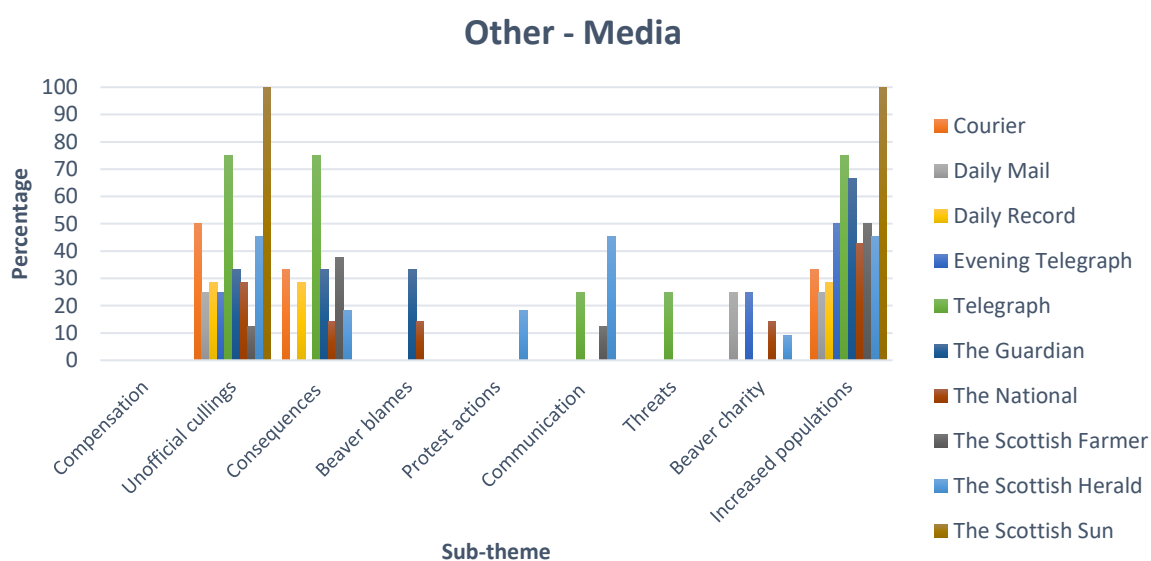


Figure 17. Other beaver related topics represented in percentages (y-axis) by each newspaper (see legend), indicating the topics: unofficial culling, consequences, beaver blames, protest actions, communication, threats, beaver charity and increased populations (x-axis)

### Comparison between the stakeholders and the media

Both Figure 16 and 17 show that a special attention is given to the rising numbers of beavers in the Tayside as to the unofficial culling that takes place to control the numbers. This topic is even more highlighted in a diversity of news articles compared to what the stakeholders shared (Table II). Interestingly, the National and the Telegraph mention in one of their articles that beaver populations are way under estimated in the Tayside and could be as high as 800, spoken by a local farmer. This seems to be in line with the estimations made by one of the ghillies. Besides the comparisons some differences were found as well between the data found during the interviews and media content. To illustrate, stakeholders paid also attention during the interviews towards compensation and the communication aspect, whereas the media barely did not.

Table II. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers

*highlighted in green show the highest percentages, meaning the sub-theme mentioned most by the stakeholders and the media.*

Sub-themes	Stakeholders (%)	Media (%)
Compensation	32	0
Unofficial culling	32	36
Consequences	24	25
Beaver blames	4	4
Protest actions	12	4
Communication	28	13
Threats	4	2
Beaver charity	0	7
Increased populations	36	45

#### 4.2.7 Representation of stakeholder in the media

What can be seen in Table 12 is that the media represents in most of its articles the nature organisations, subsequently followed by the government, the farmers and the landowners. Fishermen are way underestimated, as are the ghillies and the tour guide. These findings can be compared to the stakeholder's own opinion on whether he/she feels represented. Of all stakeholders, 84% responded to the question whether they found themselves represented in the media. Most of the farmers, ghillies and landowners did not feel represented in the media. Yet, the findings of the media analysis show that the media do represent in most of their articles the farmers and landowners. This might depend on the type of newspapers that the stakeholders choose to read. To illustrate, a landowner might read the Guardian and got the feeling his/her opinion is not heard, while the Courier, Daily Mail, the Telegraph, The Scottish Herald and The Scottish Sun do mention 'land owners' in most of their articles (See Figure 18). Table 12 shows as well that the NGO's, one fisherman, one farmer and one landowner did feel represented in the media.

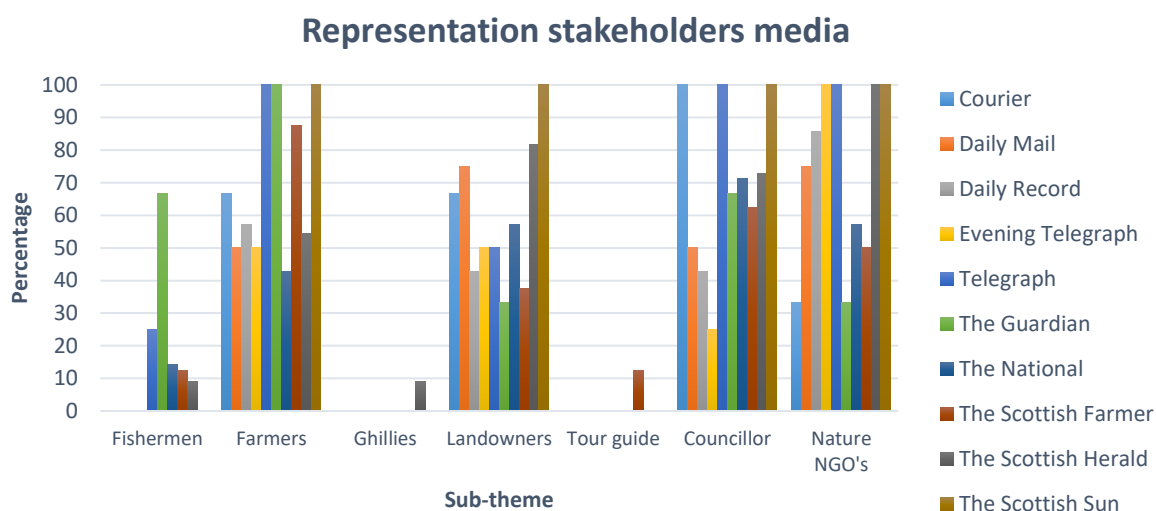


Figure 18. Representation stakeholder in media, indicating to what extent in percentages (y-axis) the fishermen, farmers, ghillies, landowners, tour guide, councillor and nature NGO's (x-axis) are mentioned in each newspaper (see legend)

Table 12. Shows the total contribution (%) for each sub-theme by all stakeholders and all newspapers. The numbers highlighted in green show the percentages more than 50%, meaning the sub-theme mentioned most by the stakeholders and the media.

Sub-themes	Stakeholders represented in media (%)	Stakeholder feels represented (%)	Stakeholder feels not represented (%)	Stakeholder feels indifferent or did not give an opinion (%)
Fishermen	11	14	43	43
Farmers	65	14	57	29
Ghillies	2	0	67	33
Landowners	58	25	75	0
Tour guide	2	0	0	100
Councillor	67	0	0	100
NGO's	73	100	0	0

## 5 Discussion

The discussion is divided in three parts. The first part deals with an interpretation of the results found in this study. Discussion topics related to the HBLs in the Tayside were organized in main- and sub-themes (Table 5). The interviewees shared their views and opinions about this. These views might not only reveal something about the HBLs, but also about the underlying HHCs, as is referred to in the conceptual model. To what extent the stakeholder's views are reflected in the media tells us something about the media's framing technique, as is described in the theoretical framework. The themes that come forward the most by the stakeholders and the media are discussed here and are compared to other related studies about HWIs. This means that not every finding of the results will be discussed. The second part addresses the reflection of the theoretical framework about to what extent existing theories were used in this study. The last paragraph reflects upon the methodology chosen for this study and its limitations.

### 5.1 Interpretation results

This chapter is structured in a way that each research question is answered and discussed in the light of the theoretical framework. The results of this study show that the interviewed stakeholder's views about the establishment of the beaver in the Tayside are partly reflected in the traditional media. The main differences and similarities between the stakeholders' views and the media's selected views are discussed below.

#### 5.1.1 Stakeholders view about the establishment of the beaver in the Tayside

This study found the main themes that contribute the most to the stakeholders' views about the establishment of the beaver in the Tayside. Here, not only the impacts of beaver activity on the environment played a role, but also the way the beaver was reintroduced, the lack of governmental support and a lack of applied management techniques in case of problems. These findings seem to be consistent with Campbell-Palmer *et al.* (2015), who mentioned the following events that contribute to the HBLs in the Tayside:

*“Lack of education on beaver ecology, unclear instructions on practicable and permitted mitigation methods, overly-bureaucratic licencing systems, financial burden and unclear benefits of beaver presence to landowners are likely to all lead to increased actual and perceived negatives impacts of beaver presence” (p.2).*

Yet, this study added the reintroduction phase as factor as well that plays an impact on the HBLs in the Tayside, which was not mentioned by Campbell-Palmer *et al.* (2015). Furthermore, the results from this study and from Campbell-Palmer *et al.* (2015) are likely to be related to the communication aspect between the stakeholders in the field who mainly experience the negative impacts of beavers and the government and NGO's who mainly seem

to experience the positive impacts of the beaver on the environment. Both parties seem to have other solutions in mind and if they do not find the middle way, conflicts will remain. As previously mentioned in the theoretical framework to reduce HHCs, it is crucial that both conflicting parties find the middle way, instead of letting one 'win' and the other 'lose' (Redpath, *et al.*, 2013).

## Reintroduction

Interestingly, references to the species itself, the beaver, was often neutral while references made to the reintroduction was often framed. An explanation for this might be that most of the stakeholders have negative feelings towards the procedure of the beaver reintroduction rather than towards the beaver itself. This finding was unexpected as thought would be that the stakeholders who are negatively impacted by the beaver would also negatively refer to this species (Jonker *et al.*, 2006). As was the case with Manikowska-Ślepowrońska & Szydzik (2016), who studied the negative impacts of the beaver on the Polish aquaculture and framed the beaver as 'conflict species'.

As argued in the theoretical framework conflicts between wildlife and humans are often related to deeper lying reasons, such as clashing views between different groups of stakeholders (Colyvan, *et al.*, 2011; Young, *et al.*, 2010; Redpath, *et al.*, 2015; Redpath, *et al.*, 2013). To illustrate, some stakeholders as the NGO's were glad that the beaver was reintroduced and even encouraged this process. This could be related to the underlying reasoning that humans were responsible for the extinction of the beaver in the UK and should therefore help to establish the species again in the UK as it belongs here (Kitchener & Conroy, 1997). The finding that the stakeholders as the nature-oriented NGO's felt positive about the reintroduction and the stakeholders directly in the field felt more negatively about the reintroduction seem to be consistent with Arts *et al.*, (2012), who studied the several discourses of reintroduced species in Scotland. He summarized it as follow: "*This is based on our observation that the pro-side represented a science-based view that promoted the idea of external intervention, whereas the anti-side was in our documents generally portrayed as local actors (potentially) affected by the reintroduction*" (Arts *et al.*, 2012, pp 918). Wilson (2004) indicated also a probably negative attitude of stakeholders towards the reintroduction of a species that likely cause negative impacts on private land. The same seems to be the case with the proposals to reintroduce the lynxes and wolves in Scotland (Yates, 2016). The proposals are not supported by stakeholders who will be negatively affected, especially the farmers as their livelihood depends on their livestock/crops (Balčiauskas *et al.*, 2017; Yates, 2016).

Although, not every stakeholder shared their opinion about the reintroduction of the beaver, still 20% of these interviewed local actors disagreed with the reintroduction of the beaver in the Tayside. A possible explanation for this negative view might be that the stakeholders were insufficiently involved in the decision-making process of the reintroduction of the beaver in the Tayside (conflict over process, as mentioned in the theoretical framework). This finding was also reported by Arts *et al.* (2014) who found that stakeholders' resistance to the beaver in Scotland was much stronger compared to other states where the beaver was reintroduced. Furthermore, their interviewees had the impression that the influence of the SNH on the

decision making was much bigger than theirs. This was also mentioned by one of the ghillies I interviewed (see quote ghillie 1, section policy -stakeholders).

Another possible explanation for the stakeholder's negative reaction to the reintroduction of the species might depend on the time frame of the presence of a species in the country. To illustrate, an animal might be more respected when people are already used to live with the same species for several decades/centuries (Kellert, 1985). Kellert (1985) found that people's attitude towards the already long existing wolf population in Alaska, Minnesota and Canada were quite positive compared to areas where wolves were recently introduced. Whether this phenomenon is the same case as with the beavers remains unknown, as no literature can be found that supports this finding.

Not only was the beaver reintroduced in Scotland, but a lot of other previous reintroductions of *Castor fiber* in Europe made it possible to compare between several countries. Macdonald *et al.* (1995) compared the reintroductions of *Castor fiber* between several European countries. Here, almost all the reintroductions were done by professional organisations and went through an official reintroduction program. However, the reintroduction of the beaver in the countries Switzerland, Belgium and Spain went illegally as well, as reintroductions were performed by private individuals (Macdonald *et al.*, 1995; Verbeylen, 2003; Dewas *et al.*, 2012). Consequently, beaver populations were not well studied, communication was lacking and damage to trees, crops and private properties became inevitable. This resulted as well in negative attitudes of key actors towards the beaver (Macdonald *et al.*, 1995).

## Impacts

The results of this study show that most of the stakeholders in the field (the fishermen, farmers, landowners & ghillies) show concern toward the current HBLs in the Tayside. Impacts on private land were mentioned the most by the stakeholders, subsequently followed by impacts on fish and nature. These results are supported by Campbell-Palmer *et al.* (2015), who found that most of the HBLs in Scotland are in agricultural areas, fisheries, forestry and infrastructure. The same situation applies in Bavaria, with a more human-dominated landscape, where HBLs seem to be apparent as well. HBLs seem to occur less in countries that have more natural areas left and thus less agricultural land, such as in Norway (Campbell-Palmer *et al.*, 2015).

Most of the stakeholders worry about the current beaver situation in the Tayside as their numbers keep rising. Yet, it seems like that only the stakeholders who are negatively impacted by the beaver seem to have a negative attitude towards them. Three out of the seven farmers that were interviewed did not experience impacts of the beaver on their land and had therefore also not a negative attitude towards the beaver. In fact, two out of these three farmers were happy to see the beaver making a comeback in Scotland. This pattern matches those observed in earlier studies. Jonker *et al.* (2006), for example, found that stakeholders who were negatively impacted by the beaver tend to be negatively oriented to the beaver, while stakeholders who did not experience negative impacts of the beaver in their environment had a less negative attitude. A similar pattern could be found in the study of Ericsson & Heberlein (2003) who demonstrated that people who are in direct interaction with the wolf and live close to areas where wolves were present often have a more negative frame towards the wolf than people



who are not in interaction or do not live close by wolf territories. Last, Siemer *et al.* (2013) found a low acceptance capacity as well among stakeholders in Massachusetts and New York who have experienced beaver impacts on their land before and live in areas with high beaver densities.

Negative impacts of beaver on fish, mainly Atlantic salmon and trout, were mentioned by 70 Percent of the interviewed fishermen. Findings in the literature indicated that negative impacts of beaver on fish depends on a lot of factors, such as the place and size of a dam, river flow and time of year, and will thus not always result in a negative outcome (Kemp *et al.*, 2012; Virbickas *et al.*, 2015). Both positive and negative impacts are mentioned in the literature. According to Macdonald *et al.* (1995) and Kemp *et al.* (2012), beavers positively impact brown trout and sea trout populations by increasing the food leverage and by creating refugia for the fish to protect themselves for predators. Yet, the siltation of spawning gravels is a negative impact on the salmon survival, which is in turn a negative impact on the Scottish Salmon Industry. Still they conclude that although there are some negative impacts visible on fish populations, the positive impacts seem to play a bigger role (Macdonald *et al.*, 1995; Kemp *et al.*, 2012). This means that the stakeholders' observations and thoughts are not in line with the findings of science, as the stakeholders mentioned almost only the negative impacts, while science seem to make a balance between the positive and negative impacts of beaver on fish.

## Policy

This study found that most stakeholders felt unheard by the government as problems were not recognized or often considered as minimal. A possible explanation for this phenomenon might be that the damage done by the beaver is compared to damage done by other animals. To illustrate, impacts on the environment caused by deer is often considered as worse and their numbers are also therefore controlled. Yet, by comparing these impacts to the impacts of the beaver on the environment, the beaver's impacts are often underestimated (See results – policy). These findings match those with Dewas *et al.* (2012) who seem to underestimate beaver impacts on private land as well, as is illustrated here: “*Compared to damage caused by other mammals (e.g., wild boar *Sus scrofa*, red deer *Cervus elaphus*), beaver damage to crops is, economically speaking, much less important and can be prevented relatively easily*” (pp. 159). This underestimation of negative impacts of beaver on private land causes the frustration among the stakeholders. A negative attitude towards wildlife means bigger challenges to conserve and protect wildlife (Houston *et al.*, 2010).

Previous surveys done in the Tayside with stakeholders that are in interaction with beavers showed mixed results compared to this study. A survey performed by the Scottish Government found in general positive views towards the beaver reintroduction and its predicted environmental effects in the Tayside (Scottish Government, 2018b). An explanation for the differences found could be that the government included more nature organisations and households in their survey, which have in general a more positive attitude towards the beaver. This study focussed specifically on the stakeholders in the field that are directly impacted by the beaver. Another study done by the Tayside Beaver Study Group showed more similar results with this study. Here, 58% of the landowners shared negative feelings towards the presence of the beaver on private land. A further 47% of the landowners wished to see the

beaver removed from their land (Scottish Natural Heritage, 2015). Furthermore, Gaywood *et al.* (2018) indicated that the beaver is studied a lot in Scotland during the last 20 years and that opinions of stakeholders were asked in the forms of questionnaires. Nevertheless, the government is not providing stakeholders with measurements or financial compensations to reduce beaver conflict on their land. This might be an explanation for why the participants in this study did not feel heard by the government.

## Management

Interestingly, most of the stakeholders want to have the beaver populations managed to reduce the beaver's impact on private land. The literature research also showed that the SNH wrote a detailed management plan focused on technical solutions on the impacts, but also on how to manage the beaver itself (Campbell-Palmer *et al.*, 2015). In other words, management is wanted in the area and the SNH has already studied possible management implications. Yet, until this very moment management implications remained small-scale, due to the high costs that are often associated with management solutions and a lack of governmental support and subsidy. There is, however, the Kinross Council Flooding Team who is the responsible body for Flood Risk Management. For instance, in case the flooding is caused due to beaver dams and it will negatively impact residential or non-residential buildings or critical infrastructure they are allowed to remove or lower a dam, which is one of their Clearance and Repair duties. Yet, in case the dam is built on private land the landowners need to take their own measurements to reduce the risk of flooding (G. Bissett, personal communication, September 28, 2018). Consequently, stakeholders in the field had to come with other cheap and efficient methods, which resulted in most cases in unofficial culling of the beaver. This phenomenon seems to happen in other states and on other animals as well (Jonker *et al.*, 2006; Jung, 2017).

60 Percent of the stakeholders wish to see the beaver numbers controlled in the Tayside, meaning that this often results in lethal control. This finding seems to be in line with Morzillo & Needham (2015) who studied the beaver's impact on private land in Oregon and solutions preferred by the landowners to these impacts. They found that the landowners who faced already the impacts of beaver on their land preferred lethal management options or technical solutions as removing the dams. In other words, the formation of a negative attitude towards the beaver based on previous experiences can result in negative behaviour towards the beaver as well, by for instance culling the species. Previous studies found that controlling the numbers by culling might not be an efficient method (Campbell-Palmer *et al.*, 2018; Dewas *et al.*, 2012; Nolet & Rosell, 1998). To illustrate, after a period of big population growth a population will regulate itself until the carrying capacity is reached. Here, the territory of one beaver can easily be replaced by another beaver, particularly if beavers change their reproductive cycles as a response on the culling activities and may become pregnant in a younger stage (Dewas *et al.*, 2012). If management allows culling during the disperse phase of beavers, other dispersers often fill in the place of the dead beaver. This solution will therefore not be very effective (Nolet & Rosell, 1998). Nevertheless, specific culling guidelines, such as culling only in a specific season and at a specific age, might be a better solution than culling all year round (Campbell-Palmer *et al.*, 2018). The latter can become realistic as soon as the Scottish government decides to implement licenses for culling activities in the Tayside, which was also mentioned by 52% of the interviewed stakeholders.

According to Dickman (2010) technical solutions can indeed be a solution, but more importantly the conflicts between different group of stakeholders must be solved as well, as the conflict is most often not only between the animal and the stakeholder. His findings are consistent with those of Baruch-Mordo *et al.* (2009) and Alexander & Quinn (2011), who indicated the importance as well to change human behaviour in order to change HWC to HWI.

The results of this study show as well that 32% of the stakeholders wish to see a form of financial compensation for loss of land or damage to own properties due to beaver activities. Some stakeholders took faith in own hand by shooting the beaver themselves. Here, some of them explained that other mitigation measures explained and proposed by the SNH were often too expensive. Especially, because there is no compensation for these high costs. Brook *et al.* (2003) highlights the importance to recognize the economic concerns of landowners to prevent unofficial culling of species. Here, the communication between the stakeholders plays an important role, as well as education and financial compensation. Yet, whether financial compensation is an efficient approach to reduce HWCs is still discussed (Brook *et al.*, 2003). Furthermore, it is often hard to prove that certain damage is caused by that specific animal and to find an adequate price to pay for the damage (Nyhus, 2016).

### 5.1.2 Media's portrayal of the establishment of the beaver in the Tayside

This section aims to discuss the answers found on the sub-question: *"How does the media portrays the establishment of the beaver in the Tayside and which themes within this beaver discussion are most mentioned?"* This study shows that the beaver is not negatively framed in most news articles, but HBCs do come forward in the Scottish media. Most of the discussion about beavers in the newspapers published between 2016 and 2018 concerned the beaver's impact on the environment (including nature and private land) and the question why beavers are still not a protected species in Scotland. The framing technique of choosing a particular word choice was recognizable in the Scottish media as well, although the extent to which differs between the different types of newspapers. Especially, the unofficial culling of the beaver was referred to in a lot of different words and expressions. This section elaborates on how several themes related to the human-beaver interactions in the Tayside were discussed and/or framed by the media.

First, this study investigated how the species itself, the portrayal of the beaver, was framed by the media. The results of this studied showed that the overall portrayal of the beaver by the media was neutral. In other words, negative framing of the word beaver did not occur that much as would be expected of a 'problem species'. One possible explanation for this could be that journalists need to write with as less prejudice as possible to produce reliable information (Sabatier & Huveneers, 2018). Another explanation might be that the beaver is a problem to a specific group of people, while most of the people do not face problems and rather see the beaver as a charismatic animal. Furthermore, the beaver is not a carnivore and is therefore not a direct threat to us humans and livestock. This finding seems to be in line with Dayer *et al.* (2017), who studied the media portrayal of a bird species; the piping plover. They found as well

that the piping plover neither was negatively nor positively framed in most of the news articles. These findings seem to be contrary to previous studies on media framing of HWCs. In particular, carnivore species such as the coyote, bear, and wolf, who seem to be negatively framed in news articles (Houston *et al.*, 2010; Alexander & Quinn, 2011; Gore *et al.*, 2005). Here, the framing technique used by the media can cause different interpretations of an event. To illustrate, when a wild animal harms a person, the event can be referred to as 'attack' or as an 'accident'. Attack includes something negative and on purpose, while accident seems to have a more neutral and innocent character (Gore *et al.*, 2005).

Not only was looked at how the species itself was framed in the media, but also at how the impacts of the beaver on the environment were framed. This study found a balance in mentioning positive and negative impacts of the beaver on the environment by the Scottish media. A possible explanation might be that the beaver is often seen as a charismatic animal by the public, meaning that the media highlights these charismatic characters of the species. Yet, the voice of people who are negatively impacted by the beaver do come forward as well, since there are a lot of complaints about the situation by several stakeholder such as the landowners, farmers and fishermen.

In contrast to earlier findings, however, HWIs were mostly negatively framed in the media (Siemer *et al.*, 2007; Houston *et al.*, 2010; Alexander & Quinn, 2011; Gore *et al.*, 2005). A prior study done on the media portrayal of the HBI in Germany showed that most of the beaver topics in the media were conflict related with a focus on negative impacts, such as the cutting of trees, damming and flooding etc. (Kaphegyi *et al.*, 2015). Although this study found a balance in mentioning both the positive as negative impacts of beaver on the environment, this does not implicate that the Scottish media is not conflict related, as conflicts do come forward, but not necessarily in the form of impacts as found in Kaphegyi *et al.* (2015). Yet, the 55% of articles that mention negative impacts of beaver on private land refer to the beaver as main problem and being destructive. This framing where wildlife is blamed for the conflict can cause an overall negative image of the beaver on the public. This finding was also reported in Dayer *et al.* (2017), where the plover was blamed for the existing conflict.

Furthermore, solutions offered in the form of management implications were also highlighted by the media. In 60 percent of the articles the topic management was coming forward, which included the need for management and/or the proposal of the several management methods, such as culling or mitigation measures. Most attention seemed to go to mitigation measures (40%) rather than culling techniques (16%). According to Alexander & Quinn (2011) management options as culling are often proposed when wildlife forms a direct threat to humans, as was the case with the coyote in Canada. They propose that it would be better to educate people about their interactions with wildlife.

Interestingly, the topic 'unofficial culling techniques' caused a lot of media attention. In 36% of the articles concern towards the unofficial beaver culling in the Tayside is highlighted. In some of these articles the beaver's dead was even portrayed as 'slaughter of animals'. Here the media shows concerns toward the beaver populations in the Tayside. These kinds of descriptions often involve deeper lying feelings and indicate that the journalist has included his/hers own judgement in the article, meaning that framing techniques are used in the articles, as was

illustrated by Brüggeman (2014) (see theoretical framework). This portrayal might create some emotional responses among the public and can even result in active behaviour as starting protest actions. A possible explanation for this is that most of the stakeholders are not negatively affected by the beaver and will therefore probably not understand why the beaver needs to be shot. This would be different if wildlife directly concerns the public, as is illustrated by Sabatier & Huveneers (2018). They studied the media portrayal of the shark in Western Australia and found out that already one negative event, such as a shark bite, is of high news value for the newspapers. Once it is published, a lot of emotions and negative attitudes towards the shark have a high chance to establish. Consequently, people become scared for sharks and this can even result in management options as killing the shark. In other words, this type of media attention put conservationists in a bad position as they are trying to protect an endangered species as the shark. All in all, these findings from the current study and of other comparable studies show the power of media framing, which can result in public support or in fear/anger towards wildlife (Jacobson *et al.*, 2012; Sabatier & Huveneers, 2018).

### 5.1.3 Reflection stakeholders' view in the traditional media

This section aims to discuss the third sub-question: *“What differences can be found between the stakeholders and media’s opinion about the establishment of the beaver in the Tayside?”*. The current study found that although most of the views shared by the stakeholders do come back in the media, the results have shown that the extent to which differs. The main differences in views were found regarding the themes: reintroduction approval, impacts, policy and management. This means that there is some friction between what the media publishes and what the stakeholders in the field view feel and think of the beaver situation. First, most of the stakeholders did not approve the reintroduction, while most news articles referred to the reintroduction as a milestone. Second, the stakeholders referred mostly to the negative impacts of the beaver on private land, while the media mentioned both the negative impacts on private land as the positive impacts on nature. Additionally, a part of the stakeholders mentioned the impacts on fish, while the media focused more on the impacts on eco-tourism. Third, regarding political issues, most stakeholders mentioned the lack of problem recognition by the government, while the media tended to focus more on the slow decision-making progress regarding the protection of the beaver. Last, both the stakeholders as the media mentioned the need for management, although most of the stakeholders would like to see the beaver numbers controlled while the media highlighted to focus on mitigation measures that reduce the negative impacts instead of focussing on beaver management. On the other hand, the themes portrayal of the beaver, description of the reintroduction and other related themes showed some overlap in views. Here, the species itself was mostly nor negatively nor positively framed, the reintroduction phase was described as illegal, followed by referring to it as a wildlife crime and finally attention was paid to the increased numbers of beaver populations in the Tayside and the unofficial culling of beavers.

It was hard to compare the findings of this sub-question to other studies, as not much studies have been performed that study both the stakeholders in the field as the media. Yet, there are some explanations for why some themes are more covered in the media than others. This

might be related to framing theory and agenda setting as was described in the theoretical framework (Zhou & Moy, 2007). For example, the impacts of beaver on salmon was barely mentioned in the media, even though some stakeholders highlighted the importance of this topic. The newsworthiness of the relation between fish and beaver was apparently not high enough to cover the topic in the media. This might also be related to the interests of the public. It is often thought that what the media publishes is dependent on the views and perspectives of the public (Tai & Chang, 2002). To illustrate, if the public finds the species of interest fascinating, wonderful and/or admirable than the media will often choose to represent views that are in favour by the public. Fish might be a topic that is in the particular interest of the salmon industry and fishermen, but probably less of interest among the public. Framing might also happen by selecting certain stakeholders as representative of a story above others (Tai & Chang, 2002; Terkildsen & Schnell, 1997). To illustrate, multiple perspectives are involved in the current beaver debate, yet not every perspective does come forward in the media. Even though fishermen represent a group of stakeholders in the current Tayside beaver debate, their views were still underestimated. Nevertheless, other stakeholders that are negatively impacted by the beaver still had a voice in the Scottish media, as farmers and landowners do come forward, just as the NGO's and the governmental body.

## 5.2 Reflection on the theory

Both the findings of this study as the discussion of these findings indicated that the conceptual model (Figure 1, p. 19) proved to be a useful model to understand both the HWCs in the Tayside and how the media makes use of framing techniques.

The theory of making a clear distinction between HWCs and HHCs about wildlife was recognized during the data-analysis of the interviews and news articles. To illustrate, although a lot of stakeholders mentioned the negative impacts of beaver on their land they also referred to conflicts they encountered with other stakeholders. For example, some stakeholders showed frustration that the government does not recognize the problems the beaver is causing on their land, and/or feel frustrated that the people who have illegally released the beaver (pro-wildlife group) were not brought to court, but also conflicted with nature organisation as their goals and missions are the opposite. Therefore, it is important that first a distinction is made between the two types of conflicts, the ones between the stakeholders and wildlife and the one between the different groups of stakeholders. Furthermore, these both types of conflicts require different type of solutions. Whereas, HWC can often be solved with implementing mitigation measures focussed on reducing the impact of wildlife on private land/environment, but conflict management is required to reduce conflicts between the different groups of stakeholders. Such as, communication in the forms of education, meetings and in some cases even law enforcement (Baruch-Mordo *et al.*, 2009; Alexander & Quinn, 2011).

This study rather focussed on the HHC part than the HWC part. Especially, because the impacts of the beaver on the environment is a well-studied domain, which was not the case for the HHC part. The driving factors behind HHCs were recognized in this case study. First, conflict over beliefs and values were recognizable. For example, the matter of principle came

forward, because some of the stakeholders mentioned that it is not ethically responsible to let a beaver escape without communicating with other stakeholders but also that the government is not punishing this act of crime. Second, conflict over interest seemed to be the case as well. Especially, because nature organisations would like to give the beaver a chance in Scotland and give it its time to establish, while farmers and landowners for instance would like to see the beaver numbers controlled to protect their fields. Different interests are in conflict here. Conflict over process seem to happen as well in the Tayside, especially, because some stakeholders mentioned that their opinions were not asked when the government made the decision to let the beaver stay in Scotland. They also mentioned that the government does not recognize the human-beaver conflicts in the Tayside as a big problem. This in turn illustrates that the communication between the government and the stakeholders in the field is not that big. The last type of conflict, conflict over information, was recognizable as well in the Tayside area. For instance, the stakeholders were not well informed about the comeback of the beaver in Scotland, due to the unofficial reintroductions of the species.

The framing theory was useful for understanding how one reality can be portrayed and interpreted in many ways. Yet, the external factors and the framing effects were eventually left out in this study. The theory of frame effects was described in the theoretical framework as this study aimed in the beginning to hand out questionnaires among the residents to find out the public opinion. Eventually, 180 questionnaires were gathered, but due to time constraints and difficulties to compare this type of data with the interviews and media content the public opinion was not analysed and therefore the theory of frame effects was not used in this study. Nevertheless, the decision was made to keep the frame effects theory in the theoretical framework, because it shows how framing by the media can negatively or even positively influence conservation programmes of wild species. It illustrates why it is important to understand the framing theory.

On the other hand, the framing techniques described in the theoretical framework were useful for the analysis of the results. The framing technique of representing certain views and stakeholders above others was recognized when the views of the stakeholders were compared with the portrayal of the establishment of the beaver by the media. Yet, it would be interesting to focus next time as well on the other framing techniques described in the literature, such as word choice, image and lay-out choices. Additionally, the theory behind the framing process provided useful information, which was mainly described by Boesman *et al.* (2017). Here, the beaver discussion in the newspapers might be in the second phase. The illegal releasing of the beavers in the Tayside was a news item a few years ago, but now once the beaver is established the newsworthiness decreases. This might also explain why beaver topics are not that common in the media, only particular events caused by the beaver might reach the news.

### 5.3 Reflection on the methodology

This section first reflects on the research strategy, followed by the reflection on the data collection and last the reflection on the data analysis part. Here, limitations and improvements of chosen approaches are discussed.

## Research strategy

This study made use of a mixed methods research where quantitative and qualitative techniques were combined to answer the main research question: *To what extent are the stakeholders' views about the establishment of the beaver in the Tayside reflected in the traditional media?* Yet, the use of a mixed method approach was a bit underestimated as the data analysis was quite time consuming due to the large amount of data gathered. Consequently, the data had to be quantified to create an overview of the main themes and sub-themes that contribute to how the beaver and its interactions with humans is portrayed by the stakeholders and the media. This was the most time-efficient approach to compare both the data gathered by the interviews with the data found in the news-articles. Furthermore, quotes from stakeholders and journalists were added in the results section to still provide some detailed information. An advantage of a mixed methods approach is that the findings are triangulated due to the cross-checking of the data (Povee & Roberts, 2015).

The case chosen for this study is specific in a way that the reintroduction of the beaver went illegally compared to countries where the beaver was reintroduced according to an official reintroduction program, which was the case in 24 European countries (B.A.C.E., 2018). Therefore, this case is specific only for the Tayside and other areas or countries where the beaver went through an illegal process of reintroductions. In other words, generalizing the results of this study to other countries where the beaver has been legally reintroduced is not advisable.

## Data collection

Regarding the data collection part, several limitations were found. First, it was not possible to randomize the sampling points in this research, as the researcher was limited in reaching certain areas. Some places were too remote to reach by public transport or bicycle or were reachable but took too much travel time. Furthermore, the areas in the Tayside that were visited eventually, were based on suggestions done by the Scottish Wildlife Trust (SWT) and a beaver distribution map of 2012 by the Scottish Natural Heritage (SNH), which was based on previous research and could therefore be regarded as trustworthy. Unfortunately, the new beaver distribution map by the SNH was published after the fieldwork was already performed (end of October 2018) and therefore the bit outdated map of 2012 was used. Yet, this was not regarded as a big constraint as the suggestions done by the SWT were considered as well.

Second, the interview questions were based on the following main themes: impacts, policy, management and media. Here, questions that focused on the reintroduction were not considered at the start of this research. Nevertheless, more than half of the stakeholders came up with this topic by themselves. Therefore, the topic reintroduction was added as one of the main themes. A limitation here is that the opinion of the stakeholders that did not mention something about the reintroduction remained unknown, even though they could have a particular view related to this subject.

Third, another important aspect to consider is that the number of stakeholders interviewed for each group differs. The response rate of the NGO's that were contacted was quite low. Here two out of eight organisations responded. The low number of interviews performed with the



NGO's might be regarded as a constraint of this study. However, the ones that participated provided useful information by sharing their views on the establishment of the beaver in the Tayside. Therefore, it was still possible to make comparisons between the views of the NGO's and the stakeholders in the field. Yet, the decision was made to mainly focus on the stakeholders in the field, who were found more cooperative than the NGO's. In the end, a total of 25 interviews was gathered, where farmers and fishermen have contributed the most. Furthermore, three farmers were interviewed which land was not impacted by the beaver but were still located in an area where beaver activities take place. Yet, these farmers were met by accident and later the decision was made to include their views as well. This was done to find out if these farmers would be negatively framed towards the beaver as well.

Not only was looked at the main themes: reintroduction, impacts, policy and management but also to the representation of the stakeholders in the media. Nevertheless, this only shows if a journalist referred to a stakeholder, but not whether their opinion was shared as well. Yet, the decision was made to include this part as well because this indicates how the media selected their representatives of the story. This was one of the framing techniques as earlier explained in the theoretical framework. To illustrate, if some stakeholders are overrepresented a biased image of the reality might be created.

Last, as the selection of the newspapers was based on certain criteria, some newspapers contained more articles to analyse than other newspapers. For instance, the Scottish Sun contained only one suitable article for the data analysis, this might cause a certain bias. Furthermore, the selection of newspapers was only limited to those which had online archives and with the presence of a search bar on their website. This means that some newspapers that could contain relevant beaver articles but did not have a search bar on their website were excluded from the analysis.

### **Data analysis**

Regarding the data analysis part, some limitations were found. First, this study only focussed on which topics are mentioned and which topics are not, indicating this by zeros and ones in Excel. A disadvantage of this approach is that it remains unknown how often a topic was mentioned. For instance, one article can highlight the negative impacts 20 times and a positive impact just once. Yet, in the end both are counted as 1, with consequently that it looks like there is a balance in mentioning negative and positive impacts, while this might not necessarily be the case.

Second, this study mainly looked at the newspapers all together compared to the views of the stakeholders. Yet, a main limitation of this approach is that the underlying differences between the different types of newspapers did not come forward that much in this study. Although, the outliers were mentioned, such as when one newspaper is extremely negative compared to another newspaper. It might therefore be interesting for further research to elaborate more on the differences between the different types of newspapers.

## 6 Conclusion

The aim of this study was to find out to what extent the stakeholders' views about the establishment of the beaver in the Tayside were reflected in the traditional media by first, performing interviews with the stakeholders in the field and second, performing a content analysis of Scottish newspaper articles. This study has identified that both the stakeholders as the media spend attention to the following main themes; reintroduction phase of the beaver, the impacts of the beaver on the environment, the attention towards management solutions and the involvement of the government towards the beaver situation in the Tayside. Furthermore, notifications of increased numbers of beavers in the area and the unofficial culling activities were also mentioned by the stakeholders and the media.

Although, the main themes are described by both the stakeholders and the media, the emphasis on the sub-themes belonging to these main themes differs. It seemed like that the view points from nature organisations or governmental bodies as the SNH are more represented than the views of the stakeholders in the field. To illustrate, the urgent need for a protection status is highlighted due to the unofficial killings of the beaver, management solutions do mainly not include the killing of the species but are more focussed on small scale measurements and finally although the reintroduction was referred to as an illegal process and a wildlife crime, the establishment of the beaver in the Tayside was in some cases described as a milestone by the media.

This study separates itself from other studies by performing both interviews in the field and analysing news articles about the portrayal of the beaver and HBIs in the Tayside. Previous studies usually studied or the media's portrayal of wildlife or went into the field to gather public's and/or stakeholders' opinions. Here, some interesting results showed that the media highlights both the positive as the negative aspects of the establishment of the beaver in the Tayside, although differences in portrayal can be found between the different types of newspapers. Due to the current study, a better understanding about the human-beaver conflicts in the Tayside and the portrayal of these conflicts/interactions by the media is accomplished. The collection of views from different stakeholders provided an overview of the topics (themes) that influenced the stakeholders view forming of the establishment of the beaver in the Tayside. Second, this study highlighted the importance of the role of media on the framing process of HWCs by showing how certain views and topics within the beaver discussion are framed by the media.

## 7 Recommendations

As this study has shown there are many underlying views connected to how stakeholders perceive the current beaver situation in the Tayside and that only certain views are shared by the media, indicating that to some extent framing was used. This section provides a number of important implications for future practice, based as a follow up on the findings of this study but also on aspects that were not thought of in this study.

First, further research should be undertaken to investigate to what extent the media's portrayal of the beaver influences the public's opinion of the HBIs in the Tayside. This is important to know as conservationist might learn how to respond and contribute to the media's portrayal of HBIs. This study started with performing close-ended questionnaires among the residents yet comparing this kind of data with the semi-structured interviews which were based on open questions was in the end not possible. Therefore, the use of a Likert Scale might work here as the use of a same method allows to make reliable comparisons between different groups of stakeholders, meaning between stakeholders with often little knowledge about the situation (public) and stakeholders with more knowledge. The use of a Likert Scale was not chosen for this research as too little was known about the stakeholders' views, therefore open questions came in handy. Nevertheless, as now the main views and underlying views are known, further research can make use of a Likert Scale to gather the public's opinion.

Second, this study only focussed on how certain views and certain stakeholders are more framed than other views and stakeholders, because the main research question was not how the media frames the beaver debate but to what extent the stakeholders' opinions do come back in the media. Therefore, it might be interesting that further research focussed on all the different framing techniques that the media can use to portray a piece of text. This is important to know as it illustrates to what extent the media influences the public's opinion.

In addition, it might be interesting to test whether the media frames the beaver and its interactions with humans in a different way throughout the years. Here, differences between newspapers might also be identified as the newspaper's political party association, such as conservative or liberal background, could play a role here but also whether a newspaper is local, regional or national published. For instance, local newspapers have a targeted audience and expected is that they select more news-items about happenings in the region (Blake, 2018). This might be interesting to know as this adds an extra dimension in understanding the framing by the media.

Third, further research could also be conducted on social media instead of traditional media. Especially, since we live in a time where a lot of people access the internet for news instead of reading a newspaper. This relatively new form of media might also apply different framing techniques. To what extent portrayals of wildlife differs between different media sources should be investigated in further research.

Fourth, further studies need to be carried out on the influence of the reintroduction process on the stakeholders' opinions. To illustrate, would their reactions be different if the beaver was reintroduced according to an official reintroduction program? This might be important to

know, especially for the conservationists. A hypothesis might be that if a beaver is officially reintroduced and different groups of stakeholders were involved in the decision-making process then the stakeholders might have a more positive attitude towards the beaver.

Last, some advice for the government and its governmental bodies: to improve the human-beaver and human-human interactions in the Tayside it is essential that; first, the government recognizes that HBCs are real in the Tayside, second, that they involve the stakeholders in the decision-making process, third, find an appropriate management plan that satisfies most of the stakeholders but also provides a safe environment for the beaver. All in all, if the problem is not recognized then unofficial beaver culling activities might continue. Furthermore, regarding the conflicts between the conservationists and the stakeholders in the field it is essential that both parties communicate with each other and are willing to cooperate.

## Literature

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# Appendixes

## Appendix A

### **Main questions for personal interviews**

#### **Interview format for farmers, fisherman, ghillies, landowners and the wildlife tour operator**

1. What did you think of the approval of the government to let the beaver stay in the Tayside?
2. What are the effects of the beaver on the environment?
3. Do you think the beaver should be managed? If so, why?
4. If the beaver was controlled, would you allow them to stay in the Tayside?
5. What do you think of the plan of the government to give licenses to kill the beaver in case of big damages?
6. What is according to you the best solution regarding human-beaver conflicts?
7. When you read the media, what is it most often that you read: positive or negative news items about the beaver (or maybe it is more neutral)? (please also mention the name of newspapers or social media networks that you use to read the news)
8. How is your view represented in the media?

#### **Interview format for NGO's and councillor**

1. What did you think of the approval of the government to let the beaver stay in the Tayside?
2. Would you describe the beaver more as a 'functional beaver' or as a 'problem beaver'? Or a combination of both?
3. What is your view towards the human-beaver conflicts in the Tayside?
4. Should famers be compensated for their loss of land due to beaver activity?
5. What do you think of the government's plan to give licenses to landowners/farmers to shoot the beaver in case of damage to their land?
6. Should the beaver be managed once a beaver migrates from remoted areas to human dense areas (private land)? If so, what kind of management implications are you thinking of?
7. What do you think is the future of the beaver in the Tayside?
8. How is the view of nature organisations towards the human-beaver interactions in the Tayside represented in the media?

## Appendix B

Table I. Suitable articles that were used for this study, details as name of the article, date and name of newspaper are mentioned as well.

Nr.	Title news article	Date	Newspaper
1	<b>Survey finds beaver numbers on the up in Tayside</b>	15 October 2018	Evening Telegraph
2	<b>Beaver protection call as numbers soar despite cull fears</b>	12 October 2018	Evening Telegraph, The Courier, The Daily Mail
3	<b>Animal charity tending to young beaver caught by dog</b>	9 August 2017	Evening Telegraph
4	<b>Beavers cleared of flooding paths at local beauty spot</b>	25 July 2017	Evening Telegraph
5	<b>Trappers called in to remove beaver from Pitlochry mill pond over flood fears for town</b>	23 January 2016	Daily Record
6	<b>Beavers are helping to restore the biodiversity to the Perthshire countryside</b>	1 June 2016	Daily Record
7	<b>Bertie the beaver risks devastating flood by blocking key waterways</b>	25 January 2016	Daily Record
8	<b>New wildlife threat for T in the Park? Beaver spotted at Strathallan raises uncertainty over festival layout</b>	27 January 2017	Daily Record
9	<b>Back after 400 years: Beavers to remain in Scotland after being granted protected species status</b>	24 November 2016	Daily Record
10	<b>Conservationists in call for Scottish Government to make their mind up about wild beavers</b>	4 Augustus 2016	Daily Record
11	<b>Calls for action after claims farmers are killing 'as many beavers as possible' before protection order</b>	1 Augustus 2016	Daily Record
12	<b>Beavers a bigger priority than Brexit as rodents hit Tayside</b>	9 February 2018	The Courier
13	<b>Beaver legislation to be introduced by summer 2018, say ministers</b>	20 December 2017	The Courier

14	<b>Calls for urgent protection of Tayside beavers amid reports of ‘systematic shootings’</b>	6 June 2018	The Courier
15	<b>Warning that damage by beavers will bite into public cash</b>	12 April 2018	The Courier
16	<b>JIM CRUMLEY: Scotland’s climate of chaos</b>	20 February 2018	The Courier
17	<b>Will Scotland's beavers be an environmental catastrophe or a green godsend?</b>	12 May 2017	The Scottish Herald
18	<b>New ‘flow devices’ to be installed at loch in bid to outwit cunning beavers</b>	1 March 2018	The Scottish Herald
19	<b>Thousands call for an end to Scottish beaver cull</b>	4 February 2016	The Scottish Herald
20	<b>Anger after decision on beaver protection delayed by Scottish Government</b>	23 March 2016	The Scottish Herald
21	<b>Young beaver in care of animal charity for two years after being caught by dog</b>	9 August 2017	The Scottish Herald
22	<b>Plans to help beavers move north</b>	22 March 2017	The Scottish Herald
23	<b>Video: "A significant milestone" - Beavers are back and thriving in Scotland</b>	28 November 2017	The Scottish Herald
24	<b>Beavers boost biodiversity and improve wetlands, researchers say</b>	19 July 2017	The Scottish Herald
25	<b>Beavers and young suffering slow painful deaths in landowner shooting cull</b>	31 January 2016	The Scottish Herald
26	<b>Calls for beavers to be introduced at new sites</b>	27 November 2016	The Scottish Herald
27	<b>Tree felling by beavers may save millions in flood repairs</b>	21 December 2016	The Scottish Herald
28	<b>Farming fears as beaver numbers rise dramatically in Scotland</b>	12 October 2018	The National
29	<b>Dog-napped beaver kit is saved by animal shelter</b>	10 August 2017	The National

30	<b>Beaver dams could help prevent flooding say experts</b>	17 February 2016	The National
31	<b>Beaver project to investigate new Tayside sightings</b>	19 April 2017	The National
32	<b>Nature threatens to give T In The Park chiefs fresh woes</b>	28 January 2016	The National
33	<b>Beavers to be listed as protected species</b>	25 November 2016	The National
34	<b>Study finds that beavers bring major boost to fight against climate change</b>	19 July 2017	The National
35	<b>Beavers blamed for flash floods in Scotland may actually control problem</b>	16 February 2016	The Guardian
36	<b>Eager beavers experts at recreating wildlife-rich wetlands, study reveals</b>	19 July 2017	The Guardian
37	<b>Beavers given native species status after reintroduction to Scotland</b>	24 November 2016	The Guardian
38	<b>New farm scheme to cope with burgeoning Tayside beavers</b>	12 October 2018	Scottish Farmer
39	<b>On the beaver trail in Alyth</b>	30 March 2017	Scottish Farmer
40	<b>Beaver damage threatens Tayside farmland</b>	28 April 2018	Scottish Farmer
41	<b>Shock at beaver capture delay</b>	27 October 2017	Scottish Farmer
42	<b>In support of beavers</b>	12 May 2018	Scottish Farmer
43	<b>Beavers get their Scottish passport</b>	24 November 2016	Scottish Farmer
44	<b>Beavers, not Brexit, to the fore at NFU Scotland agm</b>	14 February 2018	Scottish Farmer
45	<b>Know your rights over rivers and beavers</b>	9 June 2017	Scottish Farmer
46	<b>Young beaver in care of animal charity after being caught by dog</b>	9 August 2017	Daily Mail



47	<b>Chef is attacked by a wild beaver after going to investigate a mysterious brown creature on the grass verge</b>	12 February 2017	Daily Mail
48	<b>Wild beavers officially back in Britain after 400 years following successful reintroduction trial</b>	25 November 2016	Daily Mail
49	<b>Farmers express concern over major increase in beaver numbers</b>	12 October 2018	Telegraph
50	<b>Scottish farmers 'considering cutting down trees' to stop feral beavers causing havoc</b>	17 March 2018	Telegraph
51	<b>Farmers' warning over beaver damage as new report praises the 'water engineers'</b>	18 July 2017	Telegraph
52	<b>Eurasian beavers to be given formal protection and allowed to remain in Scottish countryside</b>	24 November 2016	Telegraph
53	<b><i>EAGER BEAVERS</i></b>	12 October 2018	Scottish Sun