

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

by

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Table of Contents

List of tables.....	4
Attestation of authorship.....	5
Acknowledgements.....	6
Abstract.....	7
1. Introduction.....	8
1.1 Eco-anxiety.....	10
1.2 Anxiety.....	11
1.3 Related eco-psychological terminology.....	13
1.3.1 Solastalgia.....	13
1.3.2 Ecological grief.....	14
1.3.3 Ecological Trauma.....	14
1.4 Conceptualisation, symptom presentation and therapeutic interventions.....	15
1.5 Scoping review methodology.....	16
1.6 Rationale for the present study.....	17
2. Methods.....	18
2.1 Research design.....	18
2.1.1 Scoping Review.....	18
2.1.2 Search Strategy.....	18
2.1.3 Data charting and content analysis.....	19
3. Results.....	21
4. Discussion.....	46
4.1 Conceptualisation.....	46
4.1.1 Maladaptive eco-anxiety presents even with no direct experience of ecological crisis.....	46
4.1.2 A crisis of hope regarding the future is central to the presentation of eco-anxiety.....	47
4.1.3 Eco-anxiety can be described as an existential crisis.....	48
4.1.4 Eco-anxiety results in the loss of quality of life.....	48
4.1.5 Paralysed and unable to take meaningful action.....	49
4.1.6 Eco-anxiety can be conceptualised within trauma, stress and grief frameworks.....	50
4.2 Symptoms of eco-anxiety.....	51
4.3 Interventions for climate-related anxiety.....	53
4.3.1 Overview of findings for therapeutic approaches.....	53
4.3.2 Individual level skills training.....	54
4.3.2.1 Resilience training.....	54
4.3.2.2 Emotion regulation techniques.....	55
4.3.2.3 Active hope.....	56

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

4.3.2.4 Coping skills training	58
4.3.2.5 Identify and strengthen pro-environmental values.....	59
4.2.3 Group approaches	59
4.4 Limitations and future directions	61
4.4.1 Limitations	61
4.4.2 Research and clinical implications.....	61
5. Conclusion	62
6. References.....	64
7. Appendices.....	71
Appendix A: Search strategy flow chart	71
Appendix B: Scoping review protocol.....	72

List of tables

Table 1: Charted scoping review data from all 30 papers, arranged chronologically and by author... 23	23
Table 2: Conceptualisation of eco-anxiety derived using content analysis inductive coding and abstraction process. 35	35
Table 3: Symptom presentation of eco-anxiety derived using content analysis inductive coding and abstraction process. 37	37
Table 4: Therapeutic interventions for eco-anxiety derived using content analysis, inductive coding and abstraction process. 39	39

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed:

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Abstract

As the ecological and climate crisis has intensified, impact on mental health has become more evident. 'Eco-anxiety' is a term commonly used to describe these effects. Despite the increased recognition of eco-anxiety as a valid mental state, there is little empirical evidence detailing it as a clinical presentation, or describing the interventions considered most effective in addressing it. Utilising a scoping review methodology, this study collated recent knowledge of eco-anxiety and the therapeutic approaches suggested to mitigate its negative impact. Literature published between 2017-2020 addressing the conceptualisation of eco-anxiety, its symptoms and interventions were reviewed. 25 academic articles and 5 book chapters met inclusion criteria for the review. Descriptive content analysis was used to map current understanding of this emerging presentation.

The findings from the scoping review suggest that maladaptive eco-anxiety presents even in people with no direct experiences of ecological crisis, it causes a crisis of hope regarding the future, a reduction in quality of life, and can lead to an inability to take positive action. It can be described as an existential crisis and could also be conceptualised within a trauma, stress or grief framework. Symptoms present as both cognitive-emotional and functional impairment and could be associated with diagnostic categories of anxiety, depression, trauma and stress. Therapeutic interventions consist of individual level skills training primarily for resilience and coping; group approaches; therapeutic approaches derived from the main schools of psychotherapy; diagnostic-specific approaches; and changes required at the mental health system level.

1. Introduction

It is now widely accepted that the world has entered an ecological crisis that is pervasively affecting the land, oceans, and of all life forms which rely upon them for survival (IPCC, 2019). The different areas of ecological degradation have, to some extent, become synonymous with the term climate change, which is certainly at the root of much of this degradation (IPCC, 2019). In the present study the term ‘ecological crisis’ will be used as an umbrella term to encompass what is generally understood as climate change, i.e. global temperature rise, but also refers to anthropogenically caused degradation of land and oceans through intensive exploitation and agriculture, increasing human populations, and pollution. Also, the mass extinction of species caused by both temperature rise and human exploitation (IPCC, 2019). Whilst humans are the cause of this degradation, they are also suffering because of it, and in recent years public health professionals have begun to document the health effects on humans from the ecological crisis (Watts et al., 2017).

The public health impacts of the ecological and climate crisis, have for a long time, focussed on *physical health effects*, but during the last ten years the lens has widened to acknowledge the serious *mental health impacts* experienced by increasing numbers of people worldwide (Pihkala, 2019b). In general terms the mental health impacts can be divided into direct impacts, indirect impacts, and vicarious impacts of the ecological crisis (Berry et al., 2010). The purpose of the present study was to review material focussing on the vicarious mental health impacts caused by an over-arching awareness (Hayes & Poland, 2018) of the ecological crisis. However, much of our understanding of these issues derives from the direct and indirect mental health effects, and so it is important to acknowledge these, however briefly, before moving on to a closer look at the vicarious impacts.

Direct mental health impacts result from direct exposure to acute weather events such as storms, floods and natural disasters caused, or exacerbated, by the changing climate (Hayes et al., 2018). Examples of these include the extended and intensified wild-fire season in Australia (Moffic, 2020) and the increasingly severe storms and hurricanes experienced in North America (Clayton, 2014). Directly experiencing these events has been documented as causing devastating long- and short-term mental health issues, including Post Traumatic Stress Disorder (PTSD), grief, depression, anxiety, and suicidal ideation (Clayton et al., 2017). The literature covering direct impacts on mental health has been thoroughly reviewed by Cianconi et al. (2020) in their recent systematic review of over 160 papers on the direct mental health effects of climate change. Cianconi et al. (2020) found that acute climate related weather events exposed people primarily to traumatic stress, leading to psychopathology. Additionally, the consequences of these direct experiences could

also be delayed, resulting in disorders such as posttraumatic stress, or even transmitted to later generations.

Indirect impacts on mental health can arise from damage to infrastructure and social cohesion caused by acute, sub-acute and the slow moving, chronic effects of ecological change (Manning, 2018). These include many different types of experiences, such as the anxiety, trauma and grief associated with lost landscapes, as in the case of Tuvalu, where sea-level rise is threatening their island nation which may soon become uninhabitable (Gibson et al., 2019). Similarly, the vanishing of glaciers in the Peruvian Andes and North America (Brugger et al., 2013). Another indirect experience of the ecological crisis can be the reduction, or loss, of a species, as in the case of the Inuit people of the Nunatsiavut and Labrador regions of Canada, who are experiencing the near extinction of the reindeer/caribou (Cunsolo, Borish, et al., 2020). Indirect mental health effects can also arise in response to increased temperatures and droughts. Increases in anger and suicidal ideation have been documented to accompany high temperatures (Hayes et al., 2018). The mental health impacts of worry, anxiety, grief and loss associated with climate related migration, and food insecurity, the increase in substance abuse and addictions (Manning, 2018), and the unease caused by subtle, but sustained, changes in weather are all indirect impacts on mental health.

Evidence is now emerging to show that, even for people who are not experiencing either direct or indirect impacts from ecological degradation, the overarching awareness and concern regarding this crisis is also impacting their mental health. The awareness alone is causing significant mental distress in many people, which some authors have described as vicarious trauma (Doherty, 2018). This is the case for many in the Western world, whose countries may not yet be experiencing significant overt effects, yet the knowledge of what is taking place elsewhere is enough to cause anxiety, frustration, anger, powerlessness, and fear for the future (Manning, 2018). Pihkala (2020) discusses the Swedish climate activist Greta Thunberg, who has provided an empowering example of a young person engaging with the ecological crisis, but this began as a debilitating mental health issue for her, caused by her initial overarching awareness of the problem.

NZ clinicians are also describing ecologically-related distress in their clients (NZPsS Climate Psychology Task Force, 2018). The natural environment is central to the New Zealand (NZ) identity, relying on a 'clean green' image of NZ, for both domestic and international tourism campaigns. More importantly, than the revenue this identity generates for the economy, it has become a deeply ingrained part of the NZ psyche. This is even more so for Māori, who through the process of disenfranchisement have found it difficult to fulfil their role as kaitiaki, or guardians, of the land.

Consistent with almost all other indigenous thinking, Māori do not see human health and well-being as separate from that of the wider eco-system in which they live (Durie, 2013). All

Māori models of health feature an holistic approach, in which the multiple components of an individual's life must be in a state of balance and health. In the Te Whare Tapa Whā model (Durie, 1985), taha whānau (family health), taha wairua (spiritual health), taha hinengaro (mental health) and taha tinana (physical health), all rest like the four walls of a house upon the foundation of the whenua - the land and the environment. If any of these elements, including the environment, is misaligned or damaged, the individual will experience ill-health (Durie, 1985). This is also reflected in the concept of Mauri Ora – the animating life force which flows equally though all things. The mental health impacts caused by this vicarious awareness of the ecological crisis, that is deteriorating the foundation of our collective wellness, is the subject of the present study.

Conceptualisations and terminology to describe these vicarious mental health impacts are many and various. These generally align with the academic field from which they emerge and often describe very similar psychological phenomena. Pihkala (2020) points out in his recent article that more discussion is needed in order to better define these terms. Anthropocene disorder or Anthropocene horror (Clark, 2020) and eco-angst, for example, are elucidating and valid in their own contexts, however they are not often well defined, and do not add to a clinical understanding of how vicarious impacts are presenting in the population. The term which has become most synonymous with the vicarious mental health impacts of the ecological crisis is 'eco-anxiety'. Eco-anxiety will now be defined and introduced broadly in the context of anxiety in general, followed by the introduction of three other terms that are of particular importance; solastalgia, ecological grief, and climate trauma. The importance of clinical conceptualisation, and its relationship with therapeutic interventions, will then be outlined, followed by a description of the research methodology and rationale for the present study.

1.1 Eco-anxiety

Eco-anxiety refers to any form of anxiety which is related to the ecological crisis including, but not limited to, climate change, deforestation, species extinction and pollution (Pihkala, 2020). Albrecht (2012) defined eco-anxiety as “the generalised sense that the ecological foundations of existence are in the process of collapse” (p.250). He described this type of anxiety in relation to an uncertain and changing environment, and also suggests that the potential for this anxiety to result in in-action should be labelled as 'eco-paralysis' rather than apathy (Albrecht, 2011). In 2017, a further definition was proffered by the American Psychological Association, which Pihkala (2020) credits as providing the 'working definition' that subsequently sparked an explosion of discussion around eco-anxiety. That definition is “a chronic fear of environmental doom” (Clayton et al., 2017, p. 68). Witnessing environmental degradation is a persistent source of stress that will not abate in the near future, but will only worsen. Due to the nature of world-wide media and communication, even people who are not experiencing environmental degradation first hand, are constantly exposed to stress-

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

inducing messages of escalating crisis and impending doom. This is leading to heightened risk perception, helplessness, guilt and general anxiety (Clayton et al., 2017).

Eco-anxiety is becoming a widely used term to describe this experience, often found in main stream media, academic literature, and online clinical material. In fact the term was not coined by psychologists but by the media in articles published as early as 2006 (Cossman, 2013). Whilst eco-anxiety has been described in the academic literature since the mid-2000s, there has been a significant increase in academic articles published on this, and other psychological responses to the ecological crisis, since 2017 (Pihkala, 2020). Many academic disciplines have contributed to the articulation of this phenomenon from theology to the social sciences, to psychology and psychotherapy.

The closely related term, *climate anxiety*, is often used interchangeably with eco-anxiety, however climate anxiety can be distinguished as referring to anxiety related specifically to anthropogenic climate change alone (Pihkala, 2020). Of course, there is huge overlap between these terms, as, for example, climate change is responsible for much of the observable species' extinction, and conversely, the over-exploitation of planetary resources (in particular fossil fuels) is responsible, to a large extent, for climate change. The term eco-anxiety is therefore utilised here with the understanding that it incorporates climate anxiety (Pihkala, 2020).

There is growing evidence for the existence and prevalence of presentations which can be conceptualised within the term eco-anxiety. Clayton (2020) cites numerous statistics in her recent article on climate anxiety that demonstrate the growing recognition of this issue: a survey conducted by the American Psychological Association (APA) in 2020 states that approximately two thirds of participants experienced at least a small amount of eco-anxiety. In 2019, the Yale Programme on Climate Change Communication reported that 69% of Americans were 'somewhat worried' and 29% were 'very worried' about global warming (Leiserowitz et al., 2020). Reser et al. (2012) reported 86 % of their sample as having 'some concern', and 20% feeling 'appreciable distress' with regard to climate change. 20-40% of people in various European countries, described themselves as 'very worried' (Steentjes et al., 2017). In a 2018 survey, 38 % of Greenlanders reported that they felt fear 'moderately' or 'very strongly', 19 % reported moderate or strong sadness, and 18 % reported moderate or strong hopelessness (Minor et al., 2019). In Tuvalu, which is seriously threatened by sea level rise, 95 % reported distress due to climate change which was impairing their normal function (Gibson et al., 2020).

1.2 Anxiety

Eco-anxiety is not classified as a type of anxiety disorder, and, in general, it should not be pathologised as such (Pihkala, 2020). This is because eco-anxiety represents a rational response to a

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

very real and all-pervasive threat. However, for some people it can become debilitating, so an understanding of the psychological and physical presentation of anxiety in general is beneficial as we seek to understand the specifics of eco-anxiety, and particularly how to support those who are suffering from it. The definitions of eco-anxiety, described above, suggest a generalised type of anxiety which is pervasive and at work on an existential scale.

Anxiety is similar to, and often interrelated with, fear, but is more concerned with uncertain and unpredictable future scenarios that are perceived as being beyond one's ability to cope (Grupe & Nitschke, 2013), rather than with a tangible, discrete fear. Grupe and Nitschke (2013) define anxiety as “anticipatory affective, cognitive and behavioural changes in response to uncertainty about a potential future threat” (p.488), and posit that this is the underlying psychological mechanism of the main anxiety disorders described in the Diagnostic and Statistical Manual of Mental Disorders (DSM 5, 2013), namely generalised anxiety disorder (GAD), panic disorder, social anxiety disorder (SAD), specific phobias, as well as the closely related post-traumatic stress disorder (PTSD), and obsessive-compulsive disorder (OCD). Eco-anxiety certainly fits this definition and has been documented in relation to OCD and PTSD (Jones et al., 2012). Uncertainty, unpredictability and uncontrollability are described by Grupe and Nitschke (2013) as the key to understanding anxiety, with uncertainty being most closely related to the phenomenological, or lived experience of anxiety. The ecological crisis presents people with the ultimate stressor when considered in this light. How the crisis will unfold, how we can respond to mitigate the negative effects, and what elements are in our personal control, are all unclear, leaving most people at a loss for how to feel and act.

The DSM diagnosis that is perhaps most aligned with eco-anxiety is GAD. The DSM describes GAD as characterised by “excessive anxiety and worry (apprehensive expectation) about a number of events or activities” (p.222). It is seen as a negative emotion, disproportionate to the perceived threat or uncertainty, in which the person finds it difficult to control their worrisome thoughts or stop them from intruding into daily life. In the context of the ecological crisis, this categorisation is correct in terms of its symptom description, but when it comes to a proportionate response to such a global and existential crisis, one can easily make the argument that eco-anxiety is in fact a rational and reasonable response. A number of scholars have in fact described eco-anxiety as having the potential to be a ‘practical anxiety’ (Doherty, 2018) or a ‘productive form’ of anxiety (Ojala, 2012) spurring people into action to mitigate this slow moving catastrophe. This relates to the evolutionary function of anxiety, the highly attuned threat response which keeps humans safe from danger, through the physiological fight-flight-freeze response (Grupe & Nitschke, 2013).

Prior to 2020, the phenomenon most often compared with eco-anxiety was fear of nuclear war (Pihkala, 2019a). However, now the fear of Covid19 is perhaps more relevant. Indeed, the

emotional response of fear, with regard to these global threats, seems to be one of the most central components of the anxiety response. Witte (1992) defines fear as psychological arousal and negative emotional responses, stimulated by the overestimation of a perceived threat, coupled with an underestimation of the perceived benefits from action, as well as low self-efficacy. If the fear response is coupled with high levels of self-efficacy then it can produce adaptive behavioural changes that reduce the individuals chances of harm. However, if coupled with low self-efficacy then the individual engages in avoidance behaviours (Witte, 1992). This demonstrates the interaction between the cognitive and physiological responses associated with anxiety and the resulting impacts on behavioural responses. When people become overwhelmed by their internal response, they can become paralysed into inaction (Albrecht, 2011).

As well as creating psychological distress in the general population, researchers are showing that global fears, such as nuclear war and fear of COVID-19, may potentially worsen anxiety symptoms in people with pre-existing psychological conditions (Alyami et al., 2020). Likewise, it is possible that people with a propensity for anxiety – ‘trait anxiety’ or ‘anxiety sensitivity’ – may be more susceptible to the global threat of ecological change resulting in eco-anxiety. Pihkala (2020) states that whilst this may be partially true, anxiety sensitivity by no means explains all eco-anxiety. Materia (2016) makes the distinction between trait anxiety and ‘state climate anxiety’, in her doctoral thesis, asserting that eco-anxiety is a response to an external stimulus, no matter how pervasive this particular stimulus may be. Relegating eco-anxiety, and other global threat related anxieties, such as COVID-19 or nuclear war, to the realm of hysteria and the perennially anxious is dismissive, minimising and often borne from climate denialists’ own maladaptive coping methods (Pihkala, 2020; Weintrobe, 2012). The debilitating impact of eco-anxiety on some individuals, however, necessitates a deeper understanding of this presentation so that psychologists can help people continue to engage meaningfully with this crisis, ensuring eco-paralysis does not creep in.

1.3 Related eco-psychological terminology

1.3.1 Solastalgia

Crucial to the discussion of eco-anxiety, is the work of Glenn Albrecht (Albrecht et al., 2006). Albrecht has described a number of new psychic responses to the human degradation of the earth’s environments which he calls ‘psychoterratic syndromes’ or ‘earth-related mental health syndromes’ (Albrecht, 2011). One of the most important of these is Solastalgia. First coined by Albrecht as early as 2005, Solastalgia is a neologism referring to a feeling of homesickness whilst still at home – the experience of a familiar environment changing around you (Albrecht et al., 2006). He defines solastalgia as the “pain or sickness caused by the loss of, or inability to derive solace from, the present state of one’s home environment” (Albrecht et al., 2006, p. 35). Albrecht

first developed this terminology to describe the psychological responses of Australian farmers in the Upper Hunter Valley, who experienced symptoms of distress due to the devastation of their natural environment by agriculture, power generation and open-cut mining. The people in this area gradually suffered from the loss of their landscape, in a way which Albrecht described as a type of painful nostalgia for a beloved place (Albrecht et al., 2006; Higginbotham et al., 2006). In collaboration with Albrecht, Higginbotham et al. (2006) went on to measure these psychological responses to environmental degradation, developing the Environmental Distress Scale (EDS). The EDS provided an index of the bio-psycho-social cost of human development activities and a valid social monitoring tool for affected communities and policy makers. This scale, and the concepts which their research highlighted, is foundational to the understanding of the more general term eco-anxiety, explored in the present scoping review. Whereas solastalgia is a response to a specific environmental change, eco-anxiety might be conceptualised as a bio-psycho-social response to global ecosystem degradation.

1.3.2 Ecological grief

Closely related to Albrecht's concept of solastalgia is the concept of Ecological grief. Grieving for the loss of ecological features, species, habitats and experiences in nature is the primary characteristic of climate and ecological grief. Scholars, such as Cunsolo and Ellis (2018), have articulated the psychological processes and emotions associated with grief and mourning to best describe the experience of loss when witnessing the changing environment. Cunsolo and Ellis (2018) present ecological grief as a legitimate form of human grief that, until recently, has not been openly acknowledged. Ecological grief has been documented as a sense of loss, hopelessness, and despair about environmental degradation (Pihkala, 2019b). People most at risk of experiencing ecological grief, causing significant impairment, are those most deeply connected to the natural world. Environmental researchers, scientists, and activists are documented as being seriously affected, but indigenous peoples and many members of the public, connected to nature in various ways, are also experiencing this form of grief. Eco-anxiety and eco-grief are closely related, the former anticipates future losses, whilst the former grieves for losses already incurred.

1.3.3 Ecological Trauma

Vicarious mental health impacts are increasingly being described using a trauma framework (White, 2015). Ecological trauma refers to the manifestation of trauma symptoms, such as disassociation, aggression or anhedonia and dysphoria (American Psychiatric Association, 2013), in response to the ecological crisis. These symptoms have been described even for those not directly experiencing the effects of ecological crisis (White, 2015). The observation of degradation and suffering, as a result of the ecological crisis, is framed as vicarious trauma or secondary traumatic

stress syndrome by Pihkala (2019b), and this approach has especial relevance to the focus on vicarious mental health impacts covered in the present scoping review. Other scholars have taken this conceptualisation even further to describe the phenomenon of climate change and ecological degradation as a trauma in and of itself. Woodbury (2019) emphatically describes the unfolding crisis as a severe and pervasive trauma afflicted upon us all to varying degrees. White (2015) also describes how trauma symptomology lies at the root of the ecological crisis as we deny and avoid the truth of our destructive relationship with nature. The close relationship between anxiety and trauma is highlighted in the DSM 5 as varying responses to acute stressors (American Psychiatric Association, 2013). While some individuals will respond in a fearful way, others may disassociate and experience dysphoria. Both responses are occurring in relation to the ecological crisis, and both anxiety and trauma conceptualisations can help better understand this emerging presentation.

1.4 Conceptualisation, symptom presentation and therapeutic interventions

Eco-anxiety, is an understandable, rational response to a global, existential threat, but for many people it can become debilitating and impair function on many levels (Clayton et al., 2017). In order to understand and measure how this mental state moves from a rational, practical response to a debilitating impairment, clinicians need a consistent operational definition of the construct of eco-anxiety (Clayton & Karazsia, 2020). In order to develop an operational definition, a clearly articulated conceptualisation is required. In a counselling psychology context, conceptualisation should be considered with regard to two different applications; firstly, the naming and description of the dimensions that make up a mental health presentation in general terms (Taylor & Bentley, 2004); and secondly, the description of symptoms and their hypothesised causes, as understood in the unique context of a particular individual (Havighurst & Downey, 2009). The former describes, generally, the various symptoms associated with a particular concept of mental health (or illness), but will also necessarily reflect the socio-political environment in which the conceptualisation is developed (Taylor & Bentley, 2004). It is important to retain this critical position when discussing the emerging conceptualisation of a phenomenon, such as eco-anxiety, because it can so easily be drawn into the socio-political quagmire surrounding climate change. For example, eco-anxiety was not a term developed through clinical discourse, but rather through the discourse of the modern media (Pihkala, 2020). Cossman (2013) writes scathingly of eco-anxiety as a term used to defer responsibility onto individuals and away from politicians and companies. The term eco-anxiety has also been used to attack the increasing media coverage of the ecological crisis – accused media of talking too often and in too onerous terms about the dangers (Painter & Painter, 2013). It has also been used as a proxy for ‘hysteria’ about the ecological crisis, belittling sufferers as ‘over-reacting’ and as being anxious personality types (Pihkala, 2020). So, it is in this charged political environment, that modern academic psychologists and thinkers are conceptualising the phenomenon of eco-anxiety.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

The later notion of conceptualisation refers to the clinical, or counselling, psychology context, in which a new client is assessed and their symptoms and personal history formulated into a case conceptualisation, often referred to as a case formulation. Depending on the modality practiced by the clinician this can take various forms, but is often structured into what is referred to as the Five P's: presenting issues, predisposing, precipitating, perpetuating, and protective factors (Havighurst & Downey, 2009). These factors should always be considered within the unique context of that client's context and culture. This process applies the general concept of eco-anxiety to the specific phenomenological experience of an individual. Case conceptualisation seeks to deeply understand the factors which have led the individual to this experience, including the onset, intensity and frequency of symptoms, as well as the strengths and protective factors that can be used as a basis for collaborative treatment planning (Havighurst & Downey, 2009). Formulating an individual's unique case conceptualisation, and the role of eco-anxiety in their presentation, is crucial to understanding how to support them in therapy. The findings from the present study will, therefore, be considered in the light of these two aspects of general, and case, conceptualisation. There has already been significant work undertaken to understand eco-related mental health issues and so a scoping review approach is appropriate to clarify the progress to date with regard to conceptualisation, symptom presentation and therapeutic interventions.

1.5 Scoping review methodology

There have been a number of studies since 2018 which utilised review methodologies to better define aspects of mental health responses to the ecological crisis. Cianconi et al. (2020) conducted a systematic review describing the direct impacts of climate change on mental health, detailing a large amount of literature linking extreme climate events with an increase in mental health presentations. Galway et al. (2019) conducted a scoping review of the literature on solastalgia, detailing the influence of Albrecht's ground breaking work in this field. Martin et al. (2020) have published a scoping review protocol outlining their current review-in-progress, which will cover the effects on climate change on the mental health of children. Hayes and Poland (2018) conducted a literature review of the mental health effects on climate and ecological change, with a specific focus on assessment. A scoping review of the literature on eco-anxiety is therefore timely and appropriate, to further contribute to this emerging field of psychological enquiry.

The scoping study methodology is a useful approach to determine the scope and nature of an emerging field, such as eco-anxiety, that is yet to be clearly defined, or may include research conducted using a wide range of methodologies (Arksey & O'Malley, 2005). This is the case in both respects for eco-anxiety, with the majority of publications appearing only in the last three years. Also these publications come from diverse fields of scholarship ranging from theology to psychology (Pihkala, 2020). The scoping review research procedures are similar to those of a

systematic literature review, but focus more on the extensiveness, rather than the depth, of the literature and therefore may not exclude studies based on, for example, quality or peer review status (Arksey & O'Malley, 2005). Scoping studies chart the current evidence in order to increase clarity and to identify the current conceptual limits of a specific topic area (Davis et al., 2009).

Content analysis enables replicable and valid inferences to be drawn from the reviewed data, mapping evidence-based knowledge, interpreted findings and providing new insights (Elo & Kyngas, 2008). The aim of content analysis is to develop simultaneously a condensed and broad description of the phenomenon in question. Because eco-anxiety is still a relatively new field, taking an inductive approach to analysis is appropriate. Inductive conceptual content analysis begins with no initial hypothesis, but rather allows the data to yield the findings (Elo & Kyngas, 2008). Phrases and words, which essentially have the same meaning, are coded and distilled into fewer and fewer conceptual groupings, with the outcome of the analysis being a set of concepts or categories describing the phenomenon (Elo & Kyngas, 2008). In this study the focus of analysis is on the various concepts, rather than categories, which contribute to the understanding of eco-anxiety when reviewed through a clinical, psychological lens.

1.6 Rationale for the present study

Eco-anxiety is an important area of research, due to its widespread impact as a pervasive, global stressor. There is a significant gap in the current academic literature with regard to providing a clinical conceptualisation of the construct of eco-anxiety, and the interventions that may mitigate its effects. The present study aimed to scope the recent literature on eco-anxiety, to identify and map the current understanding with regard to conceptualisation, symptom presentation and therapeutic approaches suggested by clinicians and researchers. Academic literature from 2017 – August 2020 was reviewed, as this has been the period with the most publications on the subject, and it is hypothesised to be the most likely period where eco-anxiety interventions might be discussed.

Whilst there are a number of terms currently used to describe differing aspects of the vicarious mental health effects caused by the ecological crisis, eco-anxiety is a useful term that can encompass multiple facets. It is already widely used and relatable to the general public. Eco-anxiety is most readily found discussed online and in mainstream media, and the academic world could be accused of falling behind the mainstream discussion. This seems especially true with regard to therapeutic approaches for eco-anxiety. For this reason, the term eco-anxiety has been selected for review, and the current clinical understanding, as articulated in the academic literature, was the focus.

In its 2019 submission to the New Zealand (NZ) government on the Zero-carbon Bill, the New Zealand Psychological Society (NZPsS) Climate Task Force stated that NZ clinicians are

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

already witnessing emotional and existential distress in their clients, directly related to ecological change. In order to support people, both in clinical settings and in the community, it is necessary to better understand the way eco-anxiety presents, what the symptoms are, and to raise awareness of this potential issue. In order to provide therapeutic support for eco-anxiety, it is necessary to have a generally accepted conceptualisation of the construct. Through the process of clearly articulating these aspects of eco-anxiety, the intention is not to pathologise those who are experiencing a strong emotional response to ecological crisis, but rather, learn how to empower them to experience their response, whilst remaining healthy, active and engaged in their lives, and with the crisis at hand.

2. Methods

2.1 Research design

2.1.1 Scoping Review

The present research employs a scoping review methodology and follows the Joanna Briggs Institute (JBI) guidelines for conducting scoping reviews, including the Preferred Reporting Items for Systematic reviews and Meta-analysis extension for Scoping reviews (PRISMA-ScR) (Aromataris & Munn, 2020). The review summarises current research findings and identifies research gaps in the existing literature on eco-anxiety. The scoping methodology has a number of stages; 1) identifying the research question, 2) identifying relevant studies, 3) an iterative process of study selection, 4) charting the data, 5) collating, summarising and reporting the results. The data has been analysed using qualitative descriptive content analysis, using an inductive approach to coding and abstraction of concepts (Elo & Kyngas, 2008), a further description of which can be found below in the section on analysis. It is preferable to utilise descriptive content analysis when analysing the data gathered from a scoping review (Aromataris & Munn, 2020). This is because the aim of the scoping review is to map the field of inquiry, rather than to synthesise the data, as in thematic analysis, which would be more appropriate for a systematic review (Aromataris & Munn, 2020).

2.1.2 Search Strategy

An informal search protocol was established to guide the scoping review search (see Appendix A). Eligibility criteria were established for the types of research included in the review. There were initially no restrictions on the year, or country, of publication, or the populations considered in the research, or the type of publication. Peer reviewed book chapters, academic papers, and grey literature were allowed. Academic research using both quantitative and qualitative

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

research methods were included. Only material in English was included due to the limited language capacity and timeframe of the author.

The search strategy followed the best practice guidelines set out by JBI (Aromataris & Munn, 2020). An initial limited search of two relevant databases, PsycInfo and Scopus, was conducted. This initial search was followed by an analysis of the text words contained in the title and abstract of the retrieved papers, and of the index terms used to describe the articles. A second search using the identified keywords and index terms was then undertaken across all included databases. The reference list of the identified articles was then hand-searched for additional academic papers and relevant websites. Consistent with the iterative nature of scoping reviews (Arksey & O'Malley, 2005), after the final stage of paper selection was complete, a restriction on publication year was applied, as papers prior to 2017 were found to contain little reference to therapeutic interventions, which was a central focus of this review. The full electronic search strategy can be found in appendix B.

The selection of material for inclusion was restricted to those publications that identified and described ecologically related mental health problems and the associated dimensions of their presentation. Crucially, material that discussed assessment and therapeutic interventions, proposed and/or implemented, that may mitigate negative psychological impacts caused by the vicarious, overarching awareness of ecological degradation were included. This review only included mental health problems arising from the vicarious or overarching awareness of the ecological crisis e.g. through knowledge of the issue alone. The review did not include mental health issues caused by direct or indirect experience of ecological degradation, that is, through personal experience of wildfires, floods, and species extinction attributed to ecological degradation. Interventions for mental health conditions arising from direct experience of extreme weather events are not covered. Nor does this study include literature concerning climate in-action or how to achieve pro-environmental cognitive and behavioural change through either public health communications, education in schools, or activism. After an initial review of the selected papers, material which focussed on the relevant, but conceptually distinct, terms such as eco-grief, eco-paralysis, and solastalgia were excluded. This was in order to achieve some clarity around the specific term of eco-anxiety.

2.1.3 Data charting and content analysis

Data have been charted manually by the author under the supervision of two Auckland University of Technology (AUT) supervisors. The final data items include; the paper reference; the conceptualisation of eco-anxiety, i.e. in what terms the author defines this mental health issue

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

regarding contextual and causal factors; the specific clinical presentation of eco-anxiety as the author describes it, in terms of symptoms and co-morbid diagnoses if relevant; and the therapeutic interventions suggested by the author, either in theory, or tested through clinical application or research, or as reported from other sources. The final data set was then analysed using descriptive qualitative content analysis, mapping the concepts within the data using an inductive approach (Elo & Kyngas, 2008).

An inductive content analysis methodology, begins with no specific hypothesis, instead letting the concepts to arise out of the data. This process allows for coding of the various data units extracted from the reviewed material into sub-concepts and then further refined, or abstracted, into larger concepts and finally into a main concept. This distilling process enables the main concepts to be mapped clearly, whilst enabling simultaneously a broad and specific view of the mapped data. The alternative process of deductive content analysis would require the researcher to have a set of hypotheses regarding eco-anxiety which were to be tested using the scoping review (Elo & Kyngas, 2008). As eco-anxiety is such a new field of enquiry, and the treatment of it as a clinical presentation is still emerging, the inductive method was preferable.

3. Results

The scoping search found 25 academic articles and 5 book chapters that met inclusion criteria for the review. Data was then extracted from all 30 papers selected for inclusion, and charted in the three main areas targeted for analysis; conceptualisation; symptom presentation; and therapeutic interventions for eco-anxiety. This large pool of data was then analysed using content analysis.

Table 1 shows the full data set of charted material from the formal scoping review, detailing each authors contribution in the target areas. This is arranged chronologically and in alphabetical order. Some authors featured multiple times in the review. Susan Clayton was involved in the authorship of 4 of the articles (Clayton, 2018; Clayton, 2020; Clayton & Karazsia, 2020; Clayton, 2014), including the influential 2017 APA report (Clayton et al., 2017), which she co-authored with Christine Manning, and others. Clayton was also the co-editor of a book on the subject (Manning & Clayton, 2018), along with Manning, from which a further article by Manning (Manning, 2018) is drawn, as well as an article by Thomas Doherty (Doherty, 2018). Panu Pihkala is prolific in his publications on eco-anxiety and his work featured 4 times in the review (Pihkala, 2018a, 2018b, 2019a, 2019b). Subsequent to the formal search being conducted, Pihkala published a further paper, specifically addressing eco-anxiety and eco-grief, which is referenced in the discussion, although not included in the review (Pihkala, 2020). The work of Katie Hayes featured twice in the review (Hayes et al., 2018; Hayes & Poland, 2018). The reviewed articles are from a range of journals, with only the journal *Religions* and the *Journal of Anxiety Disorders* each featuring twice. There were two commissioned reports, one for Mental Health Finland (Pihkala, 2019a) and one for the American Psychological Association (Clayton et al., 2017). There were two books, one aimed at clinicians (Davenport & Susteren, 2017), from which one relevant chapter was reviewed, and one aimed at the general public (Ray, 2020), from which two relevant chapters were reviewed.

Table 2 shows the coding and abstraction process for the concept of eco-anxiety as a clinical conceptualisation and the resulting eight main concepts mapped therein, that is; 1) maladaptive eco-anxiety presents even in people with no direct experiences of ecological crisis, 2) it causes a crisis of hope regarding the future, 3) a reduction in quality of life, and can lead to 4) an inability to take meaningful action. 5) It can be described as an existential crisis and could also be conceptualized within a 6) trauma, 7) stress or 8) grief framework.

Table 3 shows the symptoms of eco-anxiety, as they were stated in the reviewed material. There are two ways to organize this data either by *cognitive-emotional impairment* and *functional impairment*, or by *DSM diagnostic category*. Severity and frequency of symptoms is also relevant, and some authors did describe symptom clusters explicitly as mild and severe, such as Pihkala (2018). However, because severity and frequency continuums are applicable to all symptoms when describing

a mental health condition, this is not explicitly represented in the table. Cognitive-emotional impairment associated with eco-anxiety could present as rumination, worry, agitation, self-blame, anger, hopelessness, insomnia, overwhelm, fear, or an inability to take meaningful action resulting in eco-paralysis. Functional impairment could present as reduced flourishing and well-being, such as impaired work performance and losing interest in pleasurable activities, loss of appetite, maladaptive coping behaviour, such as substance abuse, and compulsive behaviours such as orthorexia. These symptoms are often overlapping and commonly associated with the diagnostic categories of anxiety (most similar to GAD), depression, trauma (PTSD and Pre-traumatic Stress Syndrome (PreTSS)) and stress.

Table 4 shows the interventions and therapeutic approaches derived from the reviewed material. These can be broadly described in the following categories; individual level skills training primarily for resilience and coping; group approaches; therapeutic approaches derived from the main schools of psychotherapy; diagnostic-specific approaches; and changes required at the mental health system level. The development of mental skills, or helpful ways of interacting with the world, focusses on emotion regulation techniques, building personal resilience, the cultivation of a particular type of realistic, active hope, developing flexible coping skills, identifying and strengthening pro-environmental values as a protective factor, enhancing one's sense of self-efficacy, and learning self-care interventions to avoid burnout. Group approaches included not only group therapy in a clinical setting, but also joining in-person and online peer groups and community groups for both emotional support and to facilitate meaningful action towards mitigating climate change and ecological damage.

Therapeutic approaches which were mentioned explicitly included CBT techniques which directly address anxiety, stress and trauma, mindfulness and meditation-based techniques, psychodynamic interventions which focus on personal trauma, and ecotherapy or nature-based therapy. Authors also suggested that existing therapeutic interventions for the diagnostic categories of stress, trauma and grief be applied to the presentation of these symptoms as eco-anxiety. And finally, increasing training and awareness of eco-anxiety among clinicians was suggested, including knowledge of symptoms, the development of assessment tools, and the development of interventions to help. Also, increasing validation of this presentation within, not only the health care sector, but also the wider community, creating an emotion-positive environment where people can share and process their feelings about climate change and eco-related damage.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Table 1: Charted scoping review data from all 30 papers, arranged chronologically and by author.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
2020			
Clayton, S. (2020). Climate anxiety: Psychological responses to climate change.	Anxiety caused by perceptions of climate change, occurring even among people who have not directly experienced any impacts. Could impact almost everyone in the world who knows about climate change.	<ul style="list-style-type: none"> - Feelings of uncertainty - Lack of understanding. - A sense of worry and concern. - Anxiety symptoms that are a threat to mental health via cognitive emotional impairment and functional impairment. 	<p>Two levels of intervention synthesised from authors own research and reviewing material by other authors:</p> <ol style="list-style-type: none"> 1. Individual well-being: <ul style="list-style-type: none"> - Learning to manage emotional responses through focus on coping styles, preferably <i>problem-focused coping</i> and/or <i>meaning-focused coping</i>. - Validation of emotional response - Nature-based therapy 2. Mitigation of climate change toward societal well-being <ul style="list-style-type: none"> - This also contributes to individual well-being through increased social connectedness, resilience building, meaning making, encouraging proactive, anticipatory coping and increased efficacy.
Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety.	Future-orientated concern about climate change which impacts psychological functioning, even when an individual has not directly experienced a climate change related weather event.	<p>Symptoms measured by the scale:</p> <p><i>Cognitive-emotional impairment:</i></p> <ul style="list-style-type: none"> - Difficulty concentrating - Sleeping difficulties - Nightmares - Crying - Feeling overwhelmed - Isolating from other - Over-thinking <p><i>Functional impairment:</i></p> <ul style="list-style-type: none"> - Inability to have fun - Impaired performance with family, at work and the fulfilment of personal potential. <p>Broad range of negative emotions: worry, stress, fear, anger,</p>	<ul style="list-style-type: none"> - Therapists need to be attentive to how their clients may be affected by climate change. - Some therapists are using approaches such as: enhanced self-efficacy, finding sources of meaning, and reconnecting with nature. - Enhancing collective efficacy through joining support groups can build resilience and motivate engagement with the issue.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
		hopelessness, guilt, grief, uncontrollable crying, feeling of paralysis, feeling ‘sick’, frustration.	
Clayton, S. (2018). Mental health risk and resilience among climate scientists.	This paper specifically addresses the experience of climate scientists and conceptualizes their experience as: - Climate trauma - Pre-traumatic stress disorder	<ul style="list-style-type: none"> - Negative emotions - Fear and anxiety - Distress - Angry - Regretful - Hopeless 	Protective factors for climate scientists: <ul style="list-style-type: none"> - Sense of community - Working towards a shared goal – leading to a sense of empowerment and meaning. - Social support - Publicly affirming their shared goals and values
Cunsolo, A., Harper, S. L., Minor, K., Hayes, K., Williams, K. G., & Howard, C. (2020). Ecological grief and anxiety: the start of a healthy response to climate change?	Ecological anxiety is the experience of “apprehension and stress about anticipated threats to salient ecosystems.” (p.261)	Symptoms of: <ul style="list-style-type: none"> - emotional distress - anxiety - grief. 	Cunsolo, et al, 2020 proposes 6 steps to reduce emotional suffering associated with ecological change: <ol style="list-style-type: none"> 1) Increase training on the mental health impacts of climate change for health professionals. 2) Improve clinical assessment of, and support for, those who are experiencing severe symptoms and distress. For those who are coping, do not pathologize what is a reasonable response to a serious challenge and may instigate necessary mitigating actions. 3) In-person group therapy to support and share emotions, and joining online networks that support climate-related mental wellness (e.g., the Good Grief Network). 4) Symptoms might be alleviated through ‘social prescribing’ of active travel modes and spending time in nature, as well as activities that support and enhance environmental, physical, and mental health. Community-based activities support social connectedness whilst implementing initiatives that benefit mental health, i.e. planting more trees in urban spaces, increasing active commuting, and the use of clean energy. 5) Take a family focused approach to address distress in children and youth. Acknowledge the challenge, help parents gain insight into young peoples’ responses, and the importance of empathetic communication with children and

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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			youth. Validating their fear and disillusionment. Create hope with meaningful goal-directed activities. 6) Build the resilience of mental health systems by taking a health equity approach to resources.
Guyatt, R. (2020). Kierkegaard in the Anthropocene: Hope, Philosophy, and the Climate Crisis.	A sense of anxiety and helplessness which prevents people from engaging in constructive climate action.	None given.	Cultivation of a Kierkegaardian type of Christian hope (either as a Christian or non-Christian) which is a therapeutic practice sustaining one’s ability to pursue ‘ecological good at a time of potentially overwhelming ecological fragility’. The nature of this type of therapeutic hope is: 1) “this-worldly and active, yet rooted in...an eternal good”. 2) Constantly anticipates a good outcome rather than fears the worst, whilst acknowledging that this is a long ‘path’ not a ‘goal’, thereby avoiding the discouragement of climate actions appearing inconsequential in the face of the enormous challenge. 3) Hope for all beings – community minded. 4) Hope that is ‘cautious and attentive, kept in check and catalysed by its reciprocal relationship with fear’.
Kaplan, E. A. (2020). Is Climate-Related Pre-Traumatic Stress Syndrome a Real Condition?	“Climate-linked pre-traumatic stress condition” (p.99). Extreme anticipatory anxiety about the collapse of natural environments and the failure of related human systems – climate catastrophe. Not necessarily caused by having experienced anything similar – simply as “ghosting of the future” (p.85).	<ul style="list-style-type: none"> - Future-orientated cognitions similar to those seen in the past-orientated cognitions of PTSD. - Intense anxiety about future survival and infrastructure loss. - Sense of being lost - Fearful dreams - Dreading the future 	Kaplan refers to the work of others to draw two points which will be beneficial to help people suffering form eco-related distress: <ul style="list-style-type: none"> - Developing a perspective of radical hope, which is the ability to adapt after a catastrophe. - Increasing awareness amongst clinicians (Psychodynamic in this case) of this condition so that they can better support clients.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
<p>Mah, A. Y. J. Chapman, D. A. Markowitz, E. M. Lickel, B. (2020). Coping with climate change: Three insights for research, intervention, and communication to promote adaptive coping to climate change.</p>	<p>Climate change-induced stress. This distress occurs especially for people with a strong environmental identity, for whom even just learning about environmental degradation in another part of the world has become a long term, chronic stressor.</p>	<p>Stress and trauma symptoms (unspecified).</p>	<p>Mah et al, draw a number of conclusions from their literature review study:</p> <ul style="list-style-type: none"> - Clinicians will all need to develop tools that can deal effectively with both types of stressors presented by climate change (acute and chronic) before impacts are widespread. - Encourage <i>coping flexibility</i> rather than only one way of coping with stress. - Teach <i>proactive coping</i> - whereby people build competencies to mitigate impacts of anticipated stress. - Interventions to promote <i>adaptive coping</i> i.e. behaviours and cognitions that people use to successfully manage stress and maintain well-being. Can be developed prior to stress exposure (e.g., resilience building, risk mitigation). - Importantly interventions should match people’s usual coping styles to be effective. - Potential benefits from promoting emotion-focused coping for uncontrollable “global” aspects of the Climate change stress, while simultaneously encouraging problem focused responses for “local” impacts. - Interventions already developed to treat trauma and stress such as; mindfulness strategies, in which participants learn to recognize and acknowledge stressful feelings, and engage in exercises like meditation or breathing practice. - Psychological preparedness interventions; teaching people to expect and recognize emotions that occur when faced with climate related stressors, thereby regulating those emotions. - Cognitive behavioural therapies aimed at reducing anxiety. - Engage in mitigation behaviours as a way to empower people and to reduce anxiety. - Psychologists can facilitate collective action, by developing meaningful interventions to increase overall community resilience, and identify vulnerabilities within communities.
<p>Ray, S. J. (2020). Embracing Life in the Anthropocene, & Cultivate Climate Wisdom. In <i>A field guide to climate anxiety: How</i></p>	<p>Feelings of fear, helplessness and sadness regarding the “destruction of the earth and its species” (p.8)</p>	<p>Suicidal ideation PTSD PreTSS Despair Anger Hopelessness</p>	<p>Ray proposes a number of practical self-help approaches derived from her own experience and from others research.</p> <ul style="list-style-type: none"> - Address the emotions which arise in response to climate change and develop the skills of emotion-regulation. - Engage with climate justice, helping to improve people’s lives.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
<i>to keep your cool on a warming planet.</i>	which make it difficult to take long term action. Refers to various other sources for fuller conceptualisations of the many terms used to describe climate-related mental health issues.	Feelings of overwhelm	<ul style="list-style-type: none"> - Utilise existing therapeutic techniques which address grief and trauma, and help to build emotional intelligence. - Mindfulness techniques and an acceptance of the suffering nature of the world as outlined in Buddhist spiritual practice. - Taking a ‘beginner’s mind’ approach as outlined in Zen Buddhism. - Dismantle the myths that small actions and individual actions do not make enough of a difference. - Transform the narrative away from ‘doom and gloom’ to ‘stories of collective and societal transformation’. - Collaborate more across the left- and right-wing political spectrums, rather than trying to win political arguments. - Build collective and personal resilience by; <ul style="list-style-type: none"> - Reducing the unhelpful, destructive feelings of guilt and fear. - Cultivating desire for a better future together with a critical view of hope. - Practicing self-compassion. - Avoiding burnout.
Robinson, T. (2020). Reimagining Christian Hope(lessness) in the Anthropocene.	‘A crisis of hope.’ Distress/grief/stress triggered by awareness of the scope of the ecological crisis faced.	Grief Depression PTSD Loss of agency to respond meaningfully Helplessness Despair Loss of hope	Robinson proposes a new philosophical existential position as the starting point for addressing the paralysing despair and fear of eco-anxiety. A re-imagined type of hope which is more realistic about the challenge. Rather than hoping that the climate crisis will be reversed, Robinson proposes a two-step process of hope: 1) Embrace hopelessness – we have nothing to lose so simply take action without fear. Take action as a manifestation of the goodness/godliness in the world. 2) Re-situate God/the sacred <i>in nature</i> rather than above or outside it.
2019			
Freeling, B. S., & Preston, T. K. (2019). How can ecologists thrive during the global environmental crisis? Lessons from the ancient world.	Knowledge of environmental loss	- Grief and discouragement	Freeling and Preston suggest that we can learn from modern Stoicism practices to help develop a healthy response to ecological change, such as; <ul style="list-style-type: none"> - Focus on the things which are in your control. - Cooperation with the community – the individual has the most impact when working together with their community. - Intention takes precedence over outcome – even if the issue seems insurmountable, maintain a positive, beneficial intention and continue to work for good.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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Haseley, D. (2019). Climate change: Clinical considerations.	“...anxiety over climate change, a serious disquiet in its own right, gets confused with childhood traumatic anxiety, with its attendant feelings of helplessness, smallness, hopelessness, shame, isolation, and useless rage, then dysfunctional defenses and affects are more likely to come to the fore” (p.109)	<ul style="list-style-type: none"> - Extremely anxious feelings - Sublimated anxiety can manifest as denial, negation and disavowal of climate change. 	<p>Haseley suggests William Worden's (2008) four stages of grief can be utilised as a model for coping and taking action about climate change:</p> <ol style="list-style-type: none"> 1. Accepting the reality of the loss 2. Working through pain and grief 3) Adjusting to the new environment 4. Reinvesting emotional energy in a new life <ul style="list-style-type: none"> - Disentangling anticipatory anxieties about climate change from past, unresolved childhood traumas and anxieties. - “Projecting realistic survivable scenarios, working to make fears tolerable, and accessing personal agency in response to the crisis” (p.113). - Climate Psychology Alliance model of creating safe community spaces and workshops to discuss conscious and unconscious feelings about climate change and reduce isolation and shame.
Kemkes, R. J., & Akerman, S. (2019). Contending with the nature of climate change: Phenomenological interpretations from northern Wisconsin.	A “lived experience of uncertainty ... amid feelings of isolation” (p.6).	<ul style="list-style-type: none"> - Feelings of shame and guilt - Powerlessness - Despair - Fear - Sense of unease about the future 	<ul style="list-style-type: none"> - Kempkes subjects articulated in her research that what they needed was kind and compassionate support. - Kempkes suggested that generally, more public forums for discussion of feelings and emotions about climate change in order to facilitate healing, increase awareness and political action were needed.
Pihkala, P. (2019). Climate Anxiety.	Eco-anxiety is a wider phenomenon, encompassing climate anxiety, in which challenging emotions in response to the threats posed by environmental	<p>Severe symptoms</p> <ul style="list-style-type: none"> - serious insomnia - states of depression - clinically definable anxiety (Climate Anxiety Disorder) - difficulty maintaining functioning, especially when faced with news about climate 	<p>Pihkala (2019) reviews much literature and suggests a number of ways to support people suffering from eco-anxiety:</p> <ul style="list-style-type: none"> - Engage in mitigating action - Develop meaning focused coping skills, which combine action/problem-focused coping with emotion-focused coping skills. - Appreciate and encounter emotions particularly: Grief, Trauma, Fear, Powerlessness, Helplessness, Anger, Guilt, Shame, Inadequacy. - Join third sector initiatives such as the Good Grief Network. - Self-help

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
<p>Pihkala, P. (2018a). Eco-anxiety, tragedy, and hope: psychological and spiritual dimensions of climate change.</p> <p>Pihkala, P. (2018b). Death, the environment, and theology.</p>	<p>degradation are experienced to a high degree.</p> <p>Mental health impacts caused by awareness of macro-social factors.</p> <p>Death anxiety or existential anxiety</p>	<p>change, its consequences and threat scenarios</p> <ul style="list-style-type: none"> - compulsive behaviour, have been called ‘climate anorexia’ or ‘climate orthorexia’ - at its most severe, self-destructive behaviours, for example, substance abuse and self-harming. <p>Mild symptoms</p> <ul style="list-style-type: none"> - occasional insomnia - sadness, restlessness (milder symptoms of anxiety) - occasional decreased levels of functioning, temporary paralysis, for example, when making moral decisions - effects on mood - “milder symptomatic behaviour e.g. single action bias or mild dissociation (e.g. a person experiences a heightened need to recycle efficiently, expecting climate issues to become better as a consequence of their actions)” (p.8). 	<ul style="list-style-type: none"> - Group activities - Peer support - Pihkala (2018a) describes the practice of radical hope / authentic hope / tragic hope, the interplay between hope and despair, which recognizes the value of difficult emotions and that these are necessary stages to move through towards a realistic hope. - Pihkala (2018b) describes utilising a ‘binocular vision’ or the spiritual skill of “seeing two levels” (p.292) to simultaneously acknowledge the good and bad things happening with regard to climate change, so as to not become overwhelmed and disheartened by the challenge. - Apply theories of grief and loss, such as William Worden's (2008), to help people process their direct and indirect experiences of environmental degradation and climate change. - Education and peer groups in which to explore emotions and feelings, such as those offered by Joanna Macy (Macy & Brown, 2014). - Encourage the practice of death meditations such as those led by Macy and Brown (2014). - Encourage time spent in nature. - Utilise the rituals of spiritual practices, including Christianity, to help process loss, such as holding rituals for dead animals – facilitating “environmentally sensitive death education” (p.292). - Engagement with the arts to help communities encounter their eco-anxiety and eco-grief through art.
<p>Pihkala, P. (2019). The Cost of Bearing Witness to the Environmental Crisis: Vicarious Traumatization and Dealing with Secondary Traumatic Stress among</p>	<p>Vicarious Traumatization and/or Secondary Traumatic Stress, experienced by those who are actively engaged in environmental</p>	<ul style="list-style-type: none"> - Psychic numbing - Compassion fatigue - Burnout through over-working - Greif - Isolation/alienation from others - ‘Constant worry, sadness and anxiety’ - Helplessness and hopelessness 	<ul style="list-style-type: none"> - Developing an emotion-positive culture within workplaces, schools, society, to enable people to communicate and process their emotions about climate change. - Increase awareness of the factors that lead to increased vulnerability to trauma i.e., personal empathy levels, past traumatic experiences, unresolved traumatic conflicts harbored, exposure to the trauma of others, the degree to which one utilises maladaptive coping strategies. - Self-care strategies such as those noted in the 2017 APA report:

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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Environmental Researchers.	research, activism and is also extrapolated to the wider environmentally concerned public. Pihkala reframes the mental health effects in terms of trauma theory rather than anxiety.	<ul style="list-style-type: none"> - Diminished sense of trust in media, politicians. - Felling unsafe - Emotional freezing - Maladaptive coping strategies 	<p>(1) Build belief in one’s own resilience. (2) Foster optimism. (3) Cultivate active coping and self-regulation skills. (4) Maintain practices that help to provide a sense of meaning. (5) Promote connectedness to family, place, culture, and community. (Clayton et al. 2017, p.7).</p> <p>- Foster opportunities for post traumatic growth through getting involved with organisations/network which seek to help others through sharing knowledge and experience e.g. the Good Grief Network (http://www.goodgriefgroup.org/) and the Radical Joy network (Johnson 2018, 2017; https://www.radicaljoyforhardtimes.org/).</p>
Powers, M. C. F., & Engstrom, S. (2019, Dec 20). Radical Self-Care for Social Workers in the Global Climate Crisis.	Stressors such as “...vicarious trauma, personal eco-grief, and climate anxiety which occur when we experience the negative impacts the climate crisis is having on our planet and the people and places we care about so deeply”. (p.31).	<ul style="list-style-type: none"> - Stress - Burnout - Compassion fatigue - PTSD - Feelings of hopelessness or inefficacy 	<p>Powers and Engstrom (2019) suggest a number of self-care practices which can benefit everyone, but especially social workers at the front line of the ecological crisis:</p> <ul style="list-style-type: none"> - Radical self-care which combines elements of traditional self-care such as boundary setting and respite, with activism for change. - Ecotherapy and eco-therapeutic self-care such as exercising in nature. - Sustainable, Life-Enhancing Pace Model – an ecologically conscious, radical self-care practice (Daley, 2003; Powers, 2017) situated within the degrowth approach (see https:// degrowth.org/).
Temte, J. L. H., John R; Kushner, Kenneth P;. (2019). Correlation Between Climate Change and Dysphoria in Primary Care.	Dysphoria – ‘a mixed state of emotional distress.’	- “...inner tension, irritability, aggression, and/or hostility” (p.71).	This study found a positive correlation between concern regarding climate change and the presentation of dysphoria. The study authors suggest that more assessment tools to measure and assess climate related dysphoria as needed.
Usher, K., Durkin, J., & Bhullar, N. (2019, Dec). Eco-anxiety: How thinking about climate	“Eco-anxiety is a specific form of anxiety relating to stress or distress	<ul style="list-style-type: none"> - Panic attacks - Insomnia 	<p>Usher et al. (2019) suggest that mental health professionals need to:</p> <ul style="list-style-type: none"> - Work with individuals, families, and communities. - Provide support for developing active coping skills and self-efficacy.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Author, date, title	Conceptualisation of eco-anxiety	Presentation / symptoms of eco-anxiety	Therapeutic approaches proposed and/or applied as interventions for eco-anxiety – may be authors own practice or repeated from other research.
change-related environmental decline is affecting our mental health.	caused by environmental changes and our knowledge of them” (p.1233).	<ul style="list-style-type: none"> - Obsessive thinking - Appetite changes caused by environmental concerns - Eco-paralysis 	<ul style="list-style-type: none"> - Promote “hope and social connectedness, as climate change adaptation strategies, to combat psychological distress” (p.1234). - Build community resilience - Share knowledge on the relationship between environmental degradation and mental health through publishing research and providing policy briefings to local and national government.
Woodbury, Z. (2019). Climate Trauma: Toward a New Taxonomy of Trauma.	Reframes the whole climate crisis as climate trauma – a massive global trauma causing personal and cultural traumatic responses.	<ul style="list-style-type: none"> - Disassociation - Overwhelm - Reduced ability to cope - Feeling powerless - “...intense fear, helplessness, loss of control, and threat of annihilation” (p.2). 	Woodbury describes a high-level action which can help eco-anxiety: <ul style="list-style-type: none"> - Take collective action to mitigate climate change. - Use consumer power to support regenerative agriculture and engage in targeted boycotts. - Create “...safe public spaces to affirm climate truths, to share ... grief over what is being lost, and to promote personal respond-ability” (p.6).
2018			
Doherty, T. J. (2018). Individual impacts and resilience.	Vicarious adverse effects of climate change which impact a person’s well-being and ability to flourish, ‘enjoy positive emotions and to trust in the future’.	<ul style="list-style-type: none"> - Worry - Anxiety - Despair - Process of ‘bearing witness’ to ‘distant suffering’ can cause an ethical or moral dilemma. - ‘Vicarious posttraumatic symptoms’ due to repeated media images of traumatic ecological events. - Compromised flourishing and well-being, ability to cope with normal life stressors, ability to realise one’s potential. 	Doherty (2018) describes a number of therapeutic actions in multiple areas, including: <ul style="list-style-type: none"> - Realistic goal setting - Adopt positive attitudes and habits of mind - Use positive imagery and self restoration (often in natural environments) to build capacity for engagement. - Accept and validate the difficult, despair-inducing nature of the problem balanced with a “commitment to hope, creativity and personal renewal” (p.252). - Develop and connect with one’s environmental identity personal environmental core values. - Commit to long-term action - Make responsible life choices - Promote “political and structural changes in society” (p.245). - Hold a systems perspective in mind to understand the problem but also the solution – small individual actions can ‘positively contribute to the situation’. - Climate mitigation actions also help mental health. - Cognitive behavioural therapies can help people to realistically appraise and assess environmental threats in their life situations, and commit to actions that address their concerns and are ‘within their scope of influence’.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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			<ul style="list-style-type: none"> - Existential-humanistic or mindfulness-based therapies can help people to be present with the difficulty of the situation whilst ‘holding space’ for their emotions. - Nature-based counselling and ecotherapy is good for individuals with strong environmental values and connection with place. - Any approach that promotes spending time doing nature-based, activities can reduce physiological stress, and facilitate a break from media messaging.
<p>Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018). The Psychological Effects of Climate Change on Children.</p>	<p>Vicarious mental health impacts due to climate change which act as a stressor on children even if they are not experiencing direct impacts.</p>	<ul style="list-style-type: none"> - Worry - Fear - Anxiety about the future - Sadness - Anger - Belief that the world may end during their lifetime. 	<ul style="list-style-type: none"> - Meaning-focused coping strategies as outlined in the research of Ojala (2012) which has the following characteristics: - Draw on ones ‘beliefs, values, and existential goals to evoke positive feelings’ in order to bear the worry of climate change threats. - Does not minimize or deny the reality of climate change. - Positive reappraisal/cognitive restructuring - Noting that there is much greater awareness of the problem now than in the past. - Development of trust in scientists and environmental organizations working to find climate solutions.
<p>Hayes, K., Blashki, G., Wiseman, J., Burke, S., & Reifels, L. (2018). Climate change and mental health: risks, impacts and priority actions.</p> <p>Hayes, K., & Poland, B. (2018). Addressing Mental Health in a Changing Climate: Incorporating Mental Health Indicators into</p>	<p>Overarching awareness of the changing climate leads to despair and hopelessness as actions to mitigate the crisis appear insignificant compared to the scale of the problem.</p> <p>“Climate Change writ large (i.e., awareness of climate change threats to human and planetary health</p>	<ul style="list-style-type: none"> - Long-term emotional distress - Despair - Hopelessness - Feelings of loss - Helplessness - Frustration (Moser, 2013) - Anxiety - Worry - Stress - Fear 	<ul style="list-style-type: none"> - Communicating about climate change and mental health in a manner that makes it relevant for people. - Helping people develop coping strategies which enable them to deal with their difficult thoughts and feelings about climate change rather than avoid them. - Active hope process (Macy and Brown, 2014) <ul style="list-style-type: none"> 1) Acknowledge reality of the problem 2) Intentions to address it are set 3) Take engaged action - Individual and group-based therapy, including CBT, cognitive restructuring, stress inoculation training. - Crisis counselling - Engaging with art and spirituality - Experiencing (such as forest bathing) and actively preserving nature. - Improved monitoring and assessment of mental health impacts caused by climate change.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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Climate Change and Health Vulnerability and Adaptation.	and survival)” (p.12).		
Helm, S. V., Pollitt, A., Barnett, M. A., Curran, M. A., & Craig, Z. R. (2018). Differentiating environmental concern in the context of psychological adaption to climate change.	Perceived ecological stress in response to the chronic environmental stressor of climate change, and consequent maladaptive ecological coping strategies.	<ul style="list-style-type: none"> - Stress - Anxiety - Depression - Fear - Numb - Sadness - Helpless and hopeless 	Helm et al. (2018) found that: <ul style="list-style-type: none"> - Biospheric concerns (caring for the whole living world) increase ecological stress but also increases ecological coping which mitigates the maladaptive response. - Improved understanding of psychological adaptation to facilitate a pro-environmental response rather than a maladaptive response.
Manning, C. (2018). Threats to mental health and wellbeing associated with climate change.	Worry and loss of control as an indirect mental health impact of physical climate related changes.	<ul style="list-style-type: none"> - Frustration - Powerlessness - Fear - Anger - Exhaustion 	<ul style="list-style-type: none"> - Build resilience to climate change both from the physical and mental health perspective – these mutually beneficial. - Strong community cohesion which provides the platform for individuals to connect improves well-being. - Interactions with nature - Increased social equity and poverty reduction.
2017			
Clayton, S., Manning, C. M, Krygsman, K, Speiser, M. (2017). <i>Mental Health and Our Changing Climate: Impacts, Implications, and Guidance.</i>	Observing the slow and ostensibly irreversible impacts of climate change unfold, and ‘worrying about the future for oneself, children, and later generations’.	<ul style="list-style-type: none"> - Feelings of loss - Helplessness - Frustration due feeling unable to make a difference in stopping climate change (Moser, 2013). - Guilt - Fear - Fatalism 	<p>“Clinicians can help individuals to thrive in the face of climate change by identifying which specific issues activate their unique vulnerabilities or personal worries and developing a specific plan or activity to give them a sense of control about how they respond” (Thomas Doherty in Clayton et al., 2017, p. 28).</p> <ul style="list-style-type: none"> - BRACE community response model - Community cohesion - Building resilience through the following actions: <ol style="list-style-type: none"> 1. Build belief in one’s own resilience. 2. Foster optimism. 3. Cultivate active coping and self-regulation. 4. Find a source of personal meaning.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

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			5. Boost personal preparedness. 6. Support social networks. 7. Encourage connection to parents, family, and other role models. 8. Uphold connection to place. 9. Maintain connections to one’s culture.’
Davenport, L., & Susteren, L. v. (2017). Long-term and complex clinical themes. In <i>Emotional Resiliency in the Era of Climate Change: A Clinicians Guide</i> .	Ambient stress about climate related issues produces future orientated ‘What if...’ scenario thinking – ‘living with the on-going threat of climate disruption. Closely related to climate related depression which may arise from the ‘sheer magnitude’ of the problem or from unresolved climate grief. - Vicarious trauma - survivor guilt, and recovery fatigue.	- Anxiety and depression symptoms. - “Isolating, shunning support, or feeling disconnected from others” (p.108). “When the climate grief experience fails to resolve, and there is a prolonged disruption to the client’s daily life” (p.108). - Noticing small changes in one’s environment which fuel anxiety - Can lead to denial if person tunes out ambient stress as a way to cope.	Davenport and Susteren (2017) suggest that clinicians need to be attuned to eco-mental health symptoms in their clients, and help them to train in three characteristics of resilience: “A belief that they can influence life events; a tendency to find meaningful purpose in life’s turmoil; and a conviction that they can learn from both positive and negative experiences” (p.110). They also suggest that ecotherapy is beneficial, tapping into the healing power of nature. For eco-anxiety experienced as vicarious Trauma: - Normalise the experience and encourage clients to be gentle with themselves. Then encourage a gradual individuation process that separates them from their merged identification with the traumatic experience. - Help clients to set limits on the time they spend on traumatic news, increase “self-care practices like breath work, exercise, time in nature, and mindfulness to reduce rumination” (p.113). Increase life-enhancing activities until balance is achieved. Psychoeducation regarding the distinction between empathy and compassion. - Guided imagery (meditation) to evoke a peaceful, relaxing place which clients can use to help them relax and reduce stress. - Practice of forgiveness for self and others: - Guided forgiveness meditation

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Table 2: Conceptualisation of eco-anxiety derived using content analysis inductive coding and abstraction process.

Conceptualisation of eco-anxiety			
References	Sub-concept	Concept	Main concept
Clayton, (2020)	Anxiety associated with perceptions about climate change.	Awareness alone can lead to eco-anxiety	Eco-anxiety presents even in people who have no direct experiences of the ecological/climate crisis.
Pihkala, P. (2018a)	Mental health impacts caused by awareness of macro-social factors.		
Freeling, et al. (2019)	Knowledge of environmental loss		
Clayton, S. (2017; 2020) Kaplan, E. A. (2020) Robinson, T. (2020) Usher, K. et al. (2019) Doherty, T. J. (2018) Burke, et al. (2018) Hayes, et al. (2018aPriority; 2018bIndicators) Manning, C. (2018)	Not necessarily caused through direct experience.	Not necessarily caused through direct experience.	
Kemkes, et al. (2019)	Lived experience of uncertainty	Concern about an uncertain future	Crisis of hope for the future
Clayton, et al. (2020)	Future-orientated concern about climate change		
Clayton, S. et al. (2017)	‘worrying about the future for oneself, children, and later generations’		
Doherty, T. J. (2018)	Diminished trust in the future		
Robinson, T. (2020)	Crisis of hope		
Manning, C. (2018)	Worry		
Cunsolo, et al. (2020)	Apprehension	Worry	
Doherty, T. J. (2018)	Positive psychology framework Vicarious impacts resulting in diminished well-being and flourishing and enjoyment of positive emotions.	Impacts ability to function and well-being	Loss of quality of life
Clayton, et al. (2020)	Impacts psychological functioning		
Robinson, T. (2020) Usher, K. et al. (2019)	Distress		
Haseley, D. (2019) Kemkes, et al. (2019)	Isolation		
Temte, Jet al. (2019) Davenport, L. et al.(2017).	Dysphoria – ‘a mixed state of emotional distress (including depression).		
Pihkala, P. (2018a; 2019a).	Challenging emotions in response to environmental degradation - experienced to a high degree.	Complex range of negative emotions	

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Conceptualisation of eco-anxiety			
References	Sub-concept	Concept	Main concept
Clayton, et al. (2020)	Manifests in a broad range of negative emotions		
Clayton, S. (2018) Kaplan, E. A. (2020) Pihkala, P.(2019bCOST) Powers, et al. (2019) Woodbury, Z. (2019)	- Pre-traumatic stress - Global Climate trauma - Cultural traumatic responses	Ecological crisis is traumatic on various levels	Conceptualisation of eco-anxiety within trauma framework
Haseley, D. (2019)	Predisposing factor = Personal childhood trauma becoming confused with anxiety about CC resulting in dysfunctional defenses (denial) and affects.	Personal trauma affects response to ecological crisis.	
Mah, et al. (2020) Pihkala, P. (2019bCOST).	Predisposing factor = strong environmental identity / connectedness to nature.	Environmental identity is a risk factor to be more deeply affected by constant exposure to the stress of the ecological crisis.	Conceptualisation of eco-anxiety within stress framework
Cunsolo, et al. (2020) Mah, et al. (2020) Robinson, T. (2020) Powers, et al. (2019) Usher, K. et al. (2019) Burke, et al. (2018) Helm, et al. (2018) Davenport, L.et al.(2017).	Stress caused by long term, chronic stressor of learning about environmental degradation.	Ecological crisis is a chronic stressor	
Ray, S. J. (2020)	Fear, helplessness and sadness making it difficult to take action	Eco-anxiety can lead to inaction	Paralysed by scope of crisis and unable to take action
Hayes, et al. (2018aPriority; 2018bIndicators). Davenport, L. et al. (2017)	Actions to mitigate the crisis appear insignificant compared to the scale of the problem.		
Guyatt, R. (2020)	Helplessness that prevents positive climate action		
Guyatt, R. (2020)	Anxiety that prevents positive climate action		
Helm, et al. (2018)	Maladaptive ecological coping strategies.	Eco-anxiety manifests in maladaptive coping strategies	

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Conceptualisation of eco-anxiety			
References	Sub-concept	Concept	Main concept
Kaplan, E. A. (2020) Robinson, T. (2020) Hayes, et al. (2018aPriority; 2018bIndicators).	Extreme anticipatory anxiety regarding scope of climate catastrophe = collapse of natural environments and related human systems.	Catastrophising	
Cunsolo, et al. (2020)	Anticipated threats to salient ecosystems		
Ray, S. J. (2020)	Regarding destruction of the earth and its species		
Manning, C. (2018)	Loss of control		
Powers, et al. (2019)	Personal eco-grief	Grief	Conceptualisation as grief
Robinson, T. (2020) Davenport, L. et al. (2017).	Grief		
Pihkala, P. (2018bDeath).	Death anxiety	Confronted by mortality	Existential crisis
Pihkala, P. 2018bDeath).	Existential anxiety		

Table 3: Symptom presentation of eco-anxiety derived using content analysis inductive coding and abstraction process.

Symptoms of eco-anxiety			
Sub-concept	Concept		Main concept
	Cognitive-emotional impairment	Functional impairment	Diagnostic category
Difficulty concentrating Over-thinking Obsessive thinking	Rumination		Anxiety
Inability to have fun Impaired performance with family and at work Impaired ability to fulfil potential		Reduced flourishing and well-being	
Uncertainty Concern	Worry		
Restlessness	Agitation		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Symptoms of eco-anxiety			
Sub-concept	Concept		Main concept
	Cognitive-emotional impairment	Functional impairment	Diagnostic category
Inner tension			Depression
Appetite changes		Appetite loss	
Shame Guilt Denial Regret	Self-blame		
Grief Uncontrollable crying	Sadness		
Irritability	Anger		
Loss of hope Sense of being lost Discouragement	Hopelessness		
Nightmares	Insomnia		
Self-destructive behaviours Substance abuse Self-harm		Maladaptive coping	
Feeling overwhelmed Feeling sick Inability to cope	Overwhelm		
Feeling unsafe Panic attacks Distress Disturbing thoughts about the future Threat of annihilation Dreading the future Reduced trust in politicians, media Lack of understanding	Fear		
Orthorexia		Compulsive behaviour	PTSD PreTSS

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Symptoms of eco-anxiety			
Sub-concept	Concept		Main concept
	Cognitive-emotional impairment	Functional impairment	Diagnostic category
Single-action bias (e.g. Recycling)			Stress
Emotional freezing Impaired decision-making Psychic numbing Compassion fatigue Burnout Disassociation Loss of agency Inability to take action	Eco-induced paralysis		

Table 4: Therapeutic interventions for eco-anxiety derived using content analysis, inductive coding and abstraction process.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Ray, S. J. (2020)	Emotion regulation Build emotional intelligence and resilience	Emotion regulation techniques	
Mah, A. Y. J. et al. (2020). Pihkala, 2018	Psychological preparedness interventions. Learn to expect and recognize emotions that occur with CC stressors, and train in emotion regulation. Appreciate and encounter emotions particularly: Greif, Trauma, Fear, Powerlessness, Helplessness, Anger, Guilt, Shame, Inadequacy.		
Clayton, S. et al. (2017) Pihkala, P. (2019)	Building resilience through the following actions: '1. Build belief in one's own resilience. 2. Foster optimism. 3. Cultivate active coping and self-regulation. 4. Find a source of personal meaning. 5. Boost personal preparedness. 6. Support social networks.		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
	7. Encourage connection to parents, family, and other role models. 8. Uphold connection to place. 9. Maintain connections to one's culture.'	Resilience training	Individual level skills training – resilience and coping
Davenport, et al. (2017) Ray, S. J. (2020)	Train in resilience: “A belief that they can influence life events; a tendency to find meaningful purpose in life's turmoil; and a conviction that they can learn from both positive and negative experiences” (Ripley 2009, p.91)		
Guyatt, R. (2020) Robinson, T. (2020) Pihkala, 2018a; 2019 Ray, S. J. (2020) Doherty, T. J. (2018)	Cultivate a particular kind of therapeutic, sustaining HOPE: Kierkegaardian in nature i.e. this-worldly and active, yet rooted in...an eternal good Anticipates a good outcome rather than fears the worst Acknowledges this is a long 'path' not a 'goal', thereby avoids discouragement Community-minded Is cautious and attentive, balanced and catalysed by reciprocal relationship with fear	Cultivate Active hope	
Robinson, T. (2020)	Situate god in nature rather than above or outside it.		
Pihkala, 2018a	'a binocular vision' or the spiritual skill of 'seeing two levels'		
Kaplan, E. A. (2020)	Cultivate radical hope – the ability to adapt after a catastrophe.		
Hayes, K. et al. (2018a) Usher, K. et al. (2019)	- Active hope process (Macy et al, 2014) 1) Acknowledge reality of the problem 2) Intentions to address it are set 3) Take engaged action		
Mah, A. Y. J. et al. (2020) Clayton, S. (2020a) Pihkala, P. (2019) Usher, K. et al. (2019) Hayes, K. et al. (2018a)	Coping skills training (to cope with both acute and chronic stressors) Problem focused coping (for local impacts) Meaning focused coping Proactive coping Coping flexibility Adaptive coping (resilience building) Benefits of emotion-focused coping are best for 'uncontrollable' global aspects of CC stress Interventions which match persons existing coping style is beneficial initially.	Coping skills training	

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Doherty, T. J. (2018)	Develop and connect with one's environmental identity personal environmental core values.	Values work – identify and strengthen pro-environmental values as a protective factor	
Burke, S. E. L. et al. (2018)	Draw on ones 'beliefs, values, and existential goals to evoke positive feelings' in order to bear the worry of climate change threats.		
Clayton, S. et al. (2020b)	Find sources of meaning		
Helm, S. V. et al. (2018)	Utilise understanding of adaptation and biospheric (caring for the whole living world) values to facilitate pro-environmental behaviour which is protective against maladaptive coping strategies.		
Clayton, S. (2020a) Pihkala, P. (2019) Powers, M. C. F et al. (2019) Doherty, T. J. (2018)	Individual actions toward CC mitigating actions – Increases self-efficacy.	Enhance self-efficacy	
Clayton, S. et al. (2020b)	Enhance self-efficacy		
Ray, S. J. (2020) Doherty, T. J. (2018)	Avoid discouragement by changing the mistaken belief that small/individual actions make no difference.		
Ray, S. J. (2020)	Self-compassion		
Freeling, B. S., et al. (2019)	Modern Stoicism practices Focus on what is in your control Cooperation with the community Intention takes precedence over outcome (relates to above hope concept)		
Ray, S. J. (2020)	Interventions to avoid burnout	Self-care interventions to avoid burnout	
Davenport, et al. (2017)	Psychoeducation regarding the distinction between empathy and compassion.		
Powers, M. C. F et al. (2019)	Sustainable, Life-Enhancing Pace Model – an ecologically conscious, radical self-care practice (Daley, 2003; Powers, 2017) situated within the degrowth approach (see https:// degrowth.org/).		
Clayton, S. (2018) Pihkala (2019; 2018) Manning, C. (2018)	Join a (support) group to engage in CC mitigating actions – Benefits: Increases social connectedness/sense of community/social support builds resilience,		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Cunsolo, A. et al. (2020) Mah, A. Y. J. et al. (2020) Haseley, D. (2019) Kemkes, R. J et al. (2019) Usher, K. et al. (2019) Woodbury, Z. (2019) Burke, S. E. L. et al. (2018)	meaning-making / working towards shared goal self and collective efficacy, proactive anticipatory coping skills Public affirmation of shared goals and values Climate justice Facilitates opportunities for post-traumatic growth	Peer group support and taking collective/community level mitigating action	Group approaches
Clayton, S. (2018) Pihkala, 2019 Woodbury, Z. (2019)	Join online networks to: support climate-related mental wellness discuss conscious and unconscious feelings about climate change and reduce isolation and shame. e.g., the Good Grief Network, Climate Psychology Alliance, Radical joy network (www.radicaljoyforhardtimes.org).		
Ray, S. J. (2020)	Transform the narrative from ‘doom and gloom’ to ‘stories of collective and societal transformation.		
Ray, S. J. (2020)	Collaborate more across the left- and right-wing political spectrums		
Cunsolo, A. et al. (2020)	Group therapy – support and share emotions		
Cunsolo, A. et al. (2020) Usher, K. et al. (2019)	Family focused approach to address distress in children and youth. Acknowledge the challenge, help parents gain insight into young peoples’ responses empathetic communication with children and youth. Validating their fear and disillusionment. Create hope with ‘meaningful goal-directed activities’	Group therapy	
Mah, A. Y. J. et al. (2020)	Existing interventions used to treat anxiety CBT	Cognitive Behavioural Therapy Techniques that address anxiety, stress and trauma	Therapeutic approaches
Doherty, T. J. (2018)	Adopt positive attitudes and habits of mind		
Doherty, T. J. (2018)	Realistic goal setting		
Doherty, T. J. (2018)	Cognitive behavioural therapies can help people to realistically appraise and assess environmental threats in their life situations, and commit to actions that address their concerns and are ‘within their scope of influence’.		
Burke, S. E. L. et al. (2018)	- Positive reappraisal/cognitive restructuring		
Burke, S. E. L. et al. (2018)	- Noting that there is much greater awareness of the problem now than in the past.		
Burke, S. E. L. et al. (2018)	- Development of trust in scientists and environmental organizations working to find climate solutions.		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Mah, A. Y. J. et al. (2020) Ray, S. J. (2020) Doherty, T. J. (2018)	Mindfulness learn to recognize and acknowledge stressful feelings, meditation or breathing practice. - Existential-humanistic or mindfulness-based therapies can help people to be present with the difficulty of the situation whilst 'holding space' for their emotions.	Mindfulness and meditation techniques	
Ray, S. J. (2020) Pihkala, P. (2019) Doherty, T. J. (2018)	Buddhist view Acceptance practice Recognise suffering nature of world Beginners mind (Zen Buddhism) Death meditation (Macy et al. 2014)		
Davenport, et al. (2017) Doherty, T. J. (2018)	Guided imagery (meditation) Peaceful Place: relax and reduce stress. Guided forgiveness meditation		
Haseley, D. (2019)	Psychodynamic interventions: Disentangling anticipatory anxieties about climate change from past, unresolved childhood traumas and anxieties. Projecting realistic survivable scenarios, make fears tolerable, access personal agency in response to the crisis.	Psychodynamic interventions	
Clayton, S. (2020a) Davenport, et al. (2017) Manning, C. (2018) Cunsolo, A. et al. (2020) Pihkala, P. (2019;2018b) Powers, M. C. F et al. (2019) Doherty, T. J. (2018) Hayes, K. et al. (2018a)	Nature-based eco-therapy reconnecting with nature reduce physiological stress facilitate a break from media messaging.	Ecotherapy	
Ray, S. J. (2020) Pihkala, P. (2019)	Existing interventions to treat/support grief - Utilise the rituals of spiritual practices, to help process loss, such as holding rituals for dead animals – facilitating 'environmentally sensitive death education'.	Existing interventions to support grief	
Haseley, D. (2019) Pihkala, P. (2018b)	William Worden's (2008) four stages of grief 1. Accepting the reality of the loss 2. Working through pain and grief 3) Adjusting to the new environment 4. Reinvesting emotional energy in a new life		
Mah, A. Y. J. et al. (2020)	Existing interventions used to treat trauma		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Ray, S. J. (2020) Woodbury, Z. (2019)		Existing interventions used to treat trauma	Diagnosis-specific approaches
Ray, S. J. (2020)	Interventions to reduce guilt and fear		
Pihkala, P. (2019).	Increase awareness of the factors that lead to increased vulnerability to trauma		
Davenport, et al. (2017)	Vicarious Trauma processing work: Normalize experience, encourage clients to be gentle with themselves. Encourage a gradual individuation process from their merged identification with the traumatic experience.		
Davenport, et al. (2017)	Limit time on traumatic news Increase life-enhancing activities		
Mah, A. Y. J. et al. (2020)	Existing interventions used to treat stress	Existing interventions for stress	
Hayes, K. et al. (2018a)	Individual and group-based therapy, including CBT, cognitive restructuring, stress inoculation training.		
Hayes, K. et al. (2018a)	Crisis counselling		
Clayton, S. et al. (2017)	Clinicians take a personalised approach to each individual's unique vulnerabilities and develop a specific plan	Clinician training and professional development in eco-related mental health impacts, symptoms, assessment and interventions	Mental health system level changes
Cunsolo, A. et al. (2020) Ray, S. J. (2020)	Health equity approach to build resilience of mental health system and address climate justice.		
Cunsolo, A. et al. (2020)	Improve clinical assessment tools for eco-related mental health issues		
Cunsolo, A. et al. (2020)	Don't pathologize those who are coping		
Clayton, S. et al. (2020b) Davenport, et al. (2017)	Clinicians – Increased awareness and training about mental health impacts of CC, and early development of tools		

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Therapeutic interventions for eco-anxiety			
Reference	Sub-Concept	Concept	Main Concept
Cunsolo, A. et al. (2020) Kaplan, E. A. (2020) Mah, A. Y. J. et al. (2020) Temte, J. L. H. et al. (2019) Hayes, K. et al. (2018a)			
Pihkala, P. (2019)	- Developing an emotion-positive culture within workplaces, schools, society, to enable people to communicate and process their emotions about climate change.	Increase validation and communication of eco-related emotions in the community and in therapy.	
Kemkes, R. J et al. (2019)	Interventions which provide kind and compassionate support		
Pihkala, P. (2018a) Hayes, K. et al. (2018a)	- Engagement with the arts to help communities encounter their eco-anxiety and eco-grief through art.		
Clayton, S. (2020a) Doherty, T. J. (2018) Burke, S. E. L. et al. (2018)	Validation of difficulty of challenge and the accompanying emotions in society and in the therapy room – not minimising.		

4. Discussion

The aim of this scoping review was to map a selection of the academic literature on eco-anxiety, in order to make progress towards a clearer clinical understanding of this construct. Recent academic literature from 2017 – mid 2020 was analysed for the clinical conceptualisation, presentation of symptoms, and description of therapeutic interventions suggested for eco-anxiety.

4.1 Conceptualisation

The review of 30 papers, generated a clinical conceptualisation, comprised of eight dimensions; 1) maladaptive eco-anxiety presents even in people with no direct negative experience of ecological crisis, 2) a crisis of hope regarding the future is central to the presentation, 3) it can result in impaired flourishing and a reduction in quality of life, which can lead to 4) the inability to take meaningful, positive action towards mitigating the causes of ecological degradation. 5) Eco-anxiety can be described as an existential crisis, due to its all-encompassing nature, and can present with facets of 6) trauma, 7) stress or 8) grief. This conceptualisation summarises the facets of the eco-anxiety construct found in the review, and each of these will be now be discussed in more detail.

4.1.1 *Maladaptive eco-anxiety presents even with no direct experience of ecological crisis*

A key feature of eco-anxiety, as described by almost all authors, was that it occurs regardless of direct experience of an acute, sub-acute or chronic ecologically related event. The over-arching awareness, knowledge, or perception of the ecological crisis alone was enough to precipitate symptoms (Clayton, 2020; Clayton & Karazsia, 2020; Freeling & Preston, 2019; Pihkala, 2018b). This finding supports the importance of learning more about how the vicarious effects of ecological change are impacting mental health. As Davenport and Susteren (2017) observe, noticing small changes creates a vicarious experience of the ecological crisis and signals the escalating crisis worldwide. Combine these with the knowledge of predicted degradation timelines (IPCC, 2019), and it is easy to see how a sense of imminent threat could present and become problematic. People living in relatively un-affected countries, such as NZ, are witnessing signs of ecological change, such as increased droughts, polluted waterways, over-fishing, and planning for imminent sea level rise, despite the still relatively low overt impact in this country. This is starting to generate an increase in concern regarding ecological change, as evidenced by the large momentum forming around the Student Strike 4 Climate campaign in New Zealand (Thomas et al., 2019), and the environmental concerns of young people, recently highlighted in the Youth19 Rangatahi Smart Survey (Fleming et al., 2020), conducted by the University of Auckland and Wellington youth research group. People

with deeper knowledge of the issues, and a stronger connection to nature were noted, by authors in the present review, as predisposed to being most at risk (Freeling & Preston, 2019).

Much of the research into indigenous experiences was excluded from this review, as most of it deals with direct and indirect mental health impacts of ecological degradation. However, the research conducted by Kemkes and Akerman (2019), was included, and it provided an example of the wholistic thinking of wellness reflected in most indigenous models of health, including NZ Māori, described in the introduction. Kemkes and Akerman (2019), observed that indigenous American Indian people would automatically enquire after the health of hunting and fishing grounds as part of an individual's health assessment process. When the environment is viewed as the foundation of all life and well-being, and is critical to one's identity, even just the knowledge that the environment is in danger will be deeply upsetting. Whilst this holistic view of health is accepted as being central to many indigenous peoples worldwide, the component of vicarious impact, found in the conceptualisation through content analysis, suggests that it is perhaps common to all people, regardless of ethnicity. The knowledge that the environment is being damaged is intolerable, precipitating mental pain, manifesting in the symptoms of eco-anxiety.

4.1.2 A crisis of hope regarding the future is central to the presentation of eco-anxiety

Unsurprisingly, the content analysis found that eco-anxiety is characterised by future-oriented concern (Clayton & Karazsia, 2020) and a lived experience of uncertainty (Kemkes & Akerman, 2019). The symptoms of worry, concern, uncertainty, apprehension and rumination were widely noted (Cunsolo, Harper, et al., 2020; Manning, 2018). Perhaps less predictable was the function of *hope* which featured within the conceptualisation, as well as the symptoms and therapeutic interventions for eco-anxiety. Hope(lessness) is discussed now as a dimension of the eco-anxiety conceptualisation, whilst the therapeutic function of hope will be discussed below.

Hope, losing hope, and hopelessness, were described by many of the authors as central to the presentation of eco-anxiety. Hopelessness is typically a symptom of depression, a feeling that there is no point continuing, and nothing a person can do that will make a difference in their life (American Psychiatric Association, 2013). In general, there is an overlap between the presentations of anxiety and depression. For example, individuals who meet criteria for GAD have often met criteria for other anxiety and unipolar depressive disorders (APA, 2013). Other symptoms of major depressive disorder which were captured by this review included; rumination, reduced flourishing and the inability to have fun, impaired performance with family and at work, restlessness, appetite changes, self-blame, sadness, irritability and insomnia. This suggests that, although the term *eco-anxiety* has become popular, it may also be capturing eco-related *depression*. It is also possible that these symptoms, if studied further, might be mapped across the progression of the presentation,

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

perhaps beginning in the initial stages as anxiety, and moving in the later stages towards depression. The dimension of hopelessness might present if the individual has not managed to join a group, or take meaningful action to combat the enormity of this concern.

Along with the crisis of hope comes a sense of diminished trust in the future generally, and in politicians and the media in particular (Doherty, 2018). The inability to trust authority figures to resolve this crisis is deeply unsettling and disrupts the normal status quo for many in the Western world particularly. This lack of trust may be a perpetuating factor for many, again especially if no meaningful action can be found in some other part of their life. If governments and leaders do not appear to be taking the crisis seriously then who will save us from the imminent threat of doom? This ties into the conceptualisation of eco-anxiety as an existential crisis.

4.1.3 Eco-anxiety can be described as an existential crisis

One of the most prolific scholars on the subject of eco-anxiety is Panu Pihkala, who is not a psychologist, but rather a theologian and Lutheran pastor based in the department of Theology at the Helsinki Institute of Sustainability. The content analysis findings highlighted an important component of this presentation as *existential anxiety*. The ecological crisis can certainly be conceived of as an existential crisis, which may explain why there is such a strong spiritual voice participating in this conversation. Clayton et al. (2020) referred to the Norwegian study by Norgaard (2016), who described a loss of ontological security as a feature of the climate crisis particularly, a deep and troubling sense that something had gone wrong with the natural world and humanities relationship to it. Pihkala (2018a) goes further and defines eco-anxiety as a form of death anxiety, conceptualising it as arising from the confrontation with mortality. This is an exciting area where psychology and spirituality merge in an attempt to grapple with, what is commonly regarded as, the most significant crisis facing humanity of all time. As is discussed below, spirituality features significantly in the therapeutic interventions section, and this seems appropriate as counselling psychology, in particular, moves towards a more holistic bio-psycho-social-spiritual model of health (Murdock, 2009).

4.1.4 Eco-anxiety results in the loss of quality of life

Doherty (2018) approached the conceptualisation and description of symptoms for eco-anxiety from a positive psychology framework. This approach is based in the World Health Organisation's definition of health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 2020, p. 1). He made a distinction between the adverse effects of ecological change on *mental health*, such as trauma, anxiety and grief, and the adverse effects on *flourishing*. He describes climate change, specifically, as a burden on people's capacity to enjoy positive emotions, experience subjective well-being, cope with the normal

stresses of life, be productive in one's work, realise personal potential and contribute to the community. So, eco-anxiety is conceptualised here as a loss of well-being and quality of life, regardless of the degree to which a person may experience the symptoms of a specific diagnosable condition.

The dimension, loss of quality of life, was also described by Clayton (2020) as a range of complex negative emotions which impact healthy psychological functioning, resulting in reduced well-being. In particular the experience of distress (Robinson, 2020; Usher et al., 2019) and isolation (Haseley, 2019; Kemkes & Akerman, 2019) were noted as contributing to reduced quality of life. Temte (2019) looked specifically at the role of climate change awareness in the presentations of dysphoria – a complex state of emotional distress, characterised by irritability, tension, aggression, and depression. They found a positive correlation between the level of concern felt regarding climate change and the presentation of dysphoric symptoms. Davenport et al. (2017) observed that, if emotions such as grief about the changing ecological world are not resolved into positive action, then it produces a prolonged disruption to a person's daily life. Taking a positive psychology view of eco-anxiety is therefore a helpful way to conceptualise the detrimental effects of this presentation. Understanding eco-anxiety as detrimental to the quality of a person's wellness continuum, impacting their ability to thrive and flourish, points clinicians in the direction of supporting clients to stay engaged and active with the ecological crisis, rather than becoming overwhelmed and paralysed (Clayton, 2020; Davenport & Susteren, 2017; Doherty, 2018).

4.1.5 Paralysed and unable to take meaningful action

The concept of eco-paralysis, as described by Albrecht (2011), is very relevant to the conceptualisation of eco-anxiety. Becoming overwhelmed and unable to engage with the ecological crisis in a meaningful way featured in the conceptualisations and symptom descriptions of many authors in the review. The experience of fear, helplessness and sadness regarding the scale of ecological damage can become so great that it results in the inability of concerned individuals to take any meaningful action (Guyatt, 2020; Ray, 2020). This is both a precipitant of eco-anxiety and a perpetuating factor, because taking action toward mitigating further ecological damage is one of the main protective factors for individuals and communities (Ray, 2020). Part of the reasons given for why people appear unable to take action, is that small, individual actions appear insignificant when compared with the scale of the problem (Ray, 2020; Hayes et al., 2018a; Davenport et al., 2017). This is a particular feature of eco-anxiety, which, in this context, is conceived as affecting people through vicarious global awareness, rather than localised direct experience. Hayes et al. (2018) describes this as “climate change writ large” (p.9). The threat to all life and planetary health and survival is too great to face and so a person simply does nothing. This again, relates to the dimension of eco-anxiety as an existential crisis, felt when one confronts their own, and others mortality.

Catastrophising, or thinking forward to the worst possible outcome, in this context, is extremely detrimental to a person's mental health. This is, in large part because unless mitigating action is taken quickly, the worst possible outcome will become reality. As such, Manning (2018) describes the loss of control felt by many people, as an indirect impact of climate change. Others describe eco-anxiety as extreme anticipatory anxiety in the face of wide spread climate catastrophe - the collapse of natural environments and the associated systems humans rely on for their survival (Kaplan, 2020; Robinson, 2020; Hayes et al., 2018). Taken to its extreme in this manner, the threat is too overwhelming for an individual and can lead to maladaptive coping strategies, such as self-harm and substance abuse (Helm et al., 2018; Pihkala, 2019). So, whilst validation of a person's concerns is important, and minimising the harm caused by the ecological crisis should be avoided, there is a balance needed here. The full-blown catastrophe of ecological crisis, as an idea in itself, poses a huge psychological threat when taken on board in its entirety.

4.1.6 Eco-anxiety can be conceptualised within trauma, stress and grief frameworks

As mentioned earlier, these findings confirm, what other authors have articulated, that the term *eco-anxiety* is a macro-category for a number of different mental states (Pihkala, 2019a). Authors variously describe mental distress caused by the awareness of the ecological crisis within traditional mental health frameworks of grief, trauma, and stress, as well as the frameworks of depression and anxiety, already mentioned earlier.

Ecological grief could be the subject of its own separate scoping review, there is now so much literature on this as a distinct phenomenon. This term was actually screened out of this review through the later stages of the paper selection process, however, the conceptualisation of eco-anxiety within the framework of grief remained. Cunsolo, Harper, et al. (2020) described ecological anxiety and ecological grief side by side in their 2020 article. They articulate the differences between the two concepts, but also highlight their interrelatedness. They defined ecological anxiety as stress and apprehension regarding threats to important ecosystems, and ecological grief as being a grief response to ecological loss. To some extent, again we can see a continuum, such as was described by Davenport and Susteren (2017), whereby an individual might begin with an experience of anxiety in anticipation of significant degradation, and then progress to an experience of grief when that actually occurs. These two mental states can be hypothesised as remaining interrelated and perpetuating one another as the anxiety persists in anticipation of further losses, and the grief mounts as these occur. Returning again to the critical dimension, that eco-anxiety occurs even in people who are not directly experiencing extreme ecological change events, the whole global ecological crisis can be seen as fueling this process of anxiety and grief.

This feeds into the conceptualisation of the ecological crisis as a chronic and persistent stressor which was widespread throughout the review. Clayton and Karazsia (2020) listed evidence for eco-anxiety, or more specifically, climate anxiety, as a product of stress citing the APA 2018 survey entitled 'Stress in America', in which 51% described climate change as a source of stress. Pihkala (2019b) described learning about the unfolding crisis through mainstream and social media channels as a daily, cumulative source of stress, especially for people who have a strong connection to the environment. Burke, et al. (2018) described the chronic stress of climate change awareness as having a deeply negative effect on children and young people, in particular, due to their increased vulnerability and lack of overall control in their lives.

Many authors in the reviewed papers described the symptoms of eco-anxiety within the framework of trauma. These included; feeling overwhelmed, and unable to cope, fear, panic attacks, disturbing and intrusive thoughts about the future, compulsive behaviours, disassociation, emotional freezing, loss of agency and burnout. These symptoms are typically associated with presentations of PTSD or Pre-traumatic Stress Syndrome (PreTSS) proposed by Kaplan (2020). PreTSS is described by Kaplan (2020) as PTSD in reverse, whereby imagined catastrophic futures traumatise the sufferer, and they become dissociative, paralysed by fear of the future, unable to take action. Pihkala, (2020a) also described eco-anxiety in terms of trauma, describing vicarious traumatization and secondary traumatic stress as particularly prevalent amongst environmental researchers and activists. Woodbury, (2019) conceptualised the ecological crisis as a pervasive traumatic experience in and of itself, leaving no one untouched by the effects of a global climate trauma.

The psychodynamic therapist, Haseley (2019)'s paper took a different angle on the conceptualisation of eco-anxiety as a presentation of trauma. She draws the connection between a person's personal, childhood trauma and the current ecological trauma. She proposed that one's anxiety about ecological change gets mixed up with the feeling associated with childhood traumatic anxiety, such as helplessness, smallness, shame, isolation, and ineffectual anger. As a consequence, dysfunctional defenses and emotions are more likely to manifest. In Haseley's (2019) conceptualisation the experience of childhood trauma is a predisposing factor for an individual, and the knowledge of ecological crisis precipitates the presentation of anxiety symptoms.

4.2 Symptoms of eco-anxiety

The list of symptoms described by the authors in the review was fairly broad and consisted mainly of anecdotal observations or the repetition of other authors' research. The main exception to this was Clayton and Karazsia (2020). Building on the work of Reser et al. (2012) and Searle and Cow (2010), Clayton and Karazsia (2020) detailed the development of a climate anxiety measurement tool. As already mentioned, eco-anxiety encompasses climate anxiety, and so this is relevant research to the emerging operational definition of eco-anxiety as a construct, and to the delineation and

measurement of symptoms. In this study, pro-environmental identity was measured using the Environmental Identity Scale, which Clayton developed in 2003. Environmental identity is important because connectedness to nature is widely observed to increase the risk of climate anxiety. Clayton and Karazsia (2020) were interested to see if there was a cut-off point where rational concern became dysfunctional anxiety, impacting not only a person's enjoyment of their own life, but also their capacity to take meaningful action towards mitigating climate change. They utilised online blogs and clinical websites and extensive reading of the literature on climate anxiety to develop a list of symptoms. This was then combined with existing measures for other relevant clinical presentations, including measures of rumination, functional impairment, and behaviours associated with drive or motivation. They also measured climate adaptation – behavioral engagement with climate change – as well as connectedness to nature. This scale has yet to be validated in populations outside of their study and it will be interesting to see how this work progresses.

Clayton and Karazsia (2020) found that the symptoms of climate anxiety could be described using two sub-scales, one assessing cognitive-emotional impairment, such as concentration, sleep, connection with others, ability to experience positive emotions. And the other assessing functional impairment, such as in one's occupation, at home with family and leisure settings. Negative emotions associated with climate change were common, but having a negative emotional response could be distinguished, using the scale, from a clinically significant anxiety or depression response to climate change. And, notably, having a non-clinically significant negative response to climate change was correlated to strong environmental identity and behavioral engagement, whereas climate change anxiety was weakly correlated with behavioral engagement and environmental identity (Clayton & Karazsia, 2020). Importantly, the work of Clayton and Karazsia (2020) suggests that it is possible to engage with, and acknowledge, the negative impacts of ecological change, whilst still maintaining one's psychological wellbeing.

Pihkala (2019) also provided a more comprehensive symptom list that was synthesised from other sources and arranged according to severity. Interestingly, the symptoms noted by authors would commonly be associated with a number of different DSM 5 diagnostic categories, including anxiety, specifically GAD, depression, PTSD, PreTSS, and stress. Symptoms were often worse for individuals who demonstrated high pro-environmental identity, especially environmental scientists and activists, but this was also seen as a protective factor for many people, as long as they continued to be active members of their community (Doherty, 2018; Pihkala, 2019b). More research is needed in order to understand how all of these various symptoms actually present in the population. It is likely that they would not necessarily all occur in one individual, but may represent different responses to the awareness of ecological crisis.

4.3 Interventions for climate-related anxiety

4.3.1 Overview of findings for therapeutic approaches

The present scoping review revealed an array of therapeutic interventions, suggesting that many authors believe existing, therapies, such as CBT, psychodynamic therapy, ecotherapy and mindfulness-based therapy can easily be adapted and applied for clients presenting with symptoms of eco-anxiety. Where symptoms present clearly within the frameworks of grief, trauma, anxiety or depression, then the existing evidence-based methods for addressing these should be applied, according to authors of the reviewed papers. The findings of this review indicated that the modality practiced by the clinician is less important than the specific kinds of resilience skills which the client is developing. Another key finding was the importance of community support, of belonging to a group with shared environmental values, and of continuing to take meaningful action towards a shared goal.

Whilst there is still no empirical research on therapy specifically to address eco-anxiety, many of the interventions described in this review are based on strong empirical evidence for their efficacy in the treatment of related clinical presentations, as well as the enhancement of general well-being. It makes sense, for example, that approaches such as CBT would be effective in helping people to process these symptoms, as cognitive reappraisal and cognitive restructuring have been proven as beneficial in coping with anxiety and stress (Greenberger & Padesky, 1995).

There has been a considerable response to the broader area of ecological and climate change related mental health concerns from the psychodynamic branch of psychotherapy, and one study identified in this review, was reflective of that approach. Haseley (2019) directly addressed anxiety caused by climate change concern from a psychoanalytic viewpoint, and referenced the work of Lertzman (2015) in describing how unresolved psychological issues of trauma and loss within individuals can become problematised into denial and disavowal of climate change, or they can become confused with current anxiety and trauma responses to climate change and produce eco-anxiety symptoms. Traditional psychodynamic processing to acquire insight and the resolution of these issues was shown, anecdotally, to be effective for some clients.

Ecotherapy was reported as a beneficial approach by a number of authors (Clayton, 2020; Cunsolo, Harper, et al., 2020; Pihkala, 2019b). Pihkala (2019b) acknowledged that this may be a complex approach for some people, who whilst holding a deep love of nature, may be triggered by spending time in nature, that they know is becoming degraded. However, this is where the therapeutic mindset of learning to live with ambiguity, and learning to accept what is out of one's control, in order to maintain wellbeing is critical. Ecopsychology urges people to reconnect with nature as a therapeutic way to both heal the symptoms of ecological trauma as well as to address one of the

underlying causes – a sense that humans are separate and superior to nature (Woodbury, 2019). Eco-therapeutic practices involve staying in the present moment and allowing the therapeutic impact of nature to affect us, without moving forward into an anxiously projected future, or grasping at a nostalgic past (Roszak et al., 1995).

Therapeutic approaches had, in some cases, been applied by the authors themselves, as with Ray (2020) and Davenport and Susteren (2017), or were reports of other people's therapeutic practice, as in the case of Pihkala (2019) who describes, for example, the work of Macy and Brown (2014), and online initiatives such as The Good Grief Network. Other authors proposed interventions, or dimensions of a therapeutic approach, based on their own specific theoretical understanding, such as the description of Kierkegaardian hope provided by Guyatt (2020). When symptoms of grief were present, both Haseley (2019) and Pihkala (2018b) recommended utilising the William Worden (2008) stages of grief model to accept and process the emotions.

Mental health system level changes were also suggested. The most important of these is to increase training in awareness of eco-anxiety among clinicians, including knowledge of symptoms, as well as the development of assessment tools and interventions to help. Increasing validation of this presentation within the health care sector, and the wider community, is crucial to improving understanding and support for sufferers. Authors strongly emphasised the importance of creating emotion-positive environments where people can share and process their feelings about climate change and eco-related damage (Pihkala, 2019a).

There now follows a detailed discussion of two of the key findings from the content analysis with regard to the therapeutic approaches for eco-anxiety, namely; individual level skills training suggested as beneficial for enhancing resilience and coping; and group approaches, which appear to have a particular efficacy in the treatment of eco-anxiety. This section is arranged under the headings of the main concepts derived from the content analysis.

4.3.2 Individual level skills training

The most detailed findings from the content analysis comprised of a long list categorised as 'skills training' for building resilience and enhancing coping. These skills can be developed in the therapy room, in group therapy, or in a community support context, or even in a self-help context. Some of the most important skills in this therapeutic approach to eco-anxiety included developing emotional intelligence and emotion regulation, cultivating an active, realistic type of hope, and training in adaptive and flexible coping skills.

4.3.2.1 Resilience training

Developing resilience skills is a necessary developmental process in order to cope with life's challenges and stressors. These skills were widely referred to by authors in the review as crucial for

the maintenance of psychological wellbeing in the face of the ecological crisis. Ray (2020) offered a 'Field guide to climate anxiety' in which she presented strategies to avoid burnout, develop adaptive coping strategies, build resilience and cultivate optimism. In the influential 2017 APA Report (Clayton et al., 2017), building belief in one's own resilience and self-efficacy, fostering optimism through positive reappraisal of one's situation, active coping and self-regulation, as well as finding a sense of personal meaning through a faith or mindfulness practice, are all offered as components of developing resilience in the face of increasing environmental degradation. Through actively engaging with the ecological crisis, Manning and Clayton (2018) see the potential for individuals to experience increased resiliency, healing, and posttraumatic growth. However, in order to make such a healthy adjustment, they suggested a combination of realistic goal setting, positive imagery and self-restoration, responsible lifestyle choices, and promoting political and structural changes in society (Manning, 2018). Mah et al. (2020) described the interrelatedness of individual, community and ecosystem level resilience. When an individual increases their own resilience and ability to cope with the stress caused by ecological change, this can have a positive flow on effect for the resilience of their community, and the wider ecosystem, and vice versa.

Thomas Doherty described how he has adapted the Building Resilience Against Climate Effects (BRACE) framework to help clients identify which specific climate change issues are triggering their personal vulnerabilities and worries and to develop a specific plan to gain control over how they are responding (Clayton et al., 2017). Increasing one's sense of self-efficacy was also noted as a key component to building resilience. The adoption of climate solutions, such as utilising active or public transport, switching to clean energy and the increased provision and utilisation of green spaces are suggested to curb an individual's sense of helplessness, anxiety and stress, as well as actively mitigate climate change (Clayton et al., 2017). Hayes et al., (2018). suggested that individual, as well as community-level interventions to preserve the environment, lead to a sense of stewardship that potentially mitigates negative psychological impacts.

4.3.2.2 Emotion regulation techniques

The role of emotions in eco-anxiety, and the importance of addressing these in a healthy manner, is reiterated by a number of authors. Mah et al. (2020); Ray (2020) and Pihkala (2019a) all stressed the crucial role that emotions play in determining if a person will engage in a functional way with environmental and climate related change, or if they will become overwhelmed. Learning to expect and recognise the emotions that occur when encountering ecological stressors, and training in appropriate emotion regulation techniques, helps build psychological preparedness (Mah et al., 2020). Pihkala (2019a) suggested that the repression of emotions is a cause of maladaptive responses to the ecological crisis. He stated that people need to appreciate and encounter their emotions of grief, fear, powerlessness, anger, guilt, shame and inadequacy in particular. Ray (2020)

agreed, and stated that emotional intelligence and emotion regulation are crucial to avoid becoming overwhelmed by feelings of anger and hopelessness. These overwhelming emotional responses, if left unregulated, can lead to emotional freezing, or eco-paralysis, and other maladaptive coping responses. Ray (2020) even described people becoming so overwhelmed and despairing that they experience suicidal ideation and may take their own lives. Cases such as these demonstrate the seriousness of presentations like eco-anxiety, and remind us that even seemingly simple interventions like teaching emotion regulation techniques can be very powerful.

Emotion-regulation techniques are found in many established therapeutic approaches such as CBT, Acceptance and Commitment Therapy (ACT), DBT and Mindfulness practices. In general, it involves learning to recognise and name emotions in oneself, followed by learning to down-regulate or up-regulate emotions to ensure negative emotions don't become overwhelming and positive emotions are enhanced. Reappraisal of situations, thoughts and feelings can be used to help get perspective on difficult situations and help keep emotional responses manageable (Greenberger & Padesky, 1995).

4.3.2.3 Active hope

The role of hope in a healthy response to ecological change was a key finding from this review. Robinson (2020), who like Pihkala (2020) writes as an eco-theologian, described eco-anxiety as essentially a crisis of hope. In fact, many authors described a very particular type of hope that needed to be cultivated in order to simultaneously maintain the recognition of the scale of the problem, whilst not becoming overwhelmed. This type of hope was beautifully articulated by Guyatt (2020), who joins Robinson (2020) and Pihkala (2020), as an academic in the field of the philosophy of religion. She described a Kierkegaardian type of hope that is therapeutic, cautious yet active, and which has the potential to subvert the eco-anxiety and helplessness that can lead individuals to into despair and inaction. This is in contrast to the perhaps more commonly articulated happy, complacent hope, which is clearly a dangerous and self-deluding type of hope with respect to the ecological and climate crisis. This is fitting as Kierkegaard was an existential philosopher who influenced the development of existential psychology (Murdock, 2009). Although not explicitly mentioned by authors in the review, this would suggest that an existential therapeutic approach would also be effective for eco-anxiety.

Guyatt (2020) outlined in four points why Kierkegaardian hope is a therapeutic practice which can prevent and heal eco-anxiety. Firstly, this is a hope that is of this world and active, yet rooted in a notion of an eternal good. Secondly, it constantly anticipates a good outcome but this is viewed as a path rather than a goal, thereby averting the discouragement of seeing small individual actions as insignificant. Thirdly, it hopes for the best for everyone – it is a collective hope. And fourthly, it is “cautious and attentive, kept in check by its reciprocal relationship with fear” (p.4).

This last point seems critical, and she points out that Kierkegaard believed that hope is only an expectation of a potential good, whereas “to relate oneself expectantly to the possibility of evil is to fear.” (Kierkegaard 1995, p.249 in Guyatt, 2020). Thus, hope is positioned as an opponent force to fear. A powerful, therapeutic force of hope, propelling people to continue to take action no matter how unlikely the chance of success. Pihkala, (2018a) echoed this when he described the spiritual skill of “seeing two levels” (p.292) or having a binocular vision – able to see both the difficulty of a situation as well as the potential for hope.

Many other authors also described a grounded, active hope as critical to managing eco-anxiety. Ray (2020) described the importance of transforming the narrative away from “urgency and gloom” (p.16) toward stories of collective and societal transformation. She also described the importance of dismantling the notion that small, individual actions are not enough, which echoed the same characteristic of Kierkegaardian hope described above. Freeling and Preston (2019) contributed another philosophical voice from the ancient world, when he described modern practices of Stoicism as beneficial when coping with ecological change. These include, maintaining a focus on the things which are in your control, recognising that the individual has the most impact when working together with their community, and remembering that intention takes precedence over outcome – even if the issue seems insurmountable, maintain a positive, beneficial intention and continue to work for good.

Buddhist psychology also featured in the review, along with the Christian voices already mentioned above. Ray (2020) described in detail the practices of mindfulness, acceptance, awareness of the impermanence of all things, and the recognition that the nature of the world is suffering. This resonates again with the concept of a realistic, active hope, that persists for the benefit of all despite the very real possibility of failure. Hayes, Blashki, Burke and Reifels (2018) stated that interventions need to tackle the problem in a holistic manner and must be rooted in active hope. They referred to the active hope process outlined by Joanna Macy (Macy & Brown, 2014), herself a Buddhist environmental activist and therapeutic practitioner. Macy and Brown (2014) state that one must first acknowledge the reality of the problem, then set an intention to address it, and finally take committed action.

This process is reminiscent of an Acceptance and Commitment Therapy (ACT) (Hayes, 2004) approach to dealing with difficult situations and their associated negative emotions. Whereby clients work with six core processes to develop psychological flexibility, learning to accept, rather than struggle with their symptoms, instead committing to taking action towards what matters in their lives. A cursory internet search produced evidence that ACT is being used in the treatment of eco-related anxiety. Jodie Wassner presents her ACT based approach in an article on the Association for Contextual Behavior Science (ACBS) website (<https://contextualscience.org>). She

recommends helping young people who are experiencing feelings of hopelessness about the environment, to re-orient toward their values and then focus on behaviour changes they can make towards fulfilling these values. Wassner states that the ACT model is a good fit for dealing with climate-change related mental health issues because at its core is the acceptance that human existence is difficult, but from that understanding people can still move forward with a meaningful, values-based life.

4.3.2.4 Coping skills training

The development of effective coping skills was another psychological skill emphasised by many authors. Almost all of these authors referenced the work of Ojala (2013), who has conducted a lot of empirical research into the area of young people's coping styles, in the climate change education sector. Although her work was excluded from the formal review due to not explicitly discussing eco-anxiety, but rather how to effectively educate young people about climate change, many authors outlined her research into the development of coping skills. Climate change education and teaching effective coping skills is, of course, an important area with regard to the *prevention* of eco-anxiety. Educating young people in a way that empowers them, rather than leads them into despair, is a crucial preventative step. Learning new ways to cope more effectively can also help in therapeutic interventions for eco-anxiety once it has developed. Mah et al. (2020), in her literature review of climate related mental health issues, referred to Ojala's (2013) work to demonstrate that there is no one single coping style which can be argued as the most effective response to ecological change. Instead, psychologists and educators should encourage *coping flexibility* rather than only one way of coping with ecological stress. Importantly, interventions should start by trying to match people's usual coping styles to be immediately effective. Then recognize the potential benefits of promoting *emotion-focused coping* for the uncontrollable, global aspects of ecological stress, while simultaneously encouraging *problem focused coping* responses for local, manageable impacts (Mah et al., 2020). This makes sense in the light of the findings around the importance of validating and sharing ecological emotions, especially with regard to aspects which appear, and often are, out of any one person's control. Where it is possible to take action, then problem-focused coping will lead to an enhanced sense of self-efficacy and of community cohesion, working together towards a shared goal. If applied too broadly, however, problem-focused coping has been associated with higher levels of anxiety and depression according to Ojala's research, as noted in Burke et al. (2018). Some beneficial coping skills can be developed prior to developing ecological stress or eco-anxiety, helping to build resilience. These are interventions that teach the skills of *proactive coping*, whereby people learn to build competencies that mitigate the impacts of anticipated ecological stress, along with interventions to promote *adaptive coping*, cultivating behaviours and cognitions to successfully manage stress and maintain well-being (Mah et al., 2020).

4.3.2.5 *Identify and strengthen pro-environmental values*

One of the key components of meaning-focused coping, as defined by Ojala (2013) and reported by Burke et al. (2018), is the ability to draw on one's beliefs, values, and goals to generate positive feelings that can help people to bear the burden of worry often experienced in relation to ecological crisis. Strong pro-environmental values, or environmental identity, were shown by authors in the present scoping study, to both increase the risk of developing eco-anxiety, but also to act as a protective factor (Clayton & Karazsia, 2020; Pihkala, 2019b). For environmental scientist and activists, who are perhaps most at risk of developing mental health issues due to their high exposure to the unfolding crisis, Pihkala (2019b) described the importance of belonging to a community of like-minded people who all share the same environmental values. If people who are experiencing eco-anxiety connect with and support others who are also environmentally minded, and perhaps suffering themselves, then there is the potential for post traumatic growth. In the case of eco-anxiety caused through the vicarious knowledge of ecological degradation, he described *vicarious traumatic growth*. To transform one's experience of suffering into growth requires active engagement and self-care on the part of the individual, the articulation and strengthening of pro-environmental values and connection with others (Pihkala, 2019b). Doherty (2018) also noted the buffering effect of pro-environmental values which often lead to engaging in more meaningful action to mitigate climate change, as well as to spending more time in nature. He also acknowledged that these are the core values which will have prompted the concern and negative affects within the individual, however pro-environmental values are necessary to support hope and a guiding vision (Doherty, 2018). Although her work did not arise through the formal search strategy or hand searching stage, NZ based eco-psychologist, Nikki Harré (2018), also describes bringing about positive change by tapping into the human strengths of shared values, drive for happiness, sociability, and desire to be good.

4.2.3 *Group approaches*

Guyatt (2020), when describing Kierkegaardian hope, talked of the inherently relational nature of self and other – “the self only becoming and flourishing in relation to the becoming flourishing of others” (p.2). This highlights the therapeutic power of coming together in a group setting, that was strongly articulated in the review. It would appear, from this review, that group-based approaches may be particularly beneficial in the management of eco-anxiety, due to the validating effect of group therapy and the opportunity for people to come together and take more effective mitigating action as a result. In Clayton and Karazsia (2020)'s study fairly low percentages of participants scored above the mid-point of the scales for cognitive (17-19%) and functional (26-27%) impairment caused by climate change related concerns. This indicates that while eco-anxiety may be increasing as a general malaise, it is not necessarily a clinically significant presentation amongst the general population. Group based

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

therapy and community support groups, are therefore a good way to teach the emotion regulation and resilience building skills described above, whilst still validating and normalizing peoples experience.

Climate psychology organisations also offer online interventions via their websites such as, the Good Grief Network (<https://www.goodgriefnetwork.org>), which advocates for ten steps to foster personal and community resilience and empowerment in the face of climate change. The steps include accepting the magnitude of the problem, showing up and reinvesting into meaningful activity. Small groups form within the network to meet and support members to make changes in their lives which help overcome eco-anxiety and mental distress. The Climate Psychology Alliance website also lists a number of therapeutic programmes it offers, both at a community and individual level. The components of their programme include; validating emotional responses to the climate crisis - such as helplessness, grief, anger, despair, anxiety and fear; helping individuals, families and groups develop emotional resilience; contributing to sustainable communities and preparing for change. These, and other third sector initiatives, were listed in Pihkala (2019)'s review of climate anxiety and the various community interventions available.

Cunsolo, Harper, et al. (2020) proposed taking a family-based approach to support children and youth experiencing eco-anxiety and eco-grief. In family groups, parents can acknowledge the challenge, gain insight into their children's responses, and develop an empathetic communication style with their children, validating their experiences whilst fostering hope and meaningful activities. The importance of social support in general, is also noted in the APA report on the impacts of climate change (Clayton et al., 2017). Strengthening social support networks is likely to play an important role in mitigating the impacts of eco-anxiety, especially when people are joining other climate conscious groups and taking positive action.

Pihkala, (2019) referred to the work of Joanna Macy (Macy & Brown, 2014) who has facilitated group therapy workshops on healing from the traumas of ecological crisis and the threat of nuclear war for many years. In her book, "Coming back to Life" (Macy and Brown, 1998) Macy details many group exercises which facilitate the sharing of emotions in a therapeutic manner. For example, the Despair Ritual is an intensive group practice in which people share their experiences of suffering and loss (with regard to the ecological crisis as well as social injustice) in three concentric circles which escalate from simple reporting, to full expressions of emotions as crying and embracing one another. She describes how naturally the group processes these emotions until the momentum turns upwards and the group find solace and hope in their shared experience.

4.4 Limitations and future directions

4.4.1 Limitations

The inclusion criteria were tightly constrained in this review, excluding material that covered areas of eco-related mental health such as eco-grief, eco-trauma and solastalgia. It would be beneficial to review all of the separate mental states, encompassed under the macro-category of eco-anxiety, in more detail, in order to better understand the relationships between these varying presentations.

The focus on the vicarious mental health impacts of the ecological crisis, whilst justified for this review, lead to the exclusion of other material that is relevant to this field, including many empirical studies on the direct and indirect experiences of ecological change. This is an important limitation to acknowledge, as excluding these studies reduced the voice of indigenous people who are experiencing directly the effects of climate change and ecological degradation.

There has been a paucity of empirical studies conducted to date on both therapeutic interventions designed to mitigate eco-related mental health, as well as on the *vicarious effects* of the ecological crisis on mental health. As such the empirical rigor of many of the studies included in this review is reduced. To this point, it is also important to note that this is a relatively small field of academic discussion and many of the articles reviewed risk creating an echo-chamber through the repeated referencing of each other's work. However, as many of the authors are in the early stages of articulating this emerging presentation their work has been included alongside empirical studies in order to give a better indication of breadth of this emerging field. This is the reason why the scoping review methodology is useful in canvassing this relatively new presentation; however, it should also be acknowledged that it is an inherently limited approach because the quality of the literature included is so broad. Future, systematic reviews which only include empirical research, will certainly offer a more robust and evidenced based view of which therapeutic interventions might be most effectively employed.

Only relevant chapters of books were formally reviewed and some relevant data may have been missed if it was located in other seemingly less relevant chapters.

4.4.2 Research and clinical implications

The conceptualisation presented here summarises the many descriptions of the eco-anxiety construct found in the review. Future research is now needed to test this on clinical and general populations to determine its validity. This could be conducted through qualitative research with clinicians or members of the public to determine if the dimensions presented here, capture all of the aspects currently being experienced.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

A more detailed understanding of the symptom presentation and progression is required. Qualitative research could investigate the lived experience of people who suffer from eco-anxiety to gain a more rich and nuanced picture of how symptoms start, their progression and which interventions are most effective in mitigating them.

Empirical studies could also explore whether there are any differences in effectiveness between the therapeutic modalities. Research could also explore each of the skills described in this study to understand how each of them impacts the experience of eco-anxiety, and in what contexts these are best cultivated.

5. Conclusion

The construct of eco-anxiety is still an emerging presentation and there is relatively little evidence-based research into this phenomenon. However, despite the tight inclusion criteria of the present study, a review of the most recent literature produced 30 papers which all contributed in different ways to the clarification of the eco-anxiety construct. The basis of a conceptualisation for eco-anxiety emerged, grounded in eight conceptual dimensions. Symptoms were diverse in presentation but could be linked to other clinical diagnoses and therefore are likely to respond well to existing evidence-based therapies for these, such as techniques used for anxiety, depression, grief, and trauma. As well as diagnostic specific therapeutic interventions, there was a strong emphasis in the review on the specific skills needed to build emotional resilience to eco-anxiety. These specific cognitive and behavioral skills could be developed using any therapeutic modality, or in group support settings or through self-help practices.

The broad range of therapeutic practices referred to in the review suggest that it is not yet clear which single approach might be most effective. CBT, positive psychology, and mindfulness practices were explicitly mentioned by authors in the review as being effective. It can be extrapolated therefore that similar approaches such as ACT, Compassion Focused therapy and Dialectical Behavioral Therapy approaches may also be effective. Psychodynamic therapy was used to facilitate deep consideration of the underlying dynamics of client's responses to ecological crisis, and showed that working with the individuals unique presenting issues to gain insight into their responses is beneficial in developing a healthy response. By implication therefore, other modalities in this school of practice could also be useful such as Transactional Analysis, Person-centered therapy, and the philosophical orientation of the existential psychologists. Group approaches to therapy and emotional support for eco-anxiety emerged as some of the most effective, and perhaps most validating. Group approaches also lend themselves to the facilitation of mitigating action, which was found to contribute to enhanced self-efficacy.

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

What emerged as most important in the approach to eco-anxiety was, not the modality that one practices, but what the therapy is trying to develop within the client. Enhancing emotion regulation, adaptive and flexible coping styles, fostering realistic, active hope, strengthening core values and enhancing self-efficacy and community resilience, were all posited as helpful in maintaining a healthy response to ecological change. These are, of course, the goals for much psychological counselling and are beneficial in the service of coping with all of life's challenges. As research in this area progresses it would be beneficial to see more specific empirical studies test these therapeutic interventions with specific reference to clients presenting with eco-anxiety. At this stage, however, awareness of eco-anxiety within the general population must be increased amongst clinicians practicing in all modalities.. Clinicians need to be alert to this new presentation, and understand how the practices described here could be applied to support the increasing number of people affected by the pervasive ecological crisis unfolding throughout the world.

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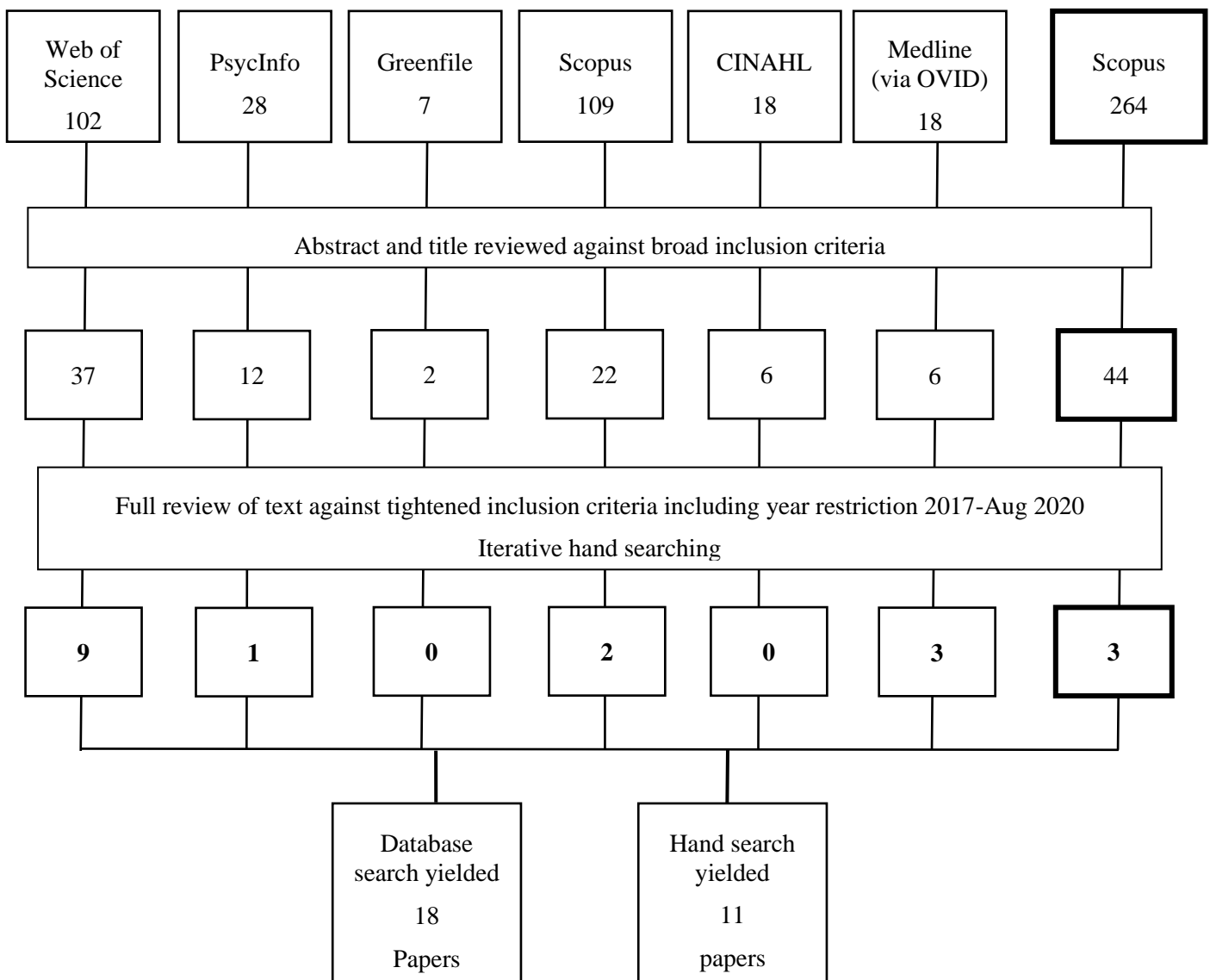
7. Appendices

Appendix A: Search strategy flow chart

Search term #1: "eco-anxiety" OR "eco anxiety" OR "climate anxiety" OR "Climate related mental illness" or "ecological grief" or "ecological anxiety" or "pre-traumatic stress" or "climate related anxiety" or solastalgia or "climate change anxiety"

When adding AND (treatment* or "treatment approach*" or therapy) search is reduced to only 1 result.

Search term #2:
(climate AND change) AND
(anxiety) AND (therapy)



Appendix B: Scoping review protocol

Title: Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Question: What is the current clinical and academic understanding of *eco-anxiety* with regard to conceptualisation, symptom presentation and psychological interventions proposed to mitigate its negative impacts?

Inclusion Criteria:

- Types of evidence sources:
 - Academic literature – both quantitative and qualitative, peer reviewed and unpublished

Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

- National survey data
- **Exclusions:** Bloggs, letters, media/news articles, websites
- Concepts for inclusion:
 - Identification and description of ecologically related mental health problems and the associated symptoms/dimensions/presentation
 - This review will only include mental health problems arising from the overarching awareness of climate and ecological change e.g. through knowledge of the issues alone
 - The review will not include mental health issues caused by direct and indirect experience of climate and ecological change e.g. through experience of wildfires, floods, species extinction etc.
 - Measurement/assessment of climate and ecologically related mental health problems
 - Interventions, proposed and/or conducted, which may mitigate negative psychological impacts caused by overarching awareness of climate and ecological change. Interventions for e.g. PTSD, depression etc caused by direct experience of extreme weather events will not be covered.
- All populations
- All contexts/countries
- Only material in English will be included due to the limited language capacity and timeframe of the author.

Search strategy:

Step 1: An initial limited search of two appropriate online databases relevant to the topic.

- PsycInfo
- Scopus
- Key words for use in initial search will include (in any combination):
 - Eco Anxiety
 - Climate change related mental health/distress
 - Solatalgia
 - Interventions/Approaches/treatments
 - Scale/measurement
- This initial search will be followed by an analysis of the text words contained in the title and abstract of the retrieved papers, and of the index terms used to describe the articles.

Step 2: A second search using all identified keywords and index terms should then be undertaken across all included databases and websites.

Step 3: The reference list of identified articles and websites should be searched for additional sources.

Source evidence selection process

- Based on inclusion criteria and conducted in an iterative but auditable manner.

Data charting

- A draft charting protocol is proposed below. This will be modified as the iterative analysis stage unfolds.

Evidence source Details and Characteristics
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Eco-anxiety: A scoping review towards a clinical conceptualisation and therapeutic approach.

Citation details (e.g. author/s, date, Country) Website details (name, URL, Author e.g. clinician or organisation)	
Details/Results extracted from source of evidence	
Conceptualisation	
Symptoms of ecologically related mental health presentation	
Interventions (proposed and/or conducted) e.g. individual, community, psychological, action based	

Analysis of data

- Descriptive qualitative content analysis, including basic coding of data, utilising an inductive analytical method.