

Article

Anxiety and the Ecological Crisis: An Analysis of Eco-Anxiety and Climate Anxiety

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Abstract: Eco-anxiety and climate anxiety are widely discussed in contemporary media and are subjects of growing research interest. However, there is a lack of research about the definitions and variations of these phenomena. This article analyzes various views of eco-anxiety from a wide range of disciplines. Insights from various anxiety theories are used to discuss empirical studies about forms of eco-anxiety. The article points out that uncertainty, unpredictability, and uncontrollability seem to be important factors in eco-anxiety. Most forms of eco-anxiety appear to be non-clinical, but cases of “pathological” eco-anxiety are also discussed. Other relevant terms and phenomena are scrutinized, such as ecological grief, solastalgia, and ecological trauma. The relationship between studies on eco-anxiety and research about ecological emotions and affect is probed. Eco-anxiety is found to be closely connected to fear and worry, but several disciplines include discussion of its character as existential anxiety. Psychosocial and sociological perspectives point out that social dynamics shape forms of eco-anxiety in profound ways. While paralyzing forms of eco-anxiety emerge as a problem, it is noted that eco-anxiety manifests itself also as “practical anxiety”, which leads to gathering of new information and reassessment of behavior options. This variety of forms of eco-anxiety should be taken into account in healthcare and public discussion.

Keywords: ecoanxiety; climate change anxiety; ecological grief; existential anxiety; anxiety disorders; psychology; sociology; psychosocial research; emotion; affect

1. Introduction

Eco-anxiety and climate anxiety are terms which are nowadays widely used in media. There is vast array of newspaper articles, documentaries, interviews, blogs and other media which discuss anxiety related to the ecological crisis. These phenomena are also subjects of growing research interest [1]. However, there is still a strong lack of research about various forms of such anxieties and about their relation to other psychological impacts of the ecological crisis. It is clear that many people suffer from eco-anxiety, but what kinds of anxiety does this mean, and how should societies and health care professionals respond to them? Since the mental health impacts of climate change and other ecological crises are estimated to be very significant [2,3], there is a strong need for a growing understanding about them.

Deliberation about anxiety in relation to ecological problems has mostly taken place after the year 2007. Maiteny [4] discusses the general phenomenon and Cossman [5] provides a useful summary of the early discussion about eco-anxiety between 2007 and 2013. In the 2010s, climate change became the most discussed and researched topic in relation to the psychological impacts of the ecological crisis. The emerging field of climate psychology, which has many subfields, has included discussion about various kinds of anxiety [6,7]. However, a 2017 report published by the American Psychological Association (APA) and EcoAmerica, Mental Health and Our Changing Climate [8], sparked much further discussion by providing a working definition of “ecoanxiety”. The work of individual scholars,

especially the Australian environmental philosopher Glenn Albrecht [9–11], has also been influential in raising attention to eco-anxiety.

Since 2017 and especially since autumn 2018, there has been increasing coverage about eco-anxiety and climate anxiety in various media. One focal point in this discussion has been the young climate activist Greta Thunberg, who has openly spoken of her climate change anxiety [12]. Climate anxiety became perhaps the most discussed form of eco-anxiety and it was often discussed in relation to the children, youth, and young adults who participated in climate action [13–16]. More studies on the mental health impacts of climate change were published [17]. In 2020, books for the general public began to appear, providing suggestions for self-help and social action in order to alleviate eco-anxiety and especially climate anxiety [18–20].

However, anxiety talk in general is very diverse and this has also applied to talk about eco-anxiety. It is clear that not all definitions of eco-anxiety are alike. Among general scholars of anxiety, a basic and shared view of anxiety is that it is future-oriented and related to a threat about which there is significant uncertainty [21–23]. However, many differences in opinion and vocabulary still remain. Anxiety, in various discourses, can refer to for example the following:

- An emotion, closely related to fear and worry, which is generated by encountering problematic uncertainty or troubling situations. For example, much discussion about “test anxiety” or (mild) “social anxiety” falls into this category [23].
- A complicated psychological phenomenon as described by psychodynamic psychologists: for example, feeling anxious because of repressed emotions [24–26].
- “Existential anxiety”, a mental state related to being human and wrestling with fundamental questions in life, as in definitions by existential philosophers and existential psychologists [27].
- Strong psychic symptoms, which are often called “anxiety disorders” or “pathological anxiety” [28].

To my knowledge, there is not yet research which would analyze eco-anxiety in relation to all these dimensions and variations of anxiety. However, there are numerous discussions about eco-anxiety in various disciplines. In addition, other terms and phenomena such as ecological grief [29], climate trauma [30] and solastalgia [31] are also subjects of growing attention. Overall, there is burgeoning research interest in various emotional and affective interplays between people, other creatures, and places.

In this article, I review research from many different fields in order to analyze various dimensions of eco-anxiety. Insights from various general anxiety theories are then used to discuss these studies about forms of eco-anxiety.

The conclusions show that eco-anxiety is indeed multi-faceted: when compared to the above-mentioned forms of anxiety, it is found that eco-anxiety can manifest in all versions (and combinations) of them. General theories of anxiety do indeed help to understand eco-anxiety and climate anxiety, since they highlight certain characteristics and factors which become evident in the data available about people’s experiences of eco-anxiety. The ecological crisis, including the climate crisis, causes difficult feelings of uncertainty, unpredictability, and uncontrollability, all of which are classic ingredients in anxiety. However, it seems that many—probably most—forms of eco-anxiety are non-pathological, which causes the need to be careful in both health care and public discussion about the standard definitions and “treatments” of eco-anxiety. Eco-anxiety has strong elements of existential anxiety, and on the other hand it often manifests in “practical anxiety”, leading to problem-solving attitudes.

2. Materials and Methods

The materials were found over a long period of following interdisciplinary research on related themes. In addition, relevant studies were sought by keyword searches in databases. This selection process resulted in the choosing of the following, partly intertwining, research fields:

- explicit studies about eco-anxiety, and the standard definitions of eco-anxiety;
- social and political sciences;
- theories of existential anxiety;
- psychodynamic and psychosocial research;
- research on pathological forms of anxiety and anxiety disorders;
- studies about ecological emotions and ecological affect;
- general theories of anxiety.

The bibliography of the article is long, and yet I have not included all the material that was found in this wide array of fields, in order to keep the article in a readable format. Since the scope of the article is so wide, my discussion will be necessarily brief in relation to many points of interest. Naturally there may also be fields or sub-fields of research which would be relevant, but I have not for some reason found them. Yet I hope to clarify the nature of these phenomena and to facilitate further research on them.

My discussion is theoretical, but I draw from many empirical studies performed in various parts of the world. I utilize a philosophical method called systematic analysis, which is a combination of various tools for conceptual and philosophical analysis. This method suits interdisciplinary research well, since it enables the analysis of the actual content of various views and vocabulary. I found that some scholars have different definitions for a single term—such as eco-anxiety—and on the other hand there are overlapping meanings between various concepts, such as ecological trauma and eco-anxiety.

Thus, the subject of this article is such anxiety which is significantly related to the ecological crisis. For brevity, I use the term eco-anxiety as a general term to refer to such anxiety, even though there are various definitions of eco-anxiety. Indeed one of the points that this article makes is that there needs to be more discussion about how these terms are defined.

As mentioned above in the introduction, climate anxiety seems to be the most widely discussed form of eco-anxiety, and some people actually equate climate anxiety and eco-anxiety. I join those scholars who see a difference between these two: eco-anxiety can be used to describe any anxiety which is related to the ecological crisis, and climate anxiety means such anxiety which is significantly related to anthropogenic climate change. It should be noted that often the lines between various eco-anxieties become blurred, especially because climate change—often called the climate crisis—has an effect on so many other ecological problems. Thus, climate anxiety is usually included in my usage of the term eco-anxiety. When I specifically discuss climate change-related anxiety, I use the term climate anxiety. Both the spellings “eco-anxiety” and “ecoanxiety” are used in the literature, as well as “climate anxiety” and “climate change anxiety”. However, the forms eco-anxiety and climate anxiety seem to be the most prevalent, and I opt for them.

I analyze the contributions of each chosen field or discipline. At the end of these subchapters, I provide brief summaries of their contribution for a wider understanding of eco-anxiety. The main research questions are:

- How are eco-anxiety and climate anxiety defined by various scholars who have used the terms?
- What key insights have been raised about anxiety and the ecological crisis in various disciplines, with or without the use of eco-anxiety terminology?
- When eco-anxiety is analyzed from the point of view of more general anxiety research, what kind of insights emerge? Are there elements in general anxiety research which help to understand the data about people’s experiences of eco-anxiety?

In the closing discussion, I point out to important findings and their relevance for public discussion and health care, and I mention subjects for further research.

3. Results

3.1. Explicit Research on Eco-Anxiety and General Definitions of It

Currently, the most widely cited definitions of eco-anxiety are those by social psychologists in the aforementioned APA report [8] and by Glenn Albrecht [9,10]. These definitions emphasize a generalized character of eco-anxiety: it is seen as a wide-scale reaction to the state of the planetary ecosystems. Here are the key definitions:

- “Ecoanxiety: A chronic fear of environmental doom” [8] (p. 68).
- “Eco-anxiety, the generalized sense that the ecological foundations of existence are in the process of collapse” [10] (p. 250). Albrecht’s another version was this: “Eco-anxiety [is] non-specific worry about our relationship to support environments” [32].

These definitions join the long history of anxiety research in depicting anxiety as closely related to fear and worry, but still as something distinct. In standard definitions, fear is seen to be related to a more concrete threat, while anxiety is borne of a troubling situation which includes more uncertainty [22] (p. 489). When compared to fear and anxiety, worry is usually regarded as a less intense emotion, although there are different levels of worry and some of them can be powerful. All of these emotions are often labeled as “negative”, mostly because they feel unpleasant. However, scholars point out that these emotions have their purposes in life: they help to address a perceived or felt threat. Categorizations into “positive” and “negative” should therefore be carefully analyzed [33]. Regarding ecological issues, psychologist and environmental education scholar Maria Ojala has emphasized that there are also productive forms of worry, fear, and anxiety [34].

The aforementioned standard definition of eco-anxiety by Clayton et al. [8] describes it as a chronic, in other words constant and strong, form of fear. These psychologists also discuss more exact anxiety symptoms as results of the impacts of climate change [7]. Thus, there is discussion about a general form of eco-anxiety—this is depicted by Albrecht with the descriptions “generalized” and “non-specific”—and of more clearly defined anxiety symptoms, such as post-traumatic stress and state anxiety. In addition, the typical form of eco-anxiety is sometimes seen more as related to worry and sometimes more as related to strong anxiety. In a recent research article, Clayton and Karazsia [35] explored “climate change anxiety” and delineated it as a rather strong form of anxiety, differentiated from less intense worry. However, these scholars still warned against pathologizing climate anxiety [13,35], as several others have also done [1,36]. These issues will be discussed more below, in the section about “pathological” anxiety.

Experienced eco-psychologists Buzzell and Chalquist [37] have recently argued that it would be important to notice that there is much healthy “eco-fear” in the symptoms usually described by the concept of eco-anxiety. This seems evident, but the relation between fear and anxiety requires careful consideration. Several psychologists have pointed out that in relation to global threats and their representation through the media, the lines between fear and anxiety easily become blurred [38–41]. Ethnographic work on climate emotions has observed this blurring of fear and anxiety in relation to climate threats [42,43]. Fears related to environments and environmental issues have also been explored through various uses of the concept “ecophobia” [44–46].

Stress and distress are closely related to anxiety, and some scholars would indeed prefer to speak of “climate change distress” instead of “climate anxiety” [47,48]. There is a long tradition of researching “environmental stress” in the sense of health impacts from various environmental conditions, such as traffic noise or pollution [49], and thus that term has a different tone when compared to eco-anxiety. Helm et al. [50] researched matters related to eco-anxiety by using the terms “ecological stress” and “depressive symptoms” in relation to environmental concern. Thus, finding the relevant psychological research about eco-anxiety requires knowledge about various terms that scholars use. It seems, however, that both in public discussions and interdisciplinary research eco-anxiety and climate anxiety have become the standard terms.

To summarize some key insights from this area of research: eco-anxiety is closely related to worry and fear, but also something distinct. The relation between fear and anxiety is not simple in these kind of cases of global angst. There are differing opinions about what terminology should be used, and whether the term climate anxiety should be used to include less severe climate worry or not. Clarifications of what is meant by “anxiety” are thus needed.

3.2. Social and Political Sciences: Anxiety as Related to Changes in the Social Order

Anxiety, worry and fear can be analyzed either in relation to the individual—as much psychology does—or in relation to social dynamics. Social psychology and the relatively new field of psychosocial studies [51] combine both perspectives, while scholars in social and political sciences (later: social science scholars) tend to emphasize the social dimension. There are varying degrees in which social science scholars include psychological considerations in their work. Many of those who have provided important contributions for eco-anxiety research have done so, and thus the lines between social and psychological research often become blurred.

Social science scholars tend to define eco-anxiety and climate anxiety—usually by using just the word anxiety—as related to uncomfortable changes in the social order of things. Numerous theories can be applied here, and partly already have been. There is a long tradition in social sciences of discussing the results of modernity and postmodernity as bringing on a new kind of “age of anxiety”. The dynamics of these developments are seen to be more complex than can be adequately discussed here. Usually it is pointed out that the fragmentation of traditional sources of norms and meanings brings individuals much more freedom and, at the same time, an increased possibility and tendency for feelings of anxiety. When this is combined with rapid changes in societies and technology, individuals are faced with constant uncertainty and stress. Sometimes this is explicitly linked with ecological threats, such as by sociologist Ulrich Beck [5].

As related to eco-anxiety, the work of sociologist Kari Marie Norgaard [52] has been especially influential. Norgaard does not use the wording eco-anxiety, but discusses the phenomenon in substance by analyzing anxiety, fear, helplessness, and guilt. By using methods of ethnography and sociology of emotions—such as Arlie Hochschild’s theories—Norgaard was able to show that contemporary people can resort to emotion management in relation to ecological threats. Norgaard found that in relation to climate change, the social dissonances and pressures in a studied community were so strong and contradictory that people often resorted to “socially constructed silence”. This silence was prone to increase anxiety in the long run [52]. In a recent article with sociologist Robert J. Brulle [53], Norgaard applies social philosopher Pierre Bourdieu’s theories to the potential traumas and anxieties that people experience in relation to climate change. By applying Bourdieu’s terms, it can be posited that “disruption of the ecological habitus [roughly, order of things]” can lead to “emotions of guilt/anxiety” [53] (p. 16).

Norgaard’s study showed that anxiety and other difficult emotions were caused on one hand by changes in geophysical environment and, on the other hand, by pressures to social worlds. Afterwards, this notion of how social and ecological factors become intertwined has been shown in many empirical studies which have included reflections about eco-anxiety and climate anxiety [15,43,54–58]. Numerous different social factors shape people’s experiences of eco-anxiety. Those who say that they experience eco-anxiety often point out that they would wish for more understanding from the social groups and societies around them: they feel that their anxiety is made worse by socially constructed silence and social conflicts.

Generally, it should be noticed that sometimes people consciously name the ecological crisis or climate crisis as a major—sometimes the major—source of their anxiety, and sometimes it is a factor which affects them unconsciously. Of course, many people simply say that it is not a concern for them, and it would require in-depth interviews to find out whether this is actually true [51]. Eco-anxiety may be only one dimension in the overall set of worries and problems that a person or group faces [3,59], and sociological research is important in showing this complexity.

A highly charged social issue in industrialized countries is the decreasing childbirth rate. During the last years of the 2010s, a growing number of people told that eco-anxiety, and especially climate anxiety, is an important reason for their reluctance to have children [15] (p. 7) [43] (p. 22) [13,20]. Organizations or movements such as Conceivable Future in the USA and BirthStrike in the UK have provided platforms for people who have these kinds of thoughts. It would require in-depth research to find out what kind of various factors have an effect on these decisions and opinions, but nevertheless it is clear that eco-anxiety is at least one significant reason for such behavior.

To summarize, this line of research shows that forms of eco-anxiety can be complex: eco-anxiety is affected by social pressures and factors and can even be a result of them. There can be silenced or socially denied eco-anxiety. In addition, the practical manifestations of eco-anxiety are often combinations of various distresses. Eco-anxiety can be a component or a dimension in a person's anxieties, such as anxiety about whether to try to have children in a rapidly changing and distressed world. Contextual matters must be taken into account when analyzing people's experiences of eco-anxiety and whether they themselves use the term or not.

3.3. Existential Anxiety

Many scholars have linked eco-anxiety with deep existential anxieties. The word existential is commonly used in two meanings in relation to the ecological crisis. It can be applied to simply mean a threat to the existence of humans and societies [60]. On the other hand, the term is used to capture a deeply felt questioning and angst as related to "ultimate concerns" [27] or "life's givens" [61]. I will here focus especially on this second sense of the term, although it also captures much of the first sense: one of the key concerns related to life's givens is death.

In the works of scholars who combine social theory with psychological theory, there is much discussion about existential anxiety. A prominent example is Anthony Giddens' theory of "ontological security" or insecurity [62] (pp. 110–112). This theory points out that deep feelings of security or insecurity have profound consequences for people's behavior and wellbeing. The global ecological crisis can easily raise deep feelings of ontological insecurity, which causes anxiety, depression, or defensive reactions [5,53,62].

Existentialism is the name for the vague movement of philosophers and psychologists who have emphasized the significance of elemental, "existential" questions of living as a human being. There are various definitions of these questions, but usually they are related to mortality, to questions of meaning or meaninglessness, and to profound feelings such as guilt and grief [27,61]. Philosopher, theologian and psychological thinker Paul Tillich developed an influential model of existential anxiety based on these kinds of questions, and he even briefly touched upon questions related to eco-anxiety in the 1960s [36]. In current anxiety theories, Tillich's thought is sometimes utilized [63], but his discussion partner Rollo May is perhaps more often drawn from [21,64].

Several scholars have recently noted that eco-anxiety often manifests in forms which can be understood by old definitions of existential anxiety, which in themselves usually did not yet discuss ecological concerns [63,65]. Myers [66] applies the phenomenological ideas of philosophers Edmund Husserl and Martin Heidegger to describe the anxiety provoked by the climate crisis as a disturbance to "the life-world"; thus, he discusses existential climate anxiety in the existentialist sense. Ojala [67] discusses the challenge and possibilities of anxiety, both as worry and as existential anxiety, for education, and briefly discusses also the aforementioned Tillich's theory.

Empirical studies show that in relation to ecological problems, people experience troubling feelings of guilt and shame [68], and existential questions about mortality and meaninglessness [15,42,69]. In one of the first monographs about eco-anxiety, Ray [18] discusses climate anxiety as related to many existential concerns.

Thus, this area of research points out that eco-anxiety can have, and often does have a deep dimension related to existential questions. More research is needed to integrate theories of existential anxiety deeper with studies about eco-anxiety. There are beginning of interdisciplinary work on this,

combining sociology, psychosocial studies and existential philosophy, and this work could be brought into discussion with theories of ecological affect and ecological emotions, such as guilt and grief.

3.4. *Psychodynamic and Psychosocial Perspectives on Eco-Anxiety*

In the 2000s and early 2010s, scholarly writing on eco-anxiety and climate anxiety was dominated by psychologists coming from psychodynamic traditions [70–74]. I interpret this as related to the strength of the social and psychological mechanisms of silence and distancing (or, in psychodynamic language, defenses). It was difficult to notice the various forms of eco-anxiety, when the subject was not commonly recognized. Some psychodynamic writers were able to encounter the topic, but even in their own guilds they engaged in efforts to raise awareness and break the silence about the topic. Still in the end of the decade, there were calls for psychoanalysts to take ecological issues into consideration [26,75].

A key volume historically was the article collection *Engaging with Climate Change: Psychoanalytic and Interdisciplinary Perspectives*, edited by psychotherapist Sally Weintrobe [76]. The book remains a highly interesting commentary on climate anxiety. It includes articles by many scholars who have explored the dynamics related to anxiety and denial, even though the concept eco-anxiety is not used. Weintrobe's lead article, "The difficult problem of anxiety in thinking about climate change" [24], argued that there is a vicious circle between anxiety and denial. It is difficult to accept the ecological crisis and the climate crisis, because it means a) accepting a potentially annihilating threat and b) accepting that there must be vast changes in the lives of individuals and communities. Some people try to escape fear and anxiety into denial, but deep down there remains dissonance related to internal conflicts—knowing and trying not to know at the same time. Thus, anxiety may breed denial, which in turn breeds more (repressed) anxiety. More empirical data about these repressed or suppressed anxieties were made available in the article collection edited by Paul Hoggett [51].

Some scholars, such as Hoggett [77,78], have explicitly sought to integrate social and psychological perspectives into what they call psychosocial studies related to the ecological crisis. An ambitious and insightful volume of this approach is the monograph by Adams [62], which includes much discussion about eco-anxiety (without the exact term). Lertzman [25] has coined the term "environmental melancholia" to describe a condition which is closely related to eco-anxiety: unresolved and often unconscious mourning because of environmental change. There are also several studies which explore the relations between death anxiety and "mortality salience" with the ecological crisis, often through such frameworks as Ernest Becker's theories or Terror Management Theory [20,36,79,80].

To summarize, the special contribution of these scholars has been to raise attention to the very existence of eco-anxiety, and to study the hidden—repressed or suppressed—forms of such anxiety. Psychosocial studies offer a framework in which socially constructed silence is analyzed also in relation to the psychological processes of individuals and groups. Research on such phenomena as environmental melancholia and death anxieties provides important discussion partners for studies about eco-anxiety.

3.5. *Research about "Pathological Anxiety" and Anxiety Disorders*

3.5.1. Anxiety Disorders

For some people, the word anxiety brings into mind first and foremost pathological anxiety or anxiety disorders. Because of this, some scholars of eco-anxiety resist the use of anxiety terminology, for they fear that it may lead to pathologizing and possibly medicalization [37]. However, eco-anxiety is actually not defined by scholars as an official disorder, although it is pointed out that strong forms of eco-anxiety can require mental health care [8,35,36,81]. As climate psychologist Thomas Doherty [82] points out, the relationship between psychopathology and eco-anxiety is complex, and requires contextual, case-specific analysis.

There is not yet much research on overly strong forms of eco-anxiety or the connections between eco-anxiety and anxiety disorders. There are case examples of severe depression and acting out-behavior

in which ecological problems have been found to be important triggers [72,73,83]. There are brief academic discussions of forms of obsessive-compulsive checking (OCD) or obsessive behavior as related to eco-anxiety and especially climate anxiety [84–86].

As a whole, the field of psychiatry has only recently started to pay attention to the impacts of the ecological crisis [87], although there were some notable—and usually unnoticed—forerunners such as Harold Searles in the 1960s and 1970s [75]. Currently, an organization called Climate Psychiatry Alliance works to draw attention to the mental health impacts of climate change, including anxiety. The discussion about climate anxiety has begun among child psychiatry professionals [88], and for example Division of Clinical Psychology of the British Psychological Society published a theme number about climate anxiety in its journal in Summer 2020 [89].

Depression, another wide-scale phenomenon with various definitions, is closely related to anxiety. As hinted above, there are observations about such depression which has been impacted by the ecological crisis, but much more research would be needed. Popular discussions of “climate depression” [90] have sparked attention. Some scholars have for a long time suggested that ecological problems may indeed cause severe depression [91]. Writing in *Psychiatric Times*, Woodward [92] offers a framework of separating “climate-related despair” from “depression” (as clinically defined). This framework has been adapted from analysis of the relation of grief and depression. The systems thinking approach championed by Berry et al. [3] offers tools to study the connections of anxiety, depression, and the multiple factors which affect these kind of phenomena.

In addition, anxiety and depression may be combined [93]. Anxiety scholars Grupe and Nitschke [22] point out that: “Mixed anxiety and depression is characterized by uncertainty about the occurrence of negative events and feelings of helplessness regarding control over those events” (p. 489). This resonates with the research about persons with strong eco-anxiety: these persons usually report that uncertainty about the future is hard to bear, and they wrestle with feelings of helplessness in the face of global ecological problems [15,43,76]. Sensitivity towards possible eco-anxiety might help the treatment of many persons who suffer from diagnosed issues such as depression or Generalized Anxiety Disorder [35,40,83].

To summarize: there is a need for more research about pathological forms of eco-anxiety, but case examples show that ecological concerns may at least partly shape many kinds of mental health issues. Pathological eco-anxiety should be differentiated from “healthy” eco-anxiety, and as a whole eco-anxiety should not be pathologized.

3.5.2. Anxiety Sensitivity and “Trait Anxiety”

In much anxiety research, a separation has been made between “trait anxiety” and “state anxiety”. The former refers to tendencies to be anxious and the latter means anxiety states [21,22,93]. These terms have been used very little in research on eco-anxiety, but Matera [94] has created a proposal for a concept of “climate state anxiety” and studied the role of trait anxiety in relation to it.

The role of anxiety sensitivity or “trait anxiety” in relation to eco-anxiety needs further research. The topic is sensitive in itself, because it is linked with social and political debates about environmental action and eco-anxiety. Some people have claimed that eco-anxiety is not relevant, because they regard ecological problems as irrelevant. These claims have sometimes been infused with claims that eco-anxiety and especially climate anxiety is experienced only by “hysterical” people. A case example is Prager [95]. However, climate skepticism has been explored as partly resulting from maladaptive coping methods with this difficult issue [96], and the emotional tone in the aforementioned arguments often hints at this direction [76].

Scholars have argued that a reasonable amount of worry is a rational reaction to ecological concerns [34,35,97], and it is evident that eco-anxiety is experienced by numerous people who do not suffer from existing mental health issues or exceptionally strong anxiety sensitivity [98]. Rather it seems that certain experiences, knowledge, and types of exposure lead one to feel eco-anxiety. For example, naturalists and climate scientists suffer from eco-anxiety because of their knowledge and their emotional

ties with the natural world [99,100]. However, at the same time it is clear that previous or existing mental health issues, and anxiety sensitivity, may contribute to the probability and severity of the eco-anxiety that a person experiences. There are some research results which confirm this [35,47,94], but more research is needed. In relation to the psychological consequences of direct impacts of ecological problems, such as extreme weather events, it has been clearly found that these kind of factors have an impact [8].

To summarize: trait anxiety and anxiety sensitivity do not explain all eco-anxiety, but they have some effect, and further research is needed to clarify the various factors which have a role. For example, it is clear that certain life situations and professions make people more susceptible to eco-anxiety, regardless of personality traits. There is not yet much research which would utilize the categories of state anxiety and trait anxiety in relation to eco-anxiety.

3.6. Ecological Emotions and Affect

During the last fifteen years, there has been increasing interest for researching the emotions, feelings, affect, and moods related to ecological issues. This is closely combined with research about the intertwined relationship between humans and the rest of nature. In this research, the substance of eco-anxiety is regularly touched upon, but the usage of anxiety terminology, or the exact term eco-anxiety, has only increased in recent years. This multi- and interdisciplinary area of research is too large to be discussed here in depth, but I point out certain important issues as regards to eco-anxiety.

The research on emotions and affect is characterized by the existence of various theories and frameworks, which do not always engage in discussions with each other. Some prefer the term emotion, while others focus on affect, and there are multiple nuances in people's understandings of these terms. This may provide fruitful conflicts and diversity, but it also hinders the efforts to gain a general understanding of research on "ecological emotions" or "ecological affect".

Anxiety is a common but tricky subject for this kind of research since it is so diverse. Anxiety can manifest itself as an emotion, but it has also other forms. Tones of ecological affect often include anxiety-like manifestations, but it is difficult to characterize anxiety simply as an affect. What emerges as elementary is the need to recognize the various forms and definitions of eco-anxiety that exist. For example, discussions about "Ecological anxiety disorder" in cultural geography [101] or "Anthropocene disorders" in environmental humanities [44] do not actually mean—at least not only or mainly—actual disorders of a pathological nature. Other examples of this non-pathologizing approach are found in literary scholar Timothy Clark's [102] discussion of his concepts of "Anthropocene disorder" and "Anthropocene Horror".

Theories of ecological affect include substantial discussion about anxiety, fear, and worry [103,104]. In a collection of articles about "affective eco-criticism", the editors Bladow and Ladino [105] provide a good introduction to scholarship on ecological affect. In the same book, many articles touch upon themes related to eco-anxiety. There is explicit discussion about "Anthropocene anxiety" [106] and "solastalgic distress" [107], and anxiety, fear, and worry are also mentioned in several other articles. While there are variations about the definitions of anxiety in these writings, a major emphasis is on future-related uncertainty and uncontrollability as causes of anxiety. Scholarship on ecological affect emphasizes the difficult psychological impacts of damage to places and lifeworlds, including much discussion on other creatures.

Regarding ecological emotions, there is the psychological literature [108] and wide-ranging interdisciplinary discussion [11]. The latter often includes discussion about also other tones of feeling than strictly defined emotions. Some emotions have so far received much more attention than others.

The relationships between anxiety and various emotions or affect are too complex to be discussed here in depth. I will only mention certain connections which seem highly important.

Guilt: As discussed above, unrecognized or complex eco-guilt (or eco-shame) can manifest as anxiety [26,68,76].

Grief: There is much discussion about varieties of anxiety in the growing literature about ecological grief and climate grief [29,109,110]. In popular writing, climate grief is sometimes used as a synonym for climate anxiety [111]. The links between grief and anxiety are profound [1]. Unrecognized or complicated grief can manifest itself in anxiety symptoms, and certain anxiety is often part of even those grief processes which do not become complicated [112].

Scholarship on solastalgia, place-based distress due to environmental changes, has explored many phenomena which are closely linked to eco-anxiety [11]. Askland and Bunn [113] argue that solastalgia has “ontological” dimensions, which reflects the discussion of existential aspects of eco-anxiety. They also insightfully point out that this distress is linked both to spatial and temporal aspects. It should be noted that there are various applications of the concept, and there is also critical discussion about the power dynamics in some of these.

Trauma: Discussion and research about “ecological trauma” and “climate trauma” has also increased during the last years [30,99,114]. This points to the need to analyze the relation between trauma dynamics and eco-anxiety dynamics. Various kinds of trauma, both primary and secondary, can cause manifestations of anxiety. The proposals of delineating a condition of “pre-traumatic stress disorder” especially in relation to climate change [115,116] discuss issues very close to eco-anxiety: psychological disturbance caused by anticipation of ecological threats.

Despair: In empirical studies which touch on eco-anxiety, despair is nearly always mentioned. For examples, see [15,43]. Some scholars delineate “environmental despair” or “eco-despair” in a sense which is close to many definitions of eco-anxiety [117]. As with anxiety and depression, there is a need to analyze what exactly is meant with the term. Many writers equate despair with hopelessness, but several scholars of eco-anxiety have pointed out that it is important to make a separation between despair and hopelessness [15,40,118]. Despair can be seen as a natural emotion, which does not necessarily include a loss of agency or loss of a sense of meaning in life, as hopelessness (in this definition) does.

Anger: From a wealth of studies, it is known that varieties of anger often manifest in relation to anxiety, grief, guilt, and trauma. There is a rapidly growing realization that “eco-anger” is an existing emotional landscape which would require more attention, but so far studies on it are very scarce [119,120]. There are general, usually quite brief mentions of anger and outrage in the literature about eco-anxiety and emotion/affect [18,20,41,44], and there are blogs and other internet sources which discuss “climate rage”, but further work is needed. A Finnish survey about climate change emotions revealed that 31% of Finns recognized themselves sometimes feeling climate anger, and 46% had seen it in other people [98]. Varieties of eco-anger should be further studied, since these varieties require or evoke very different responses. It is a different matter to feel moral outrage or blind hatred, or to channel anger either into a non-violent demonstration or then into fury on the Internet towards others who have different views on climate change.

To summarize, studies on ecological emotions and ecological affect often discuss eco-anxiety, albeit with various terminology. There is a need for further work in integrating interdisciplinary research on eco-anxiety with research on (ecological) emotion and affect. Emotions/feelings/affect which seem to have strong links with eco-anxiety include grief, solastalgia, guilt, shame, despair, and anger. The dynamics between eco-anxiety and ecological trauma should be further studied.

3.7. Anxiety Theories and Eco-Anxiety

I did not find general anxiety theories which would discuss eco-anxiety. However, in the Journal of Anxiety Disorders there were two articles recently published on climate anxiety, so further attention may be on its way [13,121]. Nevertheless, a reading of anxiety theories brought a widened understanding about the forms and experiences of eco-anxiety that other disciplines have revealed.

Of the wide variety of theoretical perspectives on anxiety, I have selected here ones that integrate elements from various theories [21–23,122]. Since eco-anxiety has been of interest for numerous fields of inquiry, as seen above, I feel that these integrative theories of anxiety help to understand various

aspects of eco-anxiety. Epstein's theory [122] is old and in certain aspects outdated, but it still includes useful observations. Of particular interest in Epstein's and Barlow's [21] theories is the fact that they combine the insights of old anxiety theorists, both psychologists and philosophers, with results of empirical psychology. Thus, they also discuss theories of existential anxiety.

Anxiety theories emphasize the key role of uncertainty. There is a felt threat, but there is also uncertainty about its exact nature or time [21]. Other key aspects are unpredictability and uncontrollability. Unpredictability has close connections with uncertainty. Uncontrollability generates helplessness and feelings of powerlessness; in other words, a diminished sense of efficacy and a diminished control belief (or changes in a felt "locus of control") [22].

In the research on people's experiences of eco-anxiety and climate anxiety, these aforementioned factors seem to play a central role. There is profound uncertainty and unpredictability both in relation to some ecological threats—for example, the specifics related to the well-known disastrous consequences of climate change—and in relation to environmental politics [5]. Uncertainty and unpredictability extend into social relations: people do not necessarily know what social norms they should follow in relation to environmental behavior [123]. For example, for middle-class people, it used to be socially accepted and even endorsed to fly; now in many countries there is a discussion about "flight shame" [124]. There are social kinds of eco-anxiety, or as sociological and psychosocial research shows, there is a social dimension in eco-anxiety dynamics.

Uncontrollability also seems to feature prominently in people's experiences of eco-anxiety and perhaps especially climate anxiety. Epstein [122] pointed out that "response unavailability" is a major factor in anxiety. Grupe and Nitschke [22] echo this in the light of more recent studies, highlighting the importance of "the belief that one has at one's disposal a response that can influence the aversiveness of an event" (p. 490). Among people who experience eco-anxiety, helplessness and powerlessness are often reported [25,76]. For some others, there is a feeling of efficacy, often in the form of some kind of activism, but still a sense of uncontrollability and a certain powerlessness may remain. For example, empirical research about the anxiety of climate activists shows that many of them recognize this factor as a major source of their anxiety: they simply do not have the political power to do what they deem that needs to be done. However, being able to do at least something constructive helps many people with their eco-anxiety, even when certain anxiety still remains [15,43,57,58,98].

Frustration often results, and its connections with anxiety are significant. Epstein pointed out: "It is thus evident that frustration theory is highly relevant for an understanding of anxiety, and that the reverse is also true" [122] (p. 305). The relevance of this insight in relation to the ecological crisis is revealed in the fact that frustration has appeared in several recent studies to be one of the most common emotions that people feel in relation to climate change and the ecological crisis [55,98].

Another often reported emotion in relation to the ecological crisis is feeling overwhelmed [18,20,43]. This is yet another theme that anxiety theories discuss poignantly. Epstein [122] regarded "overstimulation" as a major cause of anxiety: "overstimulation is associated with frantic feelings of being overwhelmed and bombarded with stimulation, corresponding to the statement, "Stop it, I can't bear it anymore"" (p. 303). This description fits well the experiences of many people who report eco-anxiety or climate anxiety because of constant media exposure to disturbing information about ecological damage [43,81]. This overstimulation is often made worse because of social media and cell phones, which enable the person to be connected to potentially disturbing information on a constant basis. It is telling that in manuals for coping with climate change distress or eco-anxiety, authors very often recommend limiting media exposure [18,20,81]. Overstimulation can also be linked with (hyper)vigilance and manic activity. Constant busyness and work-a-holism can lead to burnout, and for example the phenomenon of "climate burnout" has already been recognized [18,99,125].

Anxiety theories provide much food for thought also in relation to the anxieties generated by social distress and conflicting information. There would be possibilities for further work here in bringing together psychosocial research and anxiety theories. For example, Rollo May's theory of anxiety argues that anxiety can be generated by felt threats to the values and social groups that the person regards

highly important [21]. Epstein [122] argues that “cognitive incongruity”, “the inability to integrate the data of the world into a meaningful schemata, whether in terms of a self-concept, or a predictive model of the environment, is a basic source of anxiety” (p. 303). The wide discussions about the cognitive difficulties related to global ecological problems and especially climate change [83,126] could be linked with these theoretical perspectives about anxiety, and they also contribute to the discussions about the role of identity in eco-anxiety [35].

A highly important aspect of anxiety theories is the positive role of anxiety as an emotion which engenders information-seeking and problem-solving. This kind of anxiety, which anxiety theorist Kurth [23] calls “practical anxiety”, manifests itself also in relation to eco-anxiety. This is close to what esteemed anxiety researcher David Barlow points out: “Without anxiety, little would be accomplished” [21] (p. 9). Many people report that in addition to psychological pain, their eco-anxiety has caused them to rethink their ecological behavior and to build more sustainable and resilient lifestyles, both individually and communally. This aspect of anxiety theories helps to understand further those voices who speak on the behalf of the positive aspects of eco-anxiety and climate anxiety [1,18,20,41].

Kurth [23] also argues that anxiety can be a moral emotion: it shows that a person cares about important problems and uncertainties. This line of thought can be applied to eco-anxiety: it is important to care about threatening ecological problems. It would be possible to construct a theory of eco-anxiety as a moral emotion.

To summarize: various integrative anxiety theories help to understand many aspects of the varieties of eco-anxiety. The basic elements of anxiety—uncertainty, unpredictability, uncontrollability—are strongly present in the empirical accounts about eco-anxiety. Some formulations in anxiety theories help to further understand the links between eco-anxiety and people’s experiences of overwhelm, frustration, and dissonance. The adaptive, “practical” forms of eco-anxiety seem to merit more attention. A key question seems to be: how to increase the adaptive potential in people’s experiences of eco-anxiety and to alleviate the paralyzing forms of eco-anxiety?

4. Discussion

The analysis above shows that many fields of study contribute to research on eco-anxiety. When general anxiety research is brought into dialogue with these interdisciplinary studies, important aspects of eco-anxiety become clearer. The key roles of uncertainty, unpredictability and uncontrollability in general anxiety tell also of the fundamental characteristics of eco-anxiety. Overwhelm seems also a major factor. Further dialogue between various themes in anxiety research, such as death anxiety, health anxiety, or theories of learned helplessness and intolerance of uncertainty, would probably generate increased understanding of eco-anxiety dynamics.

There are evidently numerous ways in which eco-anxiety is linked with many emotions, as both scholars of eco-anxiety and scholars of emotion and affect have proposed. The relations between fear, worry, and anxiety are intimate, but there are also close connections between anxiety, anger, frustration, despair, guilt, shame, and grief. Among scholars, there are differing opinions about whether the term eco-anxiety should be used as a general term for related phenomena, or whether other terms such as distress, stress, or fear would be better. There are also differing opinions about whether the terms eco-anxiety and climate anxiety should be used only for stronger anxiety symptoms, or whether these terms should include also less severe worry and fear. It seems to me that the latter option would be more reasonable, for several reasons. First, since scholars warn against pathologizing eco-anxiety and climate anxiety, such anxiety should be defined in a wide manner. Second, anxiety itself is such a multidimensional phenomenon that it would be rather narrow to restrict eco-anxiety and climate anxiety only to stronger anxiety symptoms. People who recognize eco-anxiety in them themselves describe their conditions as both strong and milder. Nevertheless, there remains the task to research further both stronger and less severe forms of eco-anxiety, and to explore vocabulary for a variety of phenomena.

Sociological and psychosocial studies were found to bring into fore the importance of the social dimensions of eco-anxiety. A task for further research is to discuss more extensively the relations between general anxiety theories and eco-anxiety in this regard. For example, anxiety theorist Kurth [23] points out that there are many instances of socially mediated anxiety. “Norm uncertainty” and genuine novelty are bound to cause anxiety. Sometimes this takes place in the form of “punishment anxiety”, where a person feels anxiety because she or he fears that she will be punished either physically or socially (damage to status) because of something done or left undone. The existence of social factors which affect eco-anxiety is mentioned in many studies, and discussed with other terms in certain sociological studies, but eco-anxiety research would benefit from more explicit discussion of these social dimensions in eco-anxiety. Theories of social anxiety and eco-anxiety should be brought into a dialogue.

It was found that experiences of eco-anxiety may be strongly linked with existential anxieties. This subject area was discussed by scholars in many fields, such as psychodynamic, psychosocial, and sociological researchers. Further discussion between existential psychology, philosophy, and eco-anxiety research seems promising and important. Deep questions related to meaning or meaninglessness, guilt, and mortality are evident in empirical data about eco-anxiety.

Some research was found about pathological or clinical forms of eco-anxiety, but more studies would evidently be needed. In research on eco-anxiety and climate anxiety, the role of personality traits is currently discussed. More data are required, but two things seem evident. First, anxiety sensitivity may have a role in eco-anxiety, but, second, there are numerous cases of eco-anxiety where other factors seem more powerful. These include certain life situations and certain professions, such as being a farmer or a climate scientist. These issues are of utmost importance for designing healthcare practices in relation to mental health impacts of the ecological crisis and the climate crisis; in other words, in encountering eco-anxiety and climate anxiety. Knowledge about the various forms of eco-anxiety is needed among healthcare professionals and other professionals, so that they can respond adequately.

Literature and studies are now emerging about the various ways of coping with eco-anxiety. (There is a branch of research of its own for coping and climate change: [97,127–130]). Various definitions of anxiety and eco-anxiety are bound to have effects on this literature. On one hand, participatory action is often recommended as an important antidote to paralyzing anxiety [19]. This links eco-anxiety closely with environmental education and advocacy, environmental ethics, and the psychology of environmental action. However, because global ecological problems cannot be solved in the near future, there is a need for skills of living with anxieties and distress. For this reason, there have emerged discourses about resilience, post-traumatic growth, and adaptation skills in relation to eco-anxiety and climate anxiety [36,41,55,81,131–134]. These approaches advocate for the need for both participatory action and emotional work in order to channel eco-anxiety into resilience. Sometimes sub-themes of the needed resilience are named, such as emotional resilience [81] or existential resilience [36,135].

Overall, there is a certain pull towards the existential dimensions of eco-anxiety in these approaches because the task is to find ways to live with conditions that cannot be completely changed. Grose [20] engages in a discussion about various therapies and methods which can alleviate strong eco-anxiety and argues that cognitive-behavioral therapy (CBT) has both strengths and limitations in this regard, since much of it focuses on learning to realize that the anxiety-generating threats are not as threatening as they seem. In relation to real problems, such as catastrophic biodiversity loss and climate chaos, CBT can seem to fall short.

The COVID-19 pandemic—which is ongoing at the time when this article is written—provides a useful comparison. Authors and psychologists who have utilized CBT or its mindfulness-enhanced versions (MCBT) have had to adjust their message to confront a real threat [136]. These materials are very interesting in relation to eco-anxiety, since much of them can be applied into it. For example, Kecmanovic [137] advocates for accepting uncertainty and mortality: to find skills of living with the anxieties, instead of trying to get completely rid of them. However, the big difference is of course the fact that the COVID-19 pandemic is estimated to end at some point, but the ecological crisis will

be ongoing for generations [138]. Thus, it has even more of a character as existential anxiety than coronavirus anxiety.

I have discussed themes for further research already above, but one important research focus is related to social contexts and cultural factors. The beginnings have already appeared of applying the frameworks of “cultural politics of emotion” and “public feelings” into ecological emotions and eco-anxiety [18,44,68,139], but more work is needed in this regard. Manifestations of eco-anxiety are in numerous ways shaped by socio-cultural factors, power dynamics, and justice issues [59]. It may well be that among the multiplying crises of the 2020s, eco-anxiety will become increasingly intertwined with other anxieties. For both research and health care purposes, it will be highly important to be able to study the elements of eco-anxiety also in the experiences of those people who do not recognize—or do not have the time to think about—their eco-anxiety. The attitudes and feelings of health care professionals and other related professionals themselves also need attention [88].

The key finding of the research in this article is that eco-anxiety has many dimensions. As a general term for “difficult feelings because of the ecological crisis”, eco-anxiety seems to be quite suitable, because so many forms of these feelings have some characteristics of anxiety. This may well be a major reason why eco-anxiety terminology, including climate anxiety, has become so popular. However, there is a need to raise discussion about the various aspects of eco-anxiety, so that misunderstandings can be diminished. For example, given the wide scope of the phenomenon, it seems strongly misleading to think of eco-anxiety mainly as an anxiety disorder. On the contrary, it may be posited that eco-anxiety is actually a moral emotion: it is based on an accurate appraisal of the severity of the ecological crisis. Any paralyzing kind of eco-anxiety is not a desired state of mind, but there are luckily many instances of “practical eco-anxiety”: cases where anxiety leads people to re-evaluate the situation, search for better information, and to make changes in individual and collective behavior. Thus, especially at a time when ecological matters enter more strongly in healthcare, an overly narrow view of eco-anxiety as only a health concern should definitely be avoided.

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