

Article

Eco-Anxiety and Environmental Education

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Abstract: Anxiety and distress about the ecological crisis seems to be a rapidly growing phenomenon. This article analyzes the challenges and possibilities posed by such “eco-anxiety” for environmental education. Variations of eco-anxiety are analyzed, and it is argued that educators should be aware of the multiple forms that the phenomenon has. Eco-anxiety is found to be closely connected with many difficult emotions, such as grief, guilt, anger, and despair. However, anxiety also has an adaptive dimension, which can be called “practical anxiety”. Anxiety is connected with expectation, motivation, and hopes. Previous research about eco-anxiety and ecological emotions in various disciplines is discussed, and related studies from various fields of education are brought together. Based on this extensive literature review, theoretical analyses are made, using a philosophical method. It is argued that environmental educators need organizational and peer support both in relation to their own difficult emotions and in order to develop emotional skills in their work. Educators should first practice self-reflection about eco-anxiety, after which they have many possibilities to help their audiences to develop emotional resilience. Potential practical activities related to eco-anxiety are discussed, drawing from various fields of education. These include validation of eco-anxiety and ecological emotions, providing safe spaces to discuss them, and, if possible, providing embodied and creative activities to more fully deliberate on them.

Keywords: ecoanxiety; climate anxiety; education for sustainable development; climate education; emotion; affect; teaching; pedagogy; ecological grief; solastalgia

1. Introduction

A rapidly growing number of news items discuss eco-anxiety and climate anxiety, especially as related to children and youth [1,2]. It is reported that people have various kinds of anxiety symptoms because of environmental degradation and because of a fear that the future of civilizations is threatened. While eco-anxiety and climate anxiety have become the most often used buzzwords, there are many other related terms and phenomena which have also gained more attention in recent years: solastalgia, climate grief, environmental despair, eco-guilt, and so on [3]. For a general term about these kind of issues, most people nowadays use eco-anxiety (and climate anxiety), but some scholars prefer to use the term “climate distress” [4], and other proposals such as “Anthropocene Horror” have also been made [5]. There is a growing research interest towards these phenomena [6–10], but, so far, research is lagging behind the public discussion. There is a need for more data and more theoretical discussion about the phenomena related to eco-anxiety.

These phenomena are clearly something that posits a challenge to various forms of environmental education and sustainability education. If people suffer from serious anxiety, it will be difficult to be sustainable either psychologically or physically. However, eco-anxiety may also be seen as a possibility, as a crucial signal that people feel the seriousness of the ecological crisis. Thus, eco-anxiety and climate anxiety emerge as both potentials and problems for environmental education, depending on their manifestations. The various difficult emotions and possible anxieties that the participants of

environmental education experience merit attention, but so do the anxieties of environmental educators themselves. (I use the term emotion in this article in a relatively wide sense. For insightful discussion about the variations in defining “emotion”, see [11]. For definitions of affect in environmental studies, see [12–14].) Indeed, research has found that an alarming number of environmental educators are in danger of burnout and other serious mental states because of the relentless exposure to ecological damage and the perpetual pressures to do more about it [15–18]. Eco-anxiety and difficult ecological emotions may transfer either from educators to students or the other way around, and often these are jointly felt but unspoken phenomena.

In this article, the challenges and possibilities posed by eco-anxiety to environmental education are analyzed. An introduction to interdisciplinary studies about eco-anxiety is provided and previous research in environmental education which touches upon eco-anxiety is probed. The recommendations of psychologists and other professionals about how eco-anxiety should be encountered are analyzed, and initiatives that could be taken in environmental education to take these issues further are discussed. The article is theoretical and uses a philosophical method, but many of the studies which are used as sources have produced empirical data. The objectives are to increase knowledge about eco-anxiety and ecological emotions, and to facilitate practical development of EE practices by offering theoretical ideas based on the literature review and analyses. In the Supplementary Materials, a description of one practical form of encountering eco-anxiety in EE is offered, based on a Finnish educational project.

A note about terminology: The term environmental education (EE) is used broadly in this article, pointing to the whole field of education and advocacy as related to ecological problems. Thus, such disciplines as sustainability education, education for sustainable development, and climate (change) education are here included in EE. In essence, EE is closely related to several other environmental sciences, especially environmental communication (including climate change communication) and environmental psychology (including eco-psychology and other “psychologies of the environment”, for which see [19]). The term eco-anxiety is used as a general term for anxiety in relation to the ecological crisis, and the term climate anxiety is used to refer to such forms of that anxiety which are considerably related to the climate crisis. The term student is often used to refer to the participants of the occasions of environmental education. Since this article approaches education and eco-anxiety in a wide manner, many of its observations can be applied to people from various ages and contexts, but naturally contextual sensitivity is needed in the practical application of various practices. Education is understood in this article as a reciprocal process, where the educator has special tasks and responsibilities, but educational impacts may happen mutually. For example, sometimes young people with eco-anxiety “educate” the educator in significant ways.

The conclusions show that eco-anxiety is a wide phenomenon, which is integrally connected with many ecological emotions, psychosocial phenomena, and mental states. The figures in this article help to understand various forms of eco-anxiety. It is pointed out that most manifestations of eco-anxiety seem to be non-pathological. The paralyzing forms of eco-anxiety pose a problem, but fundamentally eco-anxiety emerges as an adaptive response to the vast socio-ecological problems of our time.

It is found that eco-anxiety poses many challenges for environmental education and several scholars in various fields of education research have already made important contributions for the study of those [20–34]. However, there is not yet any united research field about eco-anxiety and EE, which means that even scholars are not necessarily aware of the work that others have done in different areas. The issue is further complicated by the existence of various terms for related phenomena. By bringing together a wide array of studies from various disciplines, this article makes an effort to facilitate further co-operation between researchers, and participates in building a research field about eco-anxiety and EE.

It is argued in this article that educators and scholars should build a broad understanding of eco-anxiety, so that they could focus both on anxiety-like manifestations and other related issues, such as grief, anger, and guilt. Various terms should be used for various purposes: there is a need for general terms such as eco-anxiety, but also for more specific terms for various ecological emotions.

By comparing the recommendations of psychologists with the work of education scholars, ideas and recommendations are presented for educators, educational institutions, and EE scholars. These recommendations include the further integration of eco-anxiety and ecological emotions into theories of EE, the need for educators to practice self-reflection about their emotions and attitudes, ideas for development of organizational practices, and the effort to provide various positive role models of coping with eco-anxiety. In Section 4.5, several tasks and possibilities for the educator in practice are discussed. These include validating the ecological emotions and eco-anxiety felt by students, admitting that educators themselves have ambiguous feelings, providing information about coping with eco-anxiety, and, if resources allow, to offer students chances to discuss or even bodily encounter their ecological emotions. Finally, the key tasks of maintaining meaningfulness and providing opportunities for empowerment are briefly discussed. Collective action can offer constructive channels for the emotional energy inherent in eco-anxiety, but emotional resilience is also needed. Suggestions for further integration of traditional themes in EE research and eco-anxiety research are offered.

2. Materials and Methods

Materials have been collected during many years of interdisciplinary research. In addition, relevant research have been sought by keyword searches in databases. In addition to searches about eco-anxiety and climate anxiety and related anxiety terms, literature has been searched about emotions, feelings, and affect. In an important role are studies that have gathered much scholarly attention, such as Susan Clayton's and Maria Ojala's research, but emerging research has also been utilized.

The materials fall into two broad categories: writings about eco-anxiety and related phenomena, and writings about environmental education and the selected phenomena. Writings and studies that explicitly discuss environmental education and related fields, such as education for sustainable development have been emphasized in the selection, but many important contributions and studies were found from other disciplines. Thus, the materials and methods of this article point towards the strong connections between various disciplines which deal with human behavior, learning, and communication in relation to environmental issues.

The discussion in the article is mostly theoretical, but insights are drawn from many empirical studies performed in various parts of the world, and practical ideas and recommendations are provided in the discussion. A philosophical method is utilized to analyze the various meanings inherent in the use of concepts by scholars from different fields. This method of conceptual analysis suits interdisciplinary research well, since it makes it possible to analyze the deeper content of various views and vocabularies. This has been especially useful in relation to eco-anxiety, since the substance of the phenomenon is approached by numerous terms and in a wide variety of disciplines. Sometimes scholars use different terms for similar content, and sometimes scholars use the same term but actually mean different things compared to each other. If only one research approach would have to be chosen, the article would fall into the category of philosophy of (environmental) education. In fact, philosophers of education have recently started to significantly discuss topics related to eco-anxiety [35]. However, the interdisciplinary discussion in this article has a slightly different character compared to the usual discussions by professional philosophers, because so many various fields of study are included.

Thus, the subject of this article is such anxiety which is significantly related to the ecological crisis, and the challenges and possibilities that such anxiety poses for environment-related education. For brevity and clarity, the term eco-anxiety is used as a general term to refer to such anxiety, even though there are multiple definitions of eco-anxiety. The author builds here on his earlier research about definitions and forms of eco-anxiety [3], and the reader is referred to that research for extensive discussions about related terminology.

There are two main objectives in this article. The first objective is to acquire more information about eco-anxiety, especially as it relates to environmental education. The practical objective is to help environmental educators and EE researchers to become more aware of the various forms of

eco-anxiety and related ecological emotions, and to spark ideas for development of both institutional and educational practices to better support a constructive encounter of such eco-anxiety. The elements of what constitutes a constructive means of encountering eco-anxiety are explored by reviewing literature in environmental psychology and education. The main research questions and the corresponding chapters are:

- How is eco-anxiety defined by leading scholars and what types of eco-anxiety are there? (Section 3.1.1)
- What is known about practical forms of eco-anxiety? (Section 3.1.2)
- What emotions and mental states are closely connected with eco-anxiety? (Section 3.1.3)
- Have eco-anxiety and related emotions been discussed in EE literature, and if so, how? (Section 3.2)
- What are the key recommendations about coping with eco-anxiety provided by experts? (Section 3.3)
- Based on the aforementioned analysis, what challenges and possibilities arise for EE? (Section 4)

Themes for further research are discussed in several parts of the article, but mostly in the concluding remarks.

3. Results

3.1. An Analysis of Eco-Anxiety

In this subchapter, three tasks are performed, based on rather extensive literature reviews. First, definitions of eco-anxiety are reviewed, and a working definition of eco-anxiety is offered (Section 3.1.1). Second, research data about practical manifestations of eco-anxiety is reviewed (Section 3.1.2). Third, emotions and mental states that seem to be especially close to eco-anxiety are explored (Section 3.1.3). The objective is to clarify what kind of phenomena environmental educators are dealing with when they encounter forms of eco-anxiety and ecological emotions.

3.1.1. Definitions and Types of Eco-Anxiety

Based on an analysis of interdisciplinary research about related phenomena, it can be posited that eco-anxiety means considerable distress that is caused in a significant degree by the ecological crisis. The nature of eco-anxiety as considerable distress separates it from mild worry [3]. People's life experiences and social circumstances are complex, which is the reason for the formulation "caused in a significant degree by the ecological crisis". For some people, eco-anxiety manifests as the key angst in their lives; but for many, the ecological crisis is a background factor that has a growing effect on the more acute distresses of their lives, such as health issues, unemployment, or injustice issues [36–39]. In a growing manner, ecological crises and social crises become intertwined into socio-ecological crises and catastrophes. One could also speak of "eco-social anxiety", in order to underline the interconnections between the ecological and the social as affecting various anxieties.

Various definitions of eco-anxiety have been analyzed by Pihkala [3]. Perhaps the most famous definition currently is the one provided by social psychologists in a prominent report published by the American Psychological Association (APA) and EcoAmerica: "Ecoanxiety: A chronic fear of environmental doom" [40]. However, several scholars and psychologists [39,41] argue that this definition may be too narrow and that it may lead to overly pathologizing interpretations. A pioneering and influential climate psychologist, Rosemary Randall, recommends climate distress instead of climate anxiety. Then again, the leading author of the aforementioned APA report, experienced climate psychologist Susan Clayton, also herself argues that climate anxiety should not be regarded fundamentally as a problem, but instead an important sign that the individual cares about the state of the planet [7,42]. Thus, scholars widely agree that it is reasonable to worry about the ecological crisis and climate crisis [43–46], but they differ in their views about what terms should be used and how.

The situation is both complicated and made more descriptive by the many connotations inherent in the concept of anxiety itself. Roughly defined, anxiety is usually described as a feeling of unease because of future-related uncertainty. Anxiety is closely related to fear, but fear is usually characterized by a clearer threat and a stronger physical response of fight/flight/freeze [47–49]. However, the concept of anxiety is often used by different authors in a singular form with some special connotation, and these connotations differ significantly. Many health professionals have problematic forms of anxiety in mind when they use the concept: for them, anxiety refers to anxiety states, anxiety disorders and other strong or even pathological forms of anxiety [50]. Researchers of emotion and neuroscience often use anxiety to mean the specific processes that occur in the mind when problematic uncertainty is experienced [49,51]. In these views, it is easier to emphasize the adaptive and practical potential in anxiety. Furthermore, there is a long tradition of philosophy and psychology where anxiety is used either in the psychodynamic sense—arising from repressed emotions and experiences—or in the existentialist sense, referring to a fundamental human condition of wrestling with “existential anxiety” [52]. Figure 1 shows these key aspects of anxiety.

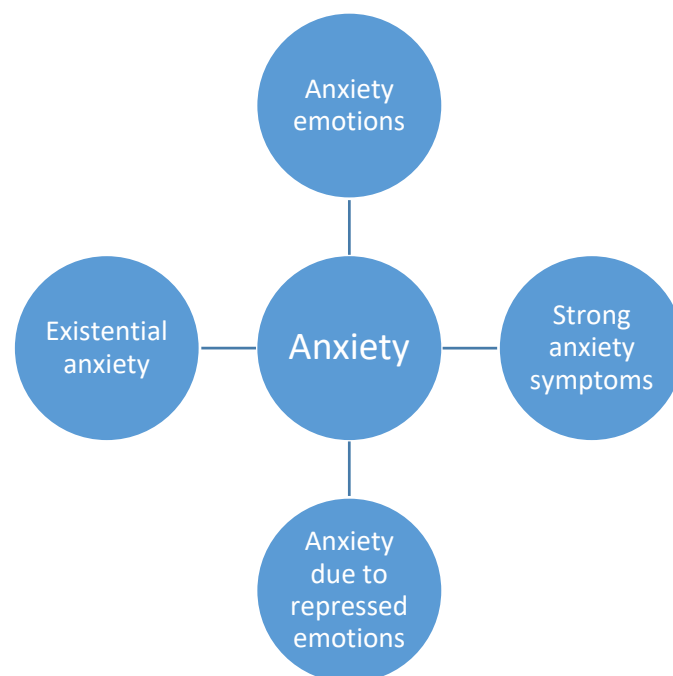


Figure 1. Various forms of anxiety, all of which can be found in experiences of eco-anxiety. These forms often overlap in the practical experiences of people.

Research from various fields of inquiry shows that eco-anxiety can manifest in all of these forms of anxiety and that it often manifests as combinations of several of them [3]. The forms of eco-anxiety that a person experiences may change over time, and there may be both linear and cyclical changes in them. For environmental educators, it is important to become aware of the many possible forms of eco-anxiety, so that they can better understand both their own experiences and those of others. It is also important to grasp that while eco-anxiety is a diffusive phenomenon, the use of related terminology captures the severity of people’s experiences. The long tradition of studying environmental concern in EE and other environmental disciplines is related to eco-anxiety, but the concept of concern does not capture all the strong dimensions of eco-anxiety that people feel. Worry is even more closely related, but anxiety is more multifaceted than worry, and eco-anxiety often includes strong feelings of helplessness and despair that are not captured by worry. Roughly speaking, it may be posited that the connections between anxiety and concern highlight the motivational aspect of eco-anxiety, while the connections between worry and anxiety highlight the ways in which eco-anxiety is related to caring about something, based on compassion and/or love.

The severity of many of the manifestations of eco-anxiety is described more in the next subchapter. Eco-anxiety, roughly defined, can also manifest as “eco-depression”: persistent low moods and even clinically definable depression. This is most evident in the case of strong crises shaped by the environmental crisis and climate change [37]. However, scholars have noted that many people who feel some eco-anxiety suffer from strong feelings of helplessness or powerlessness in the face of the vast global ecological problems, even when they do not yet experience strong physical or social impacts [53–56]. This dimension of feeling helpless is something more that separates eco-anxiety and eco-depression from mere concern or milder worry about the ecological crisis. In addition, as anxiety scholars Grupe and Nitschke [48] point out, anxiety and depression may intertwine: “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). The aforementioned data suggests that this is the case in many people’s experiences of eco-anxiety, but, so far, there is very little explicit research on eco-depression or mixed eco-anxiety and eco-depression [3,57]. Depression shaped by the ecological crisis, however, was discussed already by Kidner [58], and the systemic connections between climate change -related anxiety and depression have been well brought out by Berry et al. [38].

Especially psychodynamic and psychosocial scholars have pointed out that there is repressed anxiety in relation to the ecological crisis and the climate crisis. This can lead to various forms of denial and disavowal [53,59–63]. While this anxiety is not usually called eco-anxiety either by scholars or by these persons themselves, this is part of the general phenomenon of “anxiety because of the ecological crisis”. Thus, environmental educators may encounter many kinds of eco-anxiety in their work, and the existence of either denied or unspoken anxiety should also be taken into account.

3.1.2. Research Data about Eco-Anxiety

In this subchapter, research data about practical manifestations of eco-anxiety are reviewed. A growing number of experts and disciplines have begun to discuss phenomena related to eco-anxiety and climate anxiety, either with these very terms or others. A major research area focuses on psychological and mental health impacts of climate change [37,38,40,64,65]. As noted above, technically eco-anxiety would be a wide term for any kind of “ecological anxiety” and climate anxiety would be the climate-change-related part of it, but it is good to notice that in practice many writers equate eco-anxiety with climate anxiety [57,66]. Social psychologists have been especially prominent in related research [67], but many other branches of psychology have also made contributions [68]. These include many pioneering writings and studies by ecopsychologists, ecotherapists, and environmental psychologists [69–72]. In the following, several topics will be discussed: the available empirical data, possible factors that cause vulnerabilities to strong eco-anxiety, the issue of recognized or non-recognized eco-anxiety, and the question of the role of anxiety sensitivity—or trait anxiety—for eco-anxiety.

There is a growing amount of empirical data about eco-anxiety and related phenomena. Sociologists, anthropologists, ethnographers, and other scholars have studied the experiences that people have amidst changing environmental conditions. Anxiety, worry, and other emotions related to eco-anxiety feature often in these experiences [73–75], but the terms eco-anxiety and climate anxiety have received wider use only lately. Methods for these studies have included both ethnographic field studies, various types of interviews, and media studies. The following is a partial list of this kind of research, not a full review of research literature. Studies have been conducted both in specific places or among specific groups of people [12,56,76–79] and more generally. Eco-anxiety and climate anxiety have been found among climate activists [80–82], young people and children [54,83–85], climate researchers [86–88], and university students and professionals [21,55].

These groups of people and stages of life seem to manifest vulnerability factors to eco-anxiety due to many reasons. However, further research is needed in order to more fully explore the factors that have a role in generating various forms of eco-anxiety. It has been noted that many young people and environmental activists are more outspoken about their eco-anxiety, and several surveys have shown that people under 30 years and women report more eco-anxiety [42,89,90]. However, it may

well be that the eco-anxieties of other people are more repressed and remain unrecognized due to socio-political factors such as socially constructed silence. There is a lack of in-depth research about less easily recognized forms of eco-anxiety. The existing studies that have utilized interviews and analysis hint to the direction that there is more eco-anxiety among adults and older people than what is shown in surveys [56,60,76,77].

Regarding the mental health impacts of climate change, climate psychologists have provided models of various factors that have a role in them [36,38,91]. These include many intersectional factors, and socio-economic status seems to have a strong impact; this was also the result in the Finnish nation-wide survey about climate emotions and climate anxiety [90]. Naturally the severity of the experienced physical and social impacts has a role on anxiety levels. However, a growing body of research shows that eco-anxiety may also result vicariously or indirectly [17,92]. Certain professions include vulnerabilities for eco-anxiety, and some of them have been explored in pioneering Australian research about “environmental distress” [93,94]. For example, those whose living comes directly off the land are understandably stressed when climatic and other ecological changes greatly affect their life. In addition, those who work with environmental protection and other forms of environmentalism seem to be in an increased danger of strong anxiety because of both exposure and the underlying environmental values and identities [7,15,95,96]. The holistic negative impacts of climate change among many indigenous peoples have been studied [97]. Manning and Clayton [37] provide a general discussion about vulnerable populations in relation to mental health impacts of climate change.

What has been noted in recent discussions, but so far less studied, are the ways in which certain life situations cause increases in the average vulnerability to strong eco-anxiety. The most commonly discussed example is related to having children. People may feel hesitant to try to have children because of the ecological crisis, and anxiety is intertwined in many ways in these questionings. Those who do have children may feel increasing eco-anxiety because having the child evokes deep emotions about the future [66,98,99]. What has been less noticed is that this dynamic also applies to many older people in relation to their possible grandchildren: either because of having them may increase fear and anxiety about the ecological crisis, or because their children or grandchildren decide not to have children of their own because of eco-anxiety [100]. In addition, there are probably many other life situations that increase the average vulnerability to strong eco-anxiety, and these should be further studied. For example, the process of choosing a profession or a field of study may increasingly be such a factor [55].

It should be emphasized that the dynamics of who recognizes eco-anxiety or admits feeling it are complex. There may be identity politics around terms such as climate anxiety, and this may have an effect on people’s willingness or reluctance to admit feeling anything like that. These kind of dynamics have been observed for example in the Finnish discourse about climate anxiety [101]. Scholars Barnwell, Stroud, and Watson [39] point out that for many people who suffer from various social problems and injustices, terms such as climate anxiety may seem distant, even though the climate crisis may actually cause them distress in many ways.

Research is currently trying to explore the role that personality traits such as anxiety sensitivity or trait anxiety have on eco-anxiety. According to research, it is clear that eco-anxiety is not felt only by people with trait anxiety, but natural anxiety sensitivity can easily strengthen eco-anxiety [42,43,90,102]. It should be noted that one possible form of avoidance of eco-anxiety is an effort to over-emphasize it as a reaction by “hysteric” people; see, for example, Prager’s claims [103]. In addition, these kind of claims often reveal efforts of othering and problematic use of power: especially in the case of climate anxiety, many older people have tried to label it as both irrelevant and as something felt only by young people [104,105].

The question of the relationship between eco-anxiety and young age is a complex one. On one hand, it is clear that the aforementioned forms of othering and disavowal of climate anxiety as only a problem for neurotic youth must be resisted for both ethical and practical reasons (to enhance social co-operation in efforts to alleviate major eco-social problems). On the other hand, the dynamics of how

young age affects eco-anxiety should be further studied. The author believes, along with Ojala [44,106], that the earlier studies about youth and macrosocial worries, such the global anxiety due to the threat of nuclear war—sometimes called nuclear anxiety—in the latter part of the 1900s, offer interesting material for reflection about eco-anxiety. For example, young people are in many ways open to ethical concern about global problems [107,108]. Naturally, the life-worlds of young people have changed considerably since the 1980s and the era of high nuclear anxiety, and it should be studied how the media-shaped reality and the integration of social media in the lives of youth shape the dynamics between locally and globally felt threats (see also [109]).

How prevalent is eco-anxiety, and what kind of statistical data is available about its many forms? The simple answer is that more research is needed, but current studies and surveys show that it is a significant and currently growing phenomenon at least in those countries where such research has been conducted [7]. There are several problems in such eco-anxiety studies. It is difficult to use older research data about environmental concern and worry for studies about eco-anxiety, because usually stronger kinds of worry and anxiety were not explicitly studied. Forms of disavowal and denial, such as socially constructed silence, may cause eco-anxiety to remain hidden in studies. Differences in languages and terminology may cause complications. For example, in Sweden, “*klimatångest*”, the equivalent of climate anxiety, has been discussed for at least a decade, but the word seems to have a strong connotation of general worry. In many other countries, explicit terminology for eco-anxiety is more recent, and people may have different understandings about what kind of anxiety those terms mean.

Recent studies and surveys that have explicitly probed eco-anxiety or climate anxiety have revealed large numbers of people who recognize some anxiety of that kind. A national survey in Finland in 2019, one of the first such surveys to utilize interdisciplinary research about climate anxiety and climate emotions, revealed that 25% of the population recognized some form of climate anxiety in themselves. Of the youngest segment, 15- to 30-year olds, the percentage was over 33% [90]. In a survey in the US in December 2019, 68% of the respondents said that they felt at least some eco-anxiety, defined in that survey as climate anxiety, and about 25% said to feel much of that anxiety [110].

Any list of possible symptoms or manifestations of eco-anxiety is naturally dependent on the definition of eco-anxiety that the author uses. Doherty and Clayton [111] have proposed theoretical models where such symptoms or manifestations are described on a scale, ranging from severe to milder (see also [36,37]). For example, milder symptoms include occasional climate insomnia, while constant insomnia is a severe manifestation. The symptoms may vary over time and are often affected by events or news, seasons, and general changes in the person’s environment [112].

Thus, the environmental educator encounters in eco-anxiety a phenomenon that has many forms. It is important to notice that research is only underway to further explore many dynamics of the phenomenon, but critical results have already been found. Eco-anxiety may manifest as paralyzing symptoms, but it may also be a motivating force. Certain groups of people and certain life situations produce increasing vulnerabilities to strong eco-anxiety, but forms of it are found among all kinds of people. Social dynamics shape experiences and public discussions (or silence) about eco-anxiety in profound ways, and often eco-anxiety is intertwined with other life experiences and feelings about complex ecological and social changes.

3.1.3. Emotions, Affects, and Mental States That Are Close to Eco-Anxiety

Recent research has explored several important emotions and mental states that are closely connected with eco-anxiety. In the following, some of those emotions and issues that seem to be highly important are briefly discussed: grief, solastalgia, trauma, stress, affect studies, guilt and shame, anger and rage, and enthusiasm.

One of the most important recent fields of research in relation to eco-anxiety has been the emerging interdisciplinary study of ecological grief and climate grief [8,113,114]. This research has included both ethnography [12], philosophy [5,115,116], and human geography [117]. The word grief is used in

this literature to mean many kinds of sorrow, sadness, and mourning [118]. The relations between ecological grief and eco-anxiety have recently been explored in a prominent, albeit short, article in *Lancet* by Cunsolo et al. [6]. The authors emphasize the adaptive potential in such difficult emotions and mental states, pointing to what is here called practical anxiety.

The links between grief and anxiety—or the variations of anxiety—are profound. Certain anxiety is a normal part of a grief process. However, there are numerous ways in which contemporary people can experience problems in their grief: there is often a lack of personal emotional skills and especially a lack of community support. Problems in the grief process may cause strong increase in anxiety and depression, and grief may transform into so-called complicated grief or ambiguous loss [119–121].

It can be presumed that much eco-anxiety is shaped by various forms of complicated grief [114]. This estimation is based on existing studies and on two broad factors. First, there is a profound array of losses and griefs related to environmental change; scholars have charted these especially in relation to climate change [122]. Second, scholars from many fields have for a long time recognized that there are profound problems in contemporary societies about encountering grief. Grief specialists argue that sadness and sorrow should be encountered and appreciated: these emotions serve adaptive purposes, if they are constructively and collectively encountered [119,123,124]. Scholars have identified various forms of complicated ecological grief, such as “environmental melancholia” [56] and unrecognized feelings of loss [125]. In fact, ecological grief is discussed by most of the authors who have written about coping with eco-anxiety [57,66,96,98,126–128].

A special form of ecological grief is solastalgia, philosopher Glenn Albrecht’s neologism [129,130]. Combined from the words nostalgia, desolation, and longing for solace, solastalgia tries to capture the feeling of homesickness, longing, and sadness that a person may have even though she still lives home, because the home environment is being changed or even destroyed. A classic example of a procedure that may cause this is open-pit mining, but there are numerous possible versions of solastalgia-producing events. Some writers have used solastalgia as a synonym for all ecological grief or all eco-anxiety [131], but this is rather inexact and loses some of the power of solastalgia as a word for a special kind of ecological grief. For environmental education, the word solastalgia posits both challenges and opportunities. On one hand, it has to be introduced to people, since it is a neologism. On the other hand, it is widely regarded as an intriguing and inspiring concept [132], which easily gets people engaged in reflection. As with all concepts, there is a need for careful reflection about power dynamics and justice issues in the usage of the term [133].

There are many shocks and strong disappointments in relation to ecological crises, and these may result not only in varieties of grief, but also in varieties of shock, stupor, and even trauma. While these phenomena are partly discussed in literature about ecological grief, there has recently emerged explicit interdisciplinary discussions about “climate trauma” and “ecological trauma”. Several forms of such traumas have been explored. A major focus in these studies has been on climate change and trauma [134–136], and there is emerging literature about secondary trauma and vicarious trauma in relation to environmental damage [17]. Theories of ecological trauma are being developed, and some of these include discussion about such traumas as multi-species experiences [137].

Trauma and anxiety are interlinked in many ways. Traumatic states often include experiences of anxiety. On a more general level, the combination of felt threats and uncertainty links eco-anxiety with the traumatic potential of the ecological crisis. Scholars have explored the concept of “pre-traumatic stress” to describe the ways in which the estimated increasing severity of the ecological crisis already now affects people [134,138]. This condition is a combination of something that is already happening and something that is estimated or even known to happen in the future. The elements of future-related unease, fear, worry, and uncertainty strongly link eco-anxiety with ecological pre-traumatic stress. Indeed, many scholars and psychologists use stress terms to describe phenomena that are close or linked with eco-anxiety. For example, there is discussion about toxic ecological stress [139] and climate change as an ambient stressor [140,141].

There are also other certain other emotions and feelings that are closely related to stress and anxiety. It has been noted that there are feelings of overwhelm in relation to the ecological crisis and climate crisis [22], and this overwhelm can be seen as an important component in eco-anxiety [3]. There are also feelings of confusion and even absurdity [90,142]. It seems common to feel some kind of helplessness or powerlessness because the ecological crises are so vast and individual actions have their limits [53,143,144].

From the point of view of developmental psychology and psychology of crisis, it seems that encountering the global ecological situation is a developmental crisis for contemporary children and youth and a life crisis for many adults, especially for those who have not seriously engaged with the ecological crisis in their youth. It follows that dynamics related to eco-anxiety should be further studied in relation to developmental psychology and psychology of crisis, since currently there is very little explicit discussion about these connections. In addition to discussing trauma, the varieties of shocks and scares due to the ecological crisis should be studied.

The rapidly growing interdisciplinary research field of affect studies has explored many issues that are close to eco-anxiety. There are multiple definitions of affect, but usually the term refers—roughly speaking—to rapid, unconscious emotional reactions and/or shared emotional atmospheres. Affect studies often makes use of theories related to the social and cultural dimensions of emotion norms and feeling rules [13]. Such frameworks as “cultural politics of emotion” [145] and “public feelings” [146] help to understand the complexities and power structures related to emotions.

One of the highly important findings in such research has been the complex nature of ecological guilt and shame. Jensen’s [9] pioneering monograph explores the prevalence of guilt in environmental discourses and behavior, and insightfully discusses its relation to shame, anger, and grief. The best studies, such as Jensen’s, are able to move beyond overly narrow interpretations of a particular emotion as good or bad, and instead discuss the many possible trajectories that emotions—and combinations of them—may have. For the varieties of ecological guilt and shame, see also [112,147,148].

This same multi-dimensionality also applies to anger, hate, and rage. These emotions are often labeled as bad, but they may have a vastly important role in resisting injustice and providing energy to act [149]. Naturally the big question is how to avoid violence in such channelings of anger. While it has been noted that there is a lot of “climate rage” [150] and other kinds of anger because of the injustices related to ecological crises, the study of “eco-anger” is, so far, surprisingly narrow. In the following, a few important contributions are mentioned. Albrecht [130], who has labored to coin words for ecological emotions, has invented a term called “terrafurie” to describe anger or rage because of ecological damage. Antadze [151] has argued that there are good grounds for seeing climate rage as well-founded moral outrage. Kleres and Wettergren [82] studied emotions among climate activists from North and South and noticed that there are quite different kinds of emotional cultures and regimes among them, notably in relation to anger and guilt. Du Bray et al. [152] studied the gendered emotional responses to climate change in four different contexts and noted that women reacted more with sadness, while men reacted more with anger. Frustration and irritation are closely connected with anger, and these emotions seem very common in relation to ecological crises [3,22].

Anxiety is closely connected to both the varieties of guilt and anger. There is even a term, guilt anxiety, which points to the common occurrence of anxiety due to guilt. Anxiety often breeds anger, and repressed anger may manifest as anxiety [47]. Scholars argue that it is important to understand that many other emotions may be hidden underneath anger that manifests in relation to environmental issues [148,152,153]. Since men often express such anger, it is possible and even probable that there are feelings of sadness, fear, worry, and care underneath at least some of the angry responses. Thus, the presumptions that it is mostly women who feel eco-anxiety are challenged here: men may express their related emotions in other ways. The national survey about climate emotions in Finland also hints at this direction [90].

Finally, anxiety is closely related to expectation and even excitement and enthusiasm. Uncertainty may generate both fear and curiosity [154]. When encountering problematic uncertainty, many people

react by wanting anxiously to solve the problem. In other words, there are often links between anxiety and motivation. This “practical anxiety” [51] is regularly seen in the eco-anxiety experiences of people [3]. Some eco-anxiety authors have strongly emphasized this dimension of anxiety, along with the more paralyzing possibilities of anxiety [57,66].

Figure 2 shows some of these emotions/affects/feelings that are close to eco-anxiety.

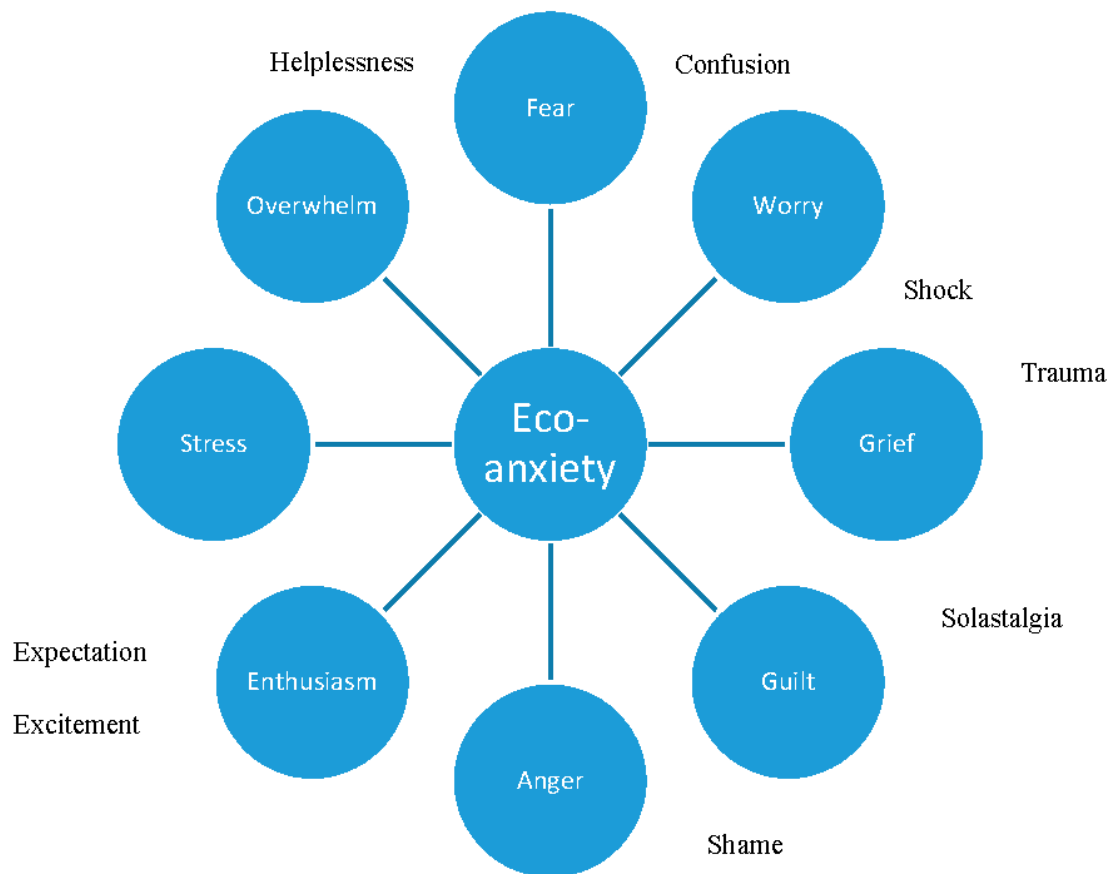


Figure 2. Emotions, feelings, affects, and mental states that can be commonly linked with eco-anxiety.

Thus, the environmental educator should be aware of the many possible emotions, feelings, and mental states that may be connected with eco-anxiety. This is linked with the wider subject of the role of emotions and affect in education. Scholars have pointed out that there are power structures and psychosocial dynamics related to recognition and evaluation of emotions/affect, and the environmental educator needs critical awareness of those. Otherwise both the existence and potentials of various emotions may remain hidden.

3.2. Previous Research about Eco-Anxiety in Environmental Education Studies

In this subchapter, a wide literature review is performed about discussions related to eco-anxiety in environmental education (EE) studies. As mentioned in the beginning of the article, EE is used here as a broad term, which also encompasses education for sustainable development (ESD) and sustainability education.

Given the scope and prevalence of eco-anxiety and the related ecological emotions (see Section 3.1 above), there is relatively little research on them in environmental education. This being said, it is important to recognize that there have been important pioneers in EE who have contributed to the development of the whole interdisciplinary field of studies about ecological emotions and eco-anxiety.

Missing or underdeveloped themes in research will be pointed out, since some emotions have received more attention than others. For example, very little explicit discussion about ecological trauma

in EE literature was found, and almost no discussion at all about ecological anger or climate rage. Of course it is possible that some important pioneering contributions about these topics have been missed in the searches, regardless of the many years of study and observation by the author; but at least there is no kind of larger discussion yet about these themes. However, such discussion seems to be on its way, and new research articles on the topic appear now—October 2020—almost on a weekly basis. Hopefully this overview will help scholars and practitioners to find relevant literature from various fields of educational and psychological research, where the research is spread. At the same time, it is evident that this survey will need updating relatively soon, because of all the emerging literature.

Overall, emotions and especially difficult emotions have been a rather under-researched topic in EE research [27,155–157]. For example, a major handbook about EE research [158] includes only a few articles that even mention the topic [159]. In a wide discussion about the status and future demands of climate education, Reid [160] mentions emotions and affect as one important area for further research.

The relative lack of research about emotions in EE reflects the situation in education and educational sciences in general. Emotions or the affective domain have often been left aside [161] (pp. 60–62) for complex reasons that reach back to the beginnings of (modern) science [162]. However, in the last decades, there have appeared many proposals and movements that emphasize the need to integrate emotional skills more firmly in educational practice. The role of emotions both in learning and in educational institutions—for example, as affecting well-being—has been further studied [163], and these movements have also sparked new interest for emotions in EE [164].

When emotions have been discussed in EE literature, the so-called positive emotions have received much more attention than the so-called negative emotions, because positive emotions such as empowerment are evident goals of environmental education and closely linked with feelings of efficacy. Among those emotions, hope has received special attention [155] (p. 15), although it is important to notice that there are various definitions of hope [31,165,166]. The wording “so-called positive/negative emotions” is used here because there are often serious problems in labeling the so-called negative emotions as undesired and “bad” [167], even though numerous psychologists and other writers have emphasized that they also belong to normal life [57,123,144].

A good introduction into research about emotions in EE—and the lack of it—is offered by the editors of the 2016 theme number about emotions in *The Canadian Journal of Environmental Education*. The editors provide a highly useful discussion of previous research, and emphasize the need to also encounter the difficult emotions [155]. In this article at hand, many of the articles published in that theme number are used as important sources.

In the 2010s, the rise of scholarly discussion about ecological emotions and affect in various fields has sparked a growing number of education and EE scholars to ponder these dimensions. However, this is still a relatively small area of research, albeit rapidly growing, and there is a great need to integrate proposals done in various fields of education research. Currently, it is difficult for interested scholars to find the contributions of others, because they are dispersed on many fields and publications, and because there is a lack of common keywords. For example, some scholars use the term emotion, others affect; and educational disciplines that contain relevant discussion include philosophy of education, educational psychology, contemplative pedagogy, transformative pedagogy, and affective pedagogy. It may be that the terms eco-anxiety, ecological grief, and ecological affect offer possibilities for general keywords, but also other emotion-specific keywords are evidently needed, such as ecological guilt (or eco-guilt) and ecological anger (or eco-anger).

In certain large-scale models of environmental education and especially climate education, eco-anxiety has already been briefly discussed. Laininen [168] and Lehtonen et al. [169] draw from the active Finnish discussion about eco-anxiety [101] in their models. Walsh et al. [170] integrate the task of encountering various difficult ecological emotions in their model of relational, justice-oriented transformative education. In several other models, there are fruitful possibilities for integrating more content about emotions and eco-anxiety. Examples include Arjen Wals’ model, which discusses the importance of feelings of dissonance for learning [156,171], and the comprehensive “bicycle” model of

climate education [172], which mentions emotions, but there is a need for further work in strengthening the emotion dimension in these models. The structural challenges posed by eco-anxiety for educational institutions and practices have been explored by several scholars [20,21,23,156].

Important pioneers in studying matters close to eco-anxiety in EE theory have been Maria Ojala, Elin Kelsey, John Hicks, and Paul Maiteny. Psychologist and EE scholar Ojala has provided theoretical discussions and performed much empirical research. She argued already in the 2000s that there are different shades of ecological worry and anxiety, and some of these are adaptive [44,106]. Later Ojala has even more explicitly explored the potential of anxiety for transgressive environmental education and ESD [20,156]. Her empirical research has studied the ways in which children, youth, and adolescents practice coping in relation to climate change, and many of the responses in these studies tell of eco-anxiety dynamics [45,109,173–176]. In these studies, Ojala mostly used the term anxiety and not eco-anxiety, but the substance is closely related. Indeed, Ojala has been interviewed lately also about eco-anxiety and climate anxiety [177].

Ojala has highlighted the importance of “critical emotional awareness” for both educators and students. In this approach, the power of emotions is recognized, but the various aspects of each emotion are critically reviewed. For example, worry is not simply something negative, but may be a sign of concern and motivation; and, on the other hand, if worry is overly strong and constant, it becomes a problem. Ojala’s studies have shown that teachers have a strong role as exemplars and power users in relation to emotions [178]: they create emotion norms in their classrooms. Thus, if eco-anxiety and other emotions are to be productively encountered in educational settings, the first task is for teachers and educators to examine their own attitudes and skills as regards emotions. Teachers and educators need (1) to be sensitive to the emotions among the participants and (2) to be aware of their own emotions and reactions. Lately these tasks have also been emphasized by many other scholars [21,23,25,179,180], and this important point will be elaborated further in the Discussion part of this article.

Elin Kelsey and her colleagues have provided pioneering reflections about the needs to encounter difficult and complex emotions in EE [27,159,181]. Kelsey, like Hicks before her [182–184], emphasizes both the importance of an open treatment of despair and of advocating for constructive hope [24,185]. Kelsey has created several practical ways to embody this approach, such as children’s books [186] and media strategies [187]. David Hicks has long worked on the intersections of future education and environmental and climate education. Among many articles and practical materials [188], he has written a monograph on the challenges of climate education [189], in which he discusses many climate emotions. In addition, experienced climate education scholars Selby and Kagawa [190] have also explored these themes. Psychotherapist, anthropologist, and education researcher Paul Maiteny discussed dynamics related to anxiety, fear, and environmental behavior even in the beginning of the 2000s [157,191,192], and he deliberated on the history of “eco-anxieties” already in 2012 [193].

The feelings of grief and loss, which Kelsey and Hicks already touched upon, have received even more focused attention in Marie Eaton’s pioneering article [23]. This article, which is linked with contemplative pedagogy, provides important discussion about the pedagogical challenges and possibilities inherent in facing ecological grief and trauma (A previous version of Eaton’s article, written already in 2012, is freely available online at https://serc.carleton.edu/bioregion/sustain_contemp_lc/essays/67207.html (accessed 26 October 2020)). Ray [32] and Atkinson [194] discuss similar themes in relation to university students, and Ray’s recent book about climate anxiety [98] extends the discussion into public domain. “Climate sorrow” as a challenge and possibility for education is explored by Todd [195]. Discussions about grief in EE often include reflections about despair and hopelessness [31,196–198].

A recent endeavor is the application of psychosocial and psychodynamic climate psychology—see, for example, [53,56,60,148,199]—into EE. A handful of EE scholars have engaged in this endeavor [25,26,31,34,192,200]. Guilt, anxiety, and questions of meaninglessness or meaningfulness are much discussed in these articles, and feelings of grief and loss are closely intertwined in these themes. This literature also posits the challenge of further engaging the intersections of existentialist thought and EE theory;

for earlier discussions about this, see [44,106,198,201]. The connections between death, death anxiety, eco-anxiety, and EE are probed by a few scholars [24,31,33,202,203]. The varieties of fear are often discussed in this literature.

It is important to note that the sufferings and losses that cause grief can be related to both humans and non-humans (or, more-than-humans). These emotional and affective dimensions have been explored by EE scholars who draw from post-humanist theories and other holistic frameworks. For example, seeing and feeling the suffering of a beloved animal can be heart-breaking [29,204]. It has been noted for a long time in EE theory that many kinds of emotional experiences may shape people's environmental identity and their motivation about environmental behavior [191,205], but recently the role of grief, shock, anger, and anxiety has gathered more focused attention [206,207].

Affect theories are of growing interest for EE scholars. Important insights for further integration of affect theory and EE theory have been provided by Verlie [22]. Among the many ecological emotions and affects that she has found among students are anxiety, frustration, overwhelm, grief, guilt, and hope. This range of emotions and affects is more than what is usually mentioned, albeit it would be fruitful in future work to extend the discussion with more nuances about shame, anger, and the varieties of helplessness/powerlessness. Hufnagel [208] provides a brief model of the need for and possible means of dealing with climate sentiment, especially in the context of science education. She also offers a ready-made template for a study diary related to climate emotions.

In edited EE books, there are several articles that discuss various difficult emotions. Books that include influences from environmental humanities stand out from the crowd in this regard [209,210]. For example, Wilson [211] briefly discusses issues of guilt and anger, Figueroa [212] deliberates about "environmental despair", and Szeman [213] briefly explores emotions related to energy issues such as Stephanie LeMenager's [214] coinage of "petro-melancholia". The wide range of people's experiences of environmental change and climatic change is discussed in relation to education for example by Howard [215] and Merola [216]. Recent volumes about climate education incorporate a growing amount of references to at least some emotions; see, for example, [217].

Some recent articles focus on ways in which eco-anxiety, climate anxiety and/or other difficult emotions could be deliberated with specific age groups. Such activities for children are discussed by a handful of scholars and psychologists [28,83,218]. Practical educational materials for teaching young people in a way that is emotionally sensitive have been prepared for example by scholars influenced by contemplative pedagogy [219,220].

Finally, a very important topic is the functioning and well-being of environmental educators themselves, and the related emotional and affective dimensions. In their pioneering study, Fraser et al. [15] found that many environmental educators and conservationists were in a strong risk of burnout and emotional exhaustion, largely due to the lack of emotional support at workplace and the lack of training about emotional skills (see also [16,17,221]). The difficult emotions encountered by students of EE are discussed via auto-ethnography and research literature by Andre [18]. Ecological emotions of teachers and preservice teachers have been studied for example by Hufnagel [179] and Lombardi and Sinatra [222]. In the 2020s, when ecological crises and social crises seem to grow rapidly in both intensity and frequency, it can be presumed that the functioning and resilience of environmental educators—whether professionals or volunteers—will need growing attention (see also [139,223]).

3.3. Expert Recommendations about Coping with Eco-Anxiety

In this subchapter, the recommendations that various psychologists and experts have made in relation to eco-anxiety and climate anxiety are discussed. Coping is used as a wide term to describe these activities and mental strategies. There are various coping theories, and several of them have been applied in relation to ecological issues [45,140,224]. The many factors that affect coping with climate anxiety have been insightfully discussed in a recent article by Mah et al. [225]. In this article, coping refers to skills of living with eco-anxiety and of alleviating its most debilitating forms. Thus, this approach has close connections with Verlie's [22] proposal of "learning to live-with climate change".

Some thinkers use the frameworks of resilience and adaptation to describe similar aims, but since there are various definitions of both resilience and adaptation, these terms always need careful analysis [226]. Moser [79] discusses “emotional adaptation”, Doppelt [139] focuses on the concept of “transformational resilience”, Davenport [127] opts for “emotional resilience”, Verlie [22] prefers “affective adaptation”, and Pihkala [3] and Foster [227] emphasize the importance of “existential resilience”.

The recommendations of psychologists and other experts understandably differ somewhat, due to different views about what eco-anxiety exactly is and due to differences in the amount of optimism or pessimism about the future. Those who define eco-anxiety more in the veins of strong anxiety symptoms naturally recommend those kind of things that are usually endorsed for serious anxiety states or anxiety disorders. Those who approach eco-anxiety in a broader manner put more emphasis on everyday skills of living with various difficult emotions and anxieties. However, as discussed above, there is a very strong common emphasis among scholars on the non-pathological character of the wide phenomenon of worry and anxiety as related to the ecological crisis. Thus, practically all the recommendations are geared towards ways in which to live with anxiety and how to harness the adaptive potential in these emotions or conditions.

As regards the views about the state of the ecological crisis, there are different opinions among eco-anxiety authors, and this effects their recommendations about coping methods. Some think that there should be full-scale mobilization [131,228], while others think that people should prepare for collapses of various kinds [229,230]. Naturally, in the first option, more emphasis is given on political action, and, in the second, more on emotional resilience and compassionate survival skills. However, most eco-anxiety authors refrain from expressing strong opinions on the matter, and practically everyone still emphasizes both the need for action and for building emotional skills. Understandably, skills of living with uncertainty and ambivalence are stressed.

Based on analysis of various texts and materials produced by a wide array of experts, [36,41,57,66,98,123,127,130,139,143,144,231–236], the following is an overview of the key elements in recommendations about eco-anxiety and related phenomena:

- Learning ways to alleviate or prevent such anxiety and depression that thwarts a person’s functioning, such as panic attacks, catastrophizing, or other paralyzing forms of anxiety. In other words, experts agree that a certain amount of anxiety and low moods will be evident in our era of overlapping crises, but anxiety levels may be lessened and strong anxiety symptoms may be helped by support from others and through self-care. Many eco-anxiety authors give practical tips for skills and strategies that help when anxious feelings start to rise. These include breathing slowly, making a conscious decision to avoid catastrophizing, and using healthy distractions and comforting means.
- Also developing emotional skills or mental health skills in advance. These include cognitive reframing, critical emotional literacy, learning to both control and to channel emotional energy, and building daily routines that increase well-being for our bodyminds.
- Learning to maintain a sense of meaning in life. This is closely connected to discussions about hope.
- Finding ways to participate in problem-solving in relation to the ecological crisis. Eco-anxiety authors usually emphasize that there is a need for both individual and collective forms of action. However, they usually stress that collective action should be accentuated in order to alleviate such eco-anxiety, which arises from individual limits and feelings of helplessness. Many experts warn against using only action as an antidote to eco-anxiety, since this can easily lead either to burnout or unrealistic views about the actual importance of individual actions; for example, consumer choices may become tools for anxiety governance, regardless of their actual impact.
- Finding peer support and building community with others.
- Developing and maintaining a strong nature connection.

Any extensive discussion about these recommendations falls outside the limits of this article. In the following, certain important themes in relation to them are deliberated on: meaning-focused

coping, the relationship between action and emotional work, the question of hope and meaningfulness, and emotional skills.

The concept of meaning-focused coping has been applied into both general environmental thought and EE by Maria Ojala. Drawing from classic coping theorists Folkman and Lazarus [237,238], Ojala efforts to combine both problem-focused coping and emotion-focused coping into such coping, which emphasizes the need to maintain a sense of meaning in life. Ojala's empirical research has shown that those people who practice meaning-focused coping in their environmental action and attitudes are, on average, better able to avoid denial and burnout [45,174,239]. Ojala's work has been widely influential and its wide scope is to be commended; one possibility for further development would be to integrate positive grief work into her discussions about emotion-focused coping and meaning-focused coping.

From another angle, this key issue of meaningfulness has been explored by existentialism-leaning thinkers, certain psychologists, and some scholars who draw from various spiritual resources [25,31,57,63,198]. A classic thinker in this regard is Victor Frankl, who developed his Logotherapy on the basis of finding meaning in even atrocious circumstances [240,241]. Other existential thinkers who have strongly emphasized the key significance of finding meaning and whose thought has been applied to ecological issues include C.G. Jung, Paul Tillich, and Rollo May [198,242–245].

The relationship between action and emotional work is complex. At best, there would be opportunities for both, and groups that practice environmental action would also integrate emotional support in their ethos [126,139]. Some environmental NGOs already do so, such as Extinction Rebellion [246]. However, for many traditional organizations, it has been difficult to give space to difficult emotions. It has not been part of organizational culture, and it may be seen as to contradict an ethos of positivity and hopefulness [17,87,247]. In various studies, it has been noticed that especially climate activists are in considerable danger of burnout [54,80], and similar issues have been noticed among climate scientists [86,88]. The problems related to the climate crisis are enormous and the tasks are very difficult, and there may be manic or hyper-vigilant efforts to make a difference and repress anxiety by constant activity. It is very hard if not impossible to get a feeling of closure in relation to climate problems or other major ecological problems. This is why most eco-anxiety authors strongly emphasize the need to also rest and have breaks, to build activist cultures that offer emotional support, and to practice living with uncertainty [57,66,98,235].

The questions of what is meant by hope, and whether it is good to use hope terms, have often been discussed in recent writings related to eco-anxiety and EE [57,66,98,198,233]. Some believe or fear that hope leads to passivity and wishful thinking, and they emphasize other terms and virtues such as courage. Others emphasize the differences between "good" and "bad" hope, and stress that good kinds of hope are very much needed. Such good kinds of hope are called by many names, such as authentic hope and active hope. The author himself has championed the concept of "tragic hope" as an effort to include both grief and empowerment in hope language [31,198]. In EE studies, Ojala [165,173,239] has explored various views of hope and her empirical studies show that constructive hope is connected with action and resilience, while hope as wishful thinking is connected with passivity.

Common ground between various positions about hope can be found by examining the connections between meaningfulness and hope, and the connections between certain other virtues and emotions with hope. Advocates of a hope-free approach [96,98] still emphasize the need to maintain a sense of meaning in life, and many advocates of some kind of "good hope", as differentiated from passive wishful thinking, strongly base their views on meaningfulness. There are views that still use hope language, but resist any overly optimistic agendas and maintain a strong consciousness of the severity of the ecological crisis [57,248]. Perhaps a common view could be built on the need to practice courage and maintain a sense of meaning in life, regardless of whether one uses hope terms or not.

Finally, a key part of the recommendations of psychologists and other experts is the development of emotional skills and emotional literacy. First, experts recommend that people should develop emotion-positive attitudes. Emotions in general may be dismissed or devalued, especially in societies that

emphasize reason over emotion. The so-called negative emotions in particular are often despised [123,167]. There is a need to develop attitudes that understand that all emotions, at their core, have life-serving functions. This general appreciation of emotions is foundational for a deepened understanding and skillset about ecological emotions and eco-anxiety [20,57,156].

Second, experts recommend building more emotional awareness. This also requires efforts to become more conscious of the ways in which cultural politics of emotion and other social emotion dynamics affect oneself and one's community [9,98,249]. Regarding emotional awareness on an individual level, the experts often recommend practicing mindfulness [57,66,98,127]. Overall, the influence of Buddhist practices on eco-anxiety authors has been considerable: for examples of this, see [98,127,228,231].

Third, naming emotions is a concrete effort that experts recommend. This has been found to help people to channel emotional energy more constructively and to understand their particular experiences of eco-anxiety. However, because there is wide-spread alexithymia—inability to recognize or name emotions—in contemporary societies [123], these naming skills need considerable building. In addition, many ecological emotions and experiences of eco-anxiety are combinations of various feelings [13,130,142]. Ambiguous, mixed, or repressed emotions may be very difficult to name at first. It may be more productive to first explore them by embodied and creative means, but this task naturally requires some competence and care. When recognized and perhaps even named, emotions can then be processed or lived-through [57,231].

Fourth, experts recommend the development of various skills to channel and control emotional energy. There are differences in views here, related to different viewpoints about how much emotions can or should be controlled [123,127]. The aforementioned skills related to awareness and mindfulness are crucial here, but the methods of channeling emotional energy are numerous, ranging from sports to rituals. Embodied activities and creative expression are often recommended [236,250]. Many of these methods will be mentioned in the Discussion.

4. Discussion

In this chapter, the practical challenges and potentials related to eco-anxiety for environmental education are discussed in the light of the analysis performed above. The recommendations provided by psychologists and other experts are brought together with the existing discussions about eco-anxiety in EE literature. Thus, the following contributions are theoretical analyses and suggestions based on the extensive literary review. However, they have also been partly shaped by non-scientific observations by the author in several practical environmental education projects. In Supplement Document S1, information is given about one such project of encountering eco-anxiety in EE.

The literature review shows that eco-anxiety is a significant phenomenon, but multi-faceted. There are many kinds of eco-anxiety: some of them productive, some paralyzing. Moreover, what is roughly called eco-anxiety can actually be a combination of various emotions and mental states, ranging from grief to guilt, from depression to enthusiasm. Understanding this complexity seems a paramount task for environmental educators. While several scholars of education have discussed related matters in a profound manner, there is a need for more integrative work and certain important ecological emotions have received very little attention.

The key themes of the following discussion are:

- Eco-anxiety and models of EE (Section 4.1)
- Acquiring more information about eco-anxiety (Section 4.2)
- Development of institutional practices (Section 4.3)
- The importance of constructive role-modelling (Section 4.4)
- Practical tasks and possibilities for educators (Section 4.5)

4.1. Integrating Eco-Anxiety and Ecological Emotions More Firmly in Models of EE

The analyses above show that eco-anxiety and ecological emotions are an important and multifaceted topic. Building on such existing and emerging models of EE and climate education that already include deliberation about eco-anxiety [169,170], there is a need to integrate these topics more firmly in EE frameworks. A recent article by Chawla [207] shows the path by integrating research about childhood nature connection with research about coping with environmental loss and grief. While the scope of emotions and anxieties that Chawla discusses could be still widened, the article takes research and educational design further. A figure that is offered (p. 635) very nicely integrates the need to engage with various emotions with nature-oriented EE.

Insights developed in environmental psychology, psychosocial studies, climate psychology, and ecopsychology should be increasingly integrated in models of EE. For example, the ideas and figures offered in climate psychology by Bamberg, Rees, and Schulte [251] and Doherty [36] should be integrated into the theories related to environmental behavior that are used in EE.

One important task for the future is to explore the relationship between eco-anxiety and learning in more depth. This endeavor should utilize both the existing research about anxiety and learning [163] and the new, emerging research about the varieties of eco-anxiety. Instead of making only general statements about the role of eco-anxiety in learning, the potentials and problems in various forms of eco-anxiety should be investigated. This kind of multi-faceted approach could prevent overly simplistic models of the relationship between eco-anxiety and learning. For instance, it seems evident that practical anxiety often enhances learning, but paralyzing anxiety hinders it. But real-life situations are complex. For example, it may well be that a student, say a young person who feels strong climate anxiety, suffers in his or her learning outcomes for quite some time because of such anxiety. However, what if this anxiety is part of a developmental process where the student re-evaluates priorities in life and eventually builds more resilience? Or what if the student spends his or her time practicing civil action, instead of focusing on school, and eventually achieves significant results together with others? In our unprecedented times of ecological upheaval, we should be ready to critically examine the plurality of possible aims in education. A recent example of this kind of critical analysis is Ruitenberg's [252] warning against the possible "cruel optimism" inherent in transformative EE.

4.2. The Need of Educators and Organizations to Acquire More Information about Eco-Anxiety

The analysis above shows that eco-anxiety is a wide phenomenon with many kinds of manifestations, and that it is linked with many ecological emotions. Educators, researchers, and various organizations need more knowledge about these phenomena. Academic articles provide many insights, but for educators it may be easiest to read either popular books [57,66,98] or materials produced by psychological organizations such as Australian Psychological Society, Psychology for a Safe Climate, and Climate Psychology Alliance. It can be estimated that more practical resources will be developed soon for teaching and education in relation to eco-anxiety and ecological emotions. Several websites have already been founded for such purposes [253,254].

Currently, there is a certain lack of materials related to other forms of eco-anxiety than climate anxiety, for example about grief and anxiety due to species loss. However, there is already considerable research interest for these themes [133,255], and more practical materials will probably follow. Resources for mourning non-humans may be found, for example, in Macy and Brown [231] and Buzzell and Chalquist [71].

4.3. Developing Institutional Practices and Discussing the Challenges of Eco-Anxiety for Education

On an institutional level, there are profound opportunities and problems. Organizations can make protocols of sharing information about coping with eco-anxiety. Support structures can be built for educators and students, including peer support groups. Continuing education can be provided for teachers and other educators about ecological emotions and emotional skills (see also

the Supplementary Materials). However, then there are the very traditional problems of finding time, resources, and motivation to do these tasks, especially in the crises-filled 2020s and onwards. In addition, the whole subject of eco-anxiety is prone to evoke resistance in many leaders and organizational settings [60,63,256].

In a key position are those people in leadership. Changes in organizations happen through complex dynamics, but nevertheless the leaders are in a crucial position. If the leaders encourage more work with eco-anxiety, such efforts are much more likely to happen and to be sustained. Some leaders already do, but certain inherent problems should be recognized. First, leaders understandably grapple with the multiple pressures and tasks that they face. They need encouragement to take eco-anxiety work into consideration (a highly interesting and nuanced approach for motivating people to encounter their ecological emotions is the new Project InsideOut, developed by a leading climate psychologist, Renée Lertzman. See <https://projectinsideout.net/>, accessed on 25 November 2020). Second, there may well be personality and path dependency factors at play here. In contemporary societies, it takes much ambition and resilience to reach leading positions. Empathy can suffer in such a race. In addition, emotion norms have often preferred the repression of emotions over expression and acknowledgement of emotion [257]. Those in leading positions may be even less aware of difficult emotions than an average person [123]. It may be genuinely difficult for many leaders to understand eco-anxiety or ecological grief, because they are so out of touch with these kind of emotions themselves. Additionally, if the leaders are accustomed to a culture where they feel that they have to be able to always be strong and carry themselves, the hint that difficult emotions should be expressed may seem hideous for them.

Moser [258] and Doppelt [139] are among the scholars and consultants who have explicitly discussed the problems and possibilities related to leaders and difficult ecological emotions. At its best, leaders can be motivated to engage difficult issues by pointing out that it leads to better outcomes in all aspects of the work that the organization does.

The discussions provided by several educational researchers provide ideas and information for institutional developments. Wallace, Greenburg, and Clark [21] insightfully discuss the problems and possibilities related to changing educational practices in relation to eco-anxiety and ecological emotions. The focus of their discussion is on students of environmental sciences, but many of their arguments can be applied for other educational fields. Eaton [23] has provided important questions for discussion and pondering in relation to encountering eco-anxiety and difficult ecological emotions in educational settings. While Eaton strongly recommends such activities, she is clear about the many challenges that have to be navigated. In the following, Eaton's questions are discussed and extended.

- Division of labor. Who in the particular organization or school does what in relation to eco-anxiety? Does somebody have special expertise in emotional work? What division of labor is fair?
- Support. What support is needed, and can be offered, for educators who engage in activities related to eco-anxiety? For example, how is the educator supported in relation to his/her own inner work and in debriefing of sessions?
- Social dynamics in the group and outcomes. If educators share their own experiences and emotions, how does this affect the dynamics in the group or class? Should there be several educators present in sessions like this? How can the results of emotional work be examined?
- Development of protocols and boundaries. What are the limits in this current organization or type of work in relation to emotional work? How does the social context shape these limits? What kind of anxiety experiences function as signs that those persons should be given information about possibilities for professional help by psychologists?
- Feedback and encouragement. How can methods be developed to regularly share feedback and experiences, positive and negative, about work with eco-anxiety and other ecological emotions?

There are clearer answers to some of these questions than to others, but for reasons of deliberate democracy and group dynamics, it is important to discuss together even prejudices and fears. In pioneering projects in Finland, where teachers and environmental educators have been trained to

include emotional activities in their work, the feedback and observed outcomes have been very positive, but long-term follow-up research has not been yet conducted [254] (see also the Supplementary Materials).

Finally, the institutional demands due to eco-anxiety extend to the ways in which environmental educators are trained. Educational institutions should set multidisciplinary teams, which include eco-psychological expertise, to develop educational practices that support the students emotionally [21,32,98], so that the traumas that previous generations have experienced during their studies [18] could be avoided or alleviated in the case of current students. For example, the University of Helsinki established such a team in 2019 to support especially students of environmental sciences.

4.4. *Providing Role Models for Students and Audiences*

Students and other audiences of EE need living examples of the various ways in which eco-anxiety and ecological emotions can be encountered. In the best situation, there would be different kinds of people around who can manifest various constructive ways of coping. For example, one person would be living proof that it is possible to admit one's ecological grief and still maintain functioning, and another person would manifest a highly action-oriented attitude, but still one that does not deny the emotions.

It would be important that people could be given models of how difficult the ecological crisis is and how it is still possible to survive. The contradictions felt by the educator and even a sort of "messiness" that the educator himself feels may be very important lessons for others [259] (p. 235), as long as the students or audiences feel safe enough. It is problematic if the students feel that they have to carry the educator. There may be a thin line between constructive sharing of vulnerability and problematic displays of despair. However, many educators seem overly cautious and afraid of any public display of emotion, due to cultural norms and prejudices. Thus, with others [21,25], the author would encourage educators towards more display of emotion, but with necessary caution, preparation, and structures of feedback and support.

What is a person who feels eco-anxiety like? It would be very important that these images would not be restricted to mere stereotypes such as young, female "worriers", but instead the wide variety of human experiences would be understood. This issue is linked with the problematic tendency to practice identity politics and intergenerational differentiation in relation to eco-anxiety and especially climate anxiety. There are various role models for young people with climate anxiety, but there is a need for more examples of adult and elderly experiences of such emotion. Surveys and studies show that such persons exist [260], but media coverage and common views about the eco-anxious are, so far, limited. Several therapists and authors have provided case stories about eco-anxious people of all ages [66,126,233,261].

4.5. *Tasks and Possibilities for Educators in Practice*

In this subchapter, some of the important possibilities and tasks for environmental educators in their practical work are briefly discussed. These suggestions are largely suitable for both educators in schools and in other settings, because they operate on a general level, pointing to major aims and forms of action. Naturally, different age groups and settings require context-specific sensitivity in the selection of methods. For brevity, the word students is used to refer to all audiences. A recent article by Chawla [262] includes discussion about many of these issues and may be consulted as a general reference regarding these kind of objectives.

4.5.1. *Self-Reflection and Inner Work by the Educator Himself/Herself*

Inner work is needed to develop the emotional resilience of the educator and to avoid maladaptive emotional communication, for example in the form of projecting the emotions of the educator in an uncritical way to students [263]. The rationale is well captured by Burkhart [197] (p. 77): "As responsible educators, I suggest that we need to be doing our own inner work, and be comfortable navigating our own emotional landscape, in order to effectively hold space for students to do this as well."

4.5.2. Validating Various Ecological Emotions and Experiences of Eco-Anxiety among Students

As noted above in Section 3.3, psychologists emphasize the need to validate the ecological emotions that students have. The educator strongly shapes the emotion norms in the learning space [178]. It can be profoundly relieving for students if their various emotions are given recognition. Various terms are used in psychology and other fields for the act of validating, affirming, and recognizing the emotions that are present. In validation, the listener says what they hear in their own words and at the same time checks with the speaker to see if they have understood correctly what the other wanted to communicate. Educational scientists who have examined ecological emotions emphasize the importance of such activities [20,21,23,25,28,156].

It seems that in our times, educators should at least publicly confirm the existence of eco-anxiety and various ecological emotions. There are several reasons for this:

- Ethics and power issues: it is an ethical demand to recognize the sufferings of students, and the educator is a position of power.
- Giving eco-anxiety public space provides the participants the chance to discuss it further, either in the group or with peers.
- In schools and in other situations with children and youth, this validation helps to alleviate conflicts between generations, since it shows that adults know about eco-anxiety and climate anxiety.
- Validation also helps the educator himself/herself. It is usually much more tiring to try to keep existing issues underneath the surface instead of publicly and reasonably admitting that they exist.

Even a simple phrase like the following can already achieve much: “The ecological crisis is so difficult that it causes a lot of different emotions in people. I and other adults have these difficult feelings, too.” In other words, the educator does not need to go into details about his/her own emotions, if he/she does not wish to or if the situation does not allow it.

Hufnagel [208] (p. 52) captures well the importance of validation by describing the costs of not providing it: “In failing to acknowledge students’ emotions, teachers forego learning opportunities to more deeply understand their students’ emotional connections, and in turn marginalize students”.

4.5.3. Admitting that the Educators Themselves Feel Difficult Emotions

This task and possibility is closely related to the issue of role modeling, which was discussed above. Scholars have argued that in addition to validating students’ emotions, the admittance that educators themselves are experiencing them provides opportunities for deeper learning. Wallace, Greenburg and Clark [21] (p. 151) stress this point: “It is important for faculty to explicitly acknowledge the existential struggles their students are experiencing. Engaging personal responsibility is an important strategy, for example, by faculty saying things like, ‘I know it’s unfair that your generation has to deal with climate change,’ or ‘I know this reading was depressing.’ However, teachers need to go a step further and bring themselves into the same emotional space that their students are occupying. By stating simply, ‘I feel despair too,’ faculty can share personal struggles with demanding subject matter, and keep students from feeling like they are alone or that there is no one who can guide them.”

By admitting the vulnerability, complexity, and ambiguity that the educator himself/herself feels, the educator provides very important role modelling and encourages others to share difficult feelings in safe spaces [25]. This can strengthen compassion. However, it must be recognized that this step is difficult for numerous educators, for multiple reasons: emotional cultures and regimes usually do not endorse this kind of behavior, not to mention the traditional power structures in educational settings. Peer support and institutional support are important in enabling educators to make this powerful move.

It should be noted that there is not any single set of “right” ecological emotions that the educator must admit to. It is not required that every educator should feel, for example, despair or optimism. The crucial thing is to engage in self-reflection and also to try to understand compassionately the emotions of others. Educators should be careful especially when they encounter students who have

very different emotions and coping strategies than the educator himself/herself. Those encounters are challenging, but can also be transformative if communication and compassion flow well.

4.5.4. Providing Information about Coping with Eco-Anxiety

Above in Section 4.2, the need for educators and organizations to acquire more information about the varieties of eco-anxiety and coping was discussed. Here the focus is on the need to share that information to students, in ways which are suitable to the situation at hand. The situations and competencies of educators differ. For many, it is within reach to use methods that help participants in encountering ecological emotions and alleviate strong eco-anxiety. For others, this is not possible, at least not yet, but they still can at least share information about how such coping could be done.

Information-based teaching about eco-anxiety is also helpful, both intellectually and emotionally. It may be easier for many students to first approach the subject from the safe distance of intellectualization, a method they are usually very familiar with in contemporary cultures. This kind of teaching is best to be kept on a level that does not include too much or too heavy information, but still is honest. Various ways of adaptive and maladaptive coping can be lectured about. For example, in the author's own teaching experience in university-level courses, many students have found the discussions about the possible relation between repressed climate anxiety and climate denial very helpful. One facet of this is that sometimes people are able to approach their own disavowal or denial only by first practicing some othering and distance, in other words, by first looking at denial manifested by others.

The educator can develop a repository of various links and literature that can be shared with students who are in various positions as regards eco-anxiety. For example, some people will benefit from trauma-related support materials, while others may have reached a stage where they can productively engage with materials that focus more on providing cognitive information. The materials produced by the Australian psychological society [236] can be recommended to all kinds of audiences. Stories of the eco-anxiety experiences of other people may help to better understand both their and one's own experiences, and these can be found online [264]. Engaging with depictions of ecological emotions in various arts can be very helpful, but care should be taken in the selection of these materials. Sometimes it may be too much for participants to engage, say, heavily emotional eco-anxiety poetry, such as the powerful poems of young people [265], or strongly moving visual imagery [266]. In other situations, this kind of powerful material may provide opportunities for transformative learning [9,219]. Personally, the author does not use strongly emotional material in teaching without providing students opportunities for both discussion and embodied processing, see below.

If the educator notices that some students suffer from heavy eco-anxiety, it would naturally be highly important to help them seek professional support. Regrettably, the available amount of psychological support varies greatly between countries and communities. In some countries, such as Britain and Finland, there have been initiatives to raise consciousness about eco-anxiety among health care professionals and school psychologists; and in some countries and areas, there is very little psychological support available at all. Telepsychology and online psychology may offer help even in these cases, provided that there is a stable internet connection available. In some countries, organizations that offer tailored support for eco-anxiety have emerged, such as Tunne ry in Finland [267] and The Good Grief Network in the US [268]. If psychological professionals themselves do not have knowledge about eco-anxiety, it is unfortunately possible that those people who seek help from them are not encountered in a productive manner [144,235]. Luckily, there are currently many voices calling for more expertise in these matters among psychological and health care professionals [6,269,270].

4.5.5. Offering Students Chances to Discuss Their Emotions

Above in Sections 3.2 and 3.3, it was found that education researchers and psychologists endorse the many benefits of discussing eco-anxiety and ecological emotions in safe settings. If the educator has done inner work and the context allows, the opportunity to discuss eco-anxiety and ecological emotions can be very helpful and even transformative for the students. In this subchapter the

focus is on discussion-based methods, and in the next, more embodied methodologies are explored. The more intensive the methodology, the more safety is needed in the group. However, it should be noted that many educators have overly strong fears about discussing ecological emotions, because they have not engaged in inner work about them themselves, and because they lack positive role models of such activities [23]. Most of experienced educators do have the skills and chance for these discussion-based methods, if they only get a chance and motivation to do some preparation. Practical tips and guidelines for such discussions are provided by Macy and Brown [231] (pp. 222–224), Eaton [271], and Pihkala [272].

As experts have recommended, naming one's own ecological emotions and varieties of eco-anxiety, for example with the help of a list of emotion words [273], is already useful. One possible activity is to watch a video or read a text where emotions are present and then name them, for example first in small groups and then by discussing with the whole group. This method can be used to explore both explicitly named emotions and those emotions that can be observed to be implicitly present in the body language or writing style of the person who is studied. For tips about noticing emotional cues, see Hufnagel [179].

It would be important to use discussion methods and more embodied methods both proactively and reactively. When used proactively, these methods increase emotional resilience and also provide resources for times of crises. In crises, it is important to react to strong experiences of the students by providing opportunities for deliberation and empowerment. Examples of psychological support materials for this kind of work include the bushfire-related materials produced in Australia [274]. It should be noted that strong emotional reactions may be engendered by events both near and far. For example, the wildfires in Amazon area in Autumn 2019 also caused eco-anxiety in many Finnish students on the other side of the globe [275].

Educators can also build sensitivity to such elements in their curriculums that are prone to cause anxiety or other difficult emotions, and then design their educational practices so that there is more time than usual for students during these lessons to discuss and reflect on their emotions. Some environmental educators have already make a habit of allowing their students to start classes by reflecting on their learning and emotional wellbeing [253]. Students can be warned in advance about readings and topics that are prone to cause anxiety.

4.5.6. If Possible, Offering Students Chances for Embodied Activities

Emotions live in our bodyminds, and embodied activities are especially useful in encountering emotions. Various methods that use bodily movement, encounters in place, creative expression, and physical closeness to other beings can be very useful in exploring eco-anxiety and ecological emotions. These methods need skills, but on the other hand, many educators already have relevant expertise, which they have before used for other purposes. For example, various arts-based methods and outdoor exercises are often used, but now the challenge would be to adapt them more explicitly into the terrain of eco-anxiety and ecological emotions.

Discussion about this theme touches upon numerous areas of environmental education research and practice. Some key areas that are highly relevant here include:

- Art-based methods in EE
- Place-based education
- Outdoor pedagogy, adventure pedagogy, and other related pedagogies
- Contemplative pedagogy and EE
- Relations with non-human others and pedagogies of interconnectedness

A full discussion of the possibilities inherent in these methods would require an article or even a book of its own. Here, just a few key points are discussed in relation to these methods.

Art-based methods in EE: certain environmental educators who use art-based methods have already applied them into exploration of eco-anxiety and related ecological emotions, and insights

may be gathered from their writings. Wide-ranging observations about the possibilities of arts for this are offered by several writers [30,197,209,276]. The methods that have been used include creative writing [277,278], participatory drama [200,279], participatory dance [280], painting and other visual arts [266,281], and videography [196,282].

Place-based education: among the vast literature related to places, place relations, and environmental education, there are many texts that touch upon the difficult emotional experiences that people have. However, there is surprisingly little explicit discussion about eco-anxiety and related ecological emotions. Luckily this situation has begun to change during the last couple of years, with more scholars writing about these issues. Complex and mixed emotions related to personal transformative places, including anxiety, grief, and solastalgia, are discussed by Stanger [196]. Chawla [207] skillfully integrates the task of discussing difficult emotions and eco-anxiety into her model of childhood EE, which emphasizes nature connection and place-based activities.

Saari and Mullen [283] have provided theoretical explorations of the role of “dark places” in EE. Drawing from many resources such as Timothy Morton’s environmental philosophy and psychodynamic theories, they point out that people experience the uncanniness of ecological conditions in various kinds of places. They argue that in addition to traditional favorite places in EE, aesthetically beautiful and ecologically rich places, EE should explore the potential in ambiguous and even dark places. Those kind of places may help people reflect on ambivalent emotions and eco-anxiety (see also [26]). Similar suggestions have been made by other writers who draw, in their turn, more from eco-psychology. These include Johnson [247,284], who champions the idea of daring to visit wounded places and practicing many kinds of activities there, including both silence and emotion work through art or ritual. Affifi and Christie [33] explore the ambiguous potentials of cemeteries for EE.

For the practicing educator, the simple idea of elaborating emotions in places provides numerous contextual opportunities, into which the aforementioned literature provides tips.

Outdoor pedagogy, adventure pedagogy, and other related pedagogies: the possibilities related to eco-anxiety in these approaches have much in common with what was just discussed in the case of place-based pedagogies, although these methods are built more on movement and changing locations. It is well established on these fields that outdoor and adventure activities can increase skills of anxiety reduction (see, for example, [285]), but now the task is to further integrate explicit work on eco-anxiety and difficult ecological emotions into these approaches. Exchange between these educational approaches and the psychological disciplines of ecotherapy [70,71], outdoor therapy [286], and ecopsychotherapy [233] would benefit all of these disciplines. One example of integrative work is the article by Morgan [287], where he discusses the role of marine adventuring for life span development and EE. He suggests that ageing and various existential questions can be deeply explored through adventures and outdoor EE. This kind of approach would provide opportunities to elaborate on eco-anxiety and difficult ecological emotions with similar methodology.

Contemplative pedagogy and EE: the growing albeit vague movement of contemplative pedagogy is built around the effort to practice various methods of contemplation, including mindfulness, silence, sensitivity to what is happening in one’s own body, guided imagery, and various ritual-like activities [288]. There are profound discussions about difficult emotions in contemplative pedagogy [259]. The intersections of EE and contemplative pedagogy are already being probed by some scholars [197,271,289,290], and it seems that this work provides many opportunities for encountering eco-anxiety in EE. In practice, contemplative EE methods for encountering eco-anxiety can be integrated into both outdoor and indoor activities.

Relations with non-human others and pedagogies of interconnectedness: the burgeoning interest in post-humanist theory and other forms of thought, which emphasize interconnectedness between humans and non-humans, has produced many insights related to eco-anxiety and EE. For general observations about animals and EE, see Spanring [291]. On one hand, there are explorations of how experiences of interconnectedness and inter-species encounters help people to bear or process their difficult emotions [70,71,233,286]. On the other hand, it has been pointed out that these kind of relations

and encounters can strengthen experiences of ecological grief and anxiety, because seeing the suffering of dear creatures, entities, or places causes heartbreak and anguish [29,113,292]. Progressive models of emotion and affect point to the ways in which these may be shared, in various forms and extents, across species boundaries [133,137,255]. The dynamics may be complex: for example, when animals grieve the loss of member of their species, compassionate humans may co-grieve with them, and vice versa, but all human mourning for animals does not necessarily signal deep attachments, but may instead be a proxy for mourning human losses [293].

For educational practice, it is important to note that embodied encounters with other creatures and entities evoke crucial affective dimensions, and that these are often multi-faceted. Still, the author joins those experts who argue that it is a much better and more ethical choice to engage the sufferings and joys of others, including non-human others, instead of trying to play it safe and refrain from embodied encounters [202].

4.5.7. Collective Action

Since action and feelings of efficacy help with eco-anxiety, educators also assist their students in relation to difficult emotions when they offer information about and options for environmental action. Educators are in widely different positions in relation to the suitable manners to do this. Some educators can easily ask audiences to join them in collective action, while others, such as those working in schools, have to be more careful in the normativity of the actions that they endorse. With new environmental movements in schools, such as Fridays4Future, some teachers have taken the option of accompanying the children and providing support. An important form of such support is highlighting the need for emotional skills and resilience. As noted above, very active young environmentalists are in the danger of burnout in the long run [54]. Educators can offer students chances to reflect on their experiences of activism, and this would be very important for example after major climate demonstrations that many students have attended. Students may be dazzled about their experiences and the emotions related to them, and if they are expected to just continue the school day as usual, trouble is bound to arise both in relation to educational goals and to well-being.

Since traditional civil activism is not easy or accessible to all students and this can cause feelings of inadequacy in some of them, educators can help the situation by building understanding about the wide array of possible forms of productive action [98,294]. If educators are participating fully with their audiences in action, they can integrate activities that increase emotional resilience both before and after the action. Educators can link this with information-based teaching about various cultures regarding emotional support in different environmental organizations, and emphasize the research-based benefits of also paying attention to difficult emotions.

4.5.8. Maintaining Balance, Remembering Joy, and Upholding Meaningfulness

As a person in a position of power, the environmental educator holds a responsibility for her/his own actions in relation to maintaining a balance between despair and empowerment. The educator cannot be responsible for everything that the audiences carry into or manifest in the sessions, but she/he should use all her expertise for efforts to increase resilience in the long run.

Balance can be sought by giving ample time for both gravity and lightness. For example, some sessions may focus on grief and/or anxiety, and others on reasonable pride for trying honestly to do one's part both individually and collectively. A sensitive use of humor may be an important tool for increasing resilience [25,57,98,294]. Opportunities should be given for joy and gratitude, even in the midst of troubling times [66,231,247].

It may be too much to ask that environmental educators would always be able to maintain or strengthen hope, but at least meaningfulness should be maintained [31,57,98]. Part of this endeavor is the example given by the educator himself in showing that both despair and empowerment can be a part of one's life, and one can still practice resilience.

5. Concluding Remarks

In this article, the varieties of eco-anxiety and ecological emotions have been explored, along with the recommendations about coping with them. The rather long Discussion section includes many recommendations for EE research, institutional development, and practical EE work. However, there are naturally many themes that require further research and efforts for adapting the findings into educational practice. The mainly theoretical ideas that have been presented here, based on the extensive literature review, invite more empirical studies to explore their applications. Some of these themes for further research are:

- Further application of EE research about significant life experiences and identity formation into the subject area of eco-anxiety and ecological emotions
- Longitudinal research about the results of various methods for encountering eco-anxiety
- Applying participatory action research into eco-anxiety and EE (a few recent Finnish research projects are engaged in this endeavor. See [295,296])
- Further studying the role of contextual factors for methods of encountering eco-anxiety, with sensitivity to justice issues and intersectionality
- Studying the existence of various ecological emotions in different groups of people, with sensitivity about the complexity of dynamics related to such emotions
- Further exploration of posthumanist and other inclusive perspectives in relation to shared feelings between humans and other-than-humans, and for studying the emotions related to relations or entanglements between humans and other-than-humans.

In the near future, it seems evident that a growing array of complex and ambiguous emotions will arise in relation to the multiple overlapping crises of our times. All efforts that educators and scholars of EE are able to make for increasing emotional resilience or affective adaptation are bound to make the situations more bearable. Eco-anxiety and climate anxiety will probably generally increase as more and more people become aware of the state of the planet's ecosystems, but it is also possible that many people will increasingly resort into denial and be occupied with other pressing demands in their lives [297,298]. Now is the time to build more understanding about the related phenomena and to try to establish practices that enable compassionate relations between various people and the more-than-human world.

Supplementary Materials: The following are available online at <http://www.mdpi.com/2071-1050/12/23/10149/s1>, Document S1: An example of environmental education with a focus on eco-anxiety: A workshop about climate emotions in the Finnish "Hope and Action"—project, 2020.

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