

ANNUAL REPORT 2019 & 2020



Cover photo: Rewetted fen in the Peene Valley (Mecklenburg-Western Pomerania) with cattail cultivation (AESa aerial).

Introduction

The Greifswald Mire Centre (GMC) is a partnership of the University of Greifswald, the Michael Succow Foundation and the DUENE e.V. It was founded in the beginning of 2015 through a cooperation agreement of the three partners. The purpose of this annual report is to summarise the development of the Greifswald Mire Centre in its fifth and sixth year in existence, to show the substantial growth in its priority topics and to outline the developments within the GMC.

The activities of the GMC are divided into:

1. Communication: Increasing the visibility of peatlands and their value
2. Guidance and Contribution: Peatland conservation around the world
3. Implementation: Rewetting of own areas as well as project areas
4. Research: Creating knowledge
5. Networking: Strengthening cooperations, expanding networks

You can find a full overview of the essential events at the GMC [here](#).

The GMC's activities are largely financed through third-party funds and donations. So far, 2019 has been the year with the highest approved funding sum for applications of third-party funds (Tab. 1).

Tab. 1. Acquired third party funds, donations and prize money at the Greifswald Mire Centre since 2016 (in Euro).

	2016	2017	2018	2019	2020
Third party Funds	1.490.000	4.508.000	3.719.000	5.776.000	1.405.000
Donations and prize money	79.900	79.685	100.000	2.130	9.100
Total	1.569.900	4.587.685	3.819.000	5.778.130	1.414.100

1. Communication

Heads up! Peatlands are gaining visibility

There is a broad consensus that climate protection is one of the biggest societal challenges of the 21st century. The German “**Fridays for Future**” movement however, made up of students all around the world, are demanding more action. Many more groups, such as scientists, have come together and joined the movement as “**Scientists for Future**”. Public pressure on politics is growing. The GMC participated in several actions this year, drawing attention to the significance of peatlands for our global climate.

In addition, the GMC uses the numerous inquiries of regional, supra-regional and international **media** (television, broadcast, print, online) to create and raise the awareness for **mires and peatlands** in the public discussion. We are seeing that the number of media posts concerning peatlands and the use of peatlands has increased rapidly. In the years 2019/2020 numerous media reported on the work of the GMC, among them the German newspapers ZEIT, Süddeutsche Zeitung, Welt am Sonntag, Spiegel Wissenschaft, FAZ, Tagesspiegel, Der Standard, nature, Spiegel Online as well as the radio broadcasts Deutschlandradio Kultur, Deutschlandfunk Kultur, the German children’s network KIKA and English media and print including the Guardian, BBC, and CNN.



Fig. 1. Tiny house made with building materials from paludiculture plants (Photo: A. Nordt).

The GMC understands knowledge transfer as one of its key responsibilities. Through the use of diverse formats different stakeholders are reached. Particularly, **information events and public field days** play a significant role, such as the ones organised through the MoKli-project (2019-2022), as well as multi-day excursions on paludiculture-demonstration plots in northern Germany for separate stakeholders (scientists, politicians). In addition, the **paludiculture roadshow** tangibly conveyed

the importance of peatlands and their sustainable utilisation. The roadshow was visitable at 11 stations throughout the whole Federal Republic of Germany in the visitor centres of nature reserves or municipal utilities and was not completely booked out due solely to the pandemic in 2019 and 2020. In addition, in cooperation with the GMC, **a tiny house** was constructed in 2020 largely using building materials made from paludiculture biomass. It now serves as a mobile demonstration object showcasing the wide range of possible applications (Fig. 1). Sadly, the literature evenings in the Peatland Library, which were enjoying increased popularity, had to be cancelled in 2020 due to the pandemic.

The GMC publishes a quarterly digital **paludiculture newsletter** to inform about the latest projects, developments, publications, dates and more in relation to paludiculture worldwide. At the end of 2020 this newsletter had a total of 308 subscribers from at least four countries. Additionally, the GMC regularly publishes texts with detailed information concerning different peatland-related topics as a part of its publication series which was founded in 2018. Noteworthy are volume 03/2019 (Abel et al., Klimaschutz auf Moorböden - Lösungsansätze und Best-Practice-Beispiele), as well as volume 01/2020 (Tegetmeyer et al., Aggregierte Karte der organischen Böden Deutschlands) - both frequently cited outcomes of the MoorDialog project.

Apart from its own websites www.greifswaldmoor.de/home.html and <https://mowi.botanik.uni-greifswald.de/en/index.php>, the GMC uses the social network Twitter for brief news and the GMC YouTube channel for self-made videos or videos made by partners of the GMC. Both are being increasingly used (Twitter → Fig. 2). The Federal Environmental Agency linked the GMC educational video "[Moor muss nass!](#)" on their website.

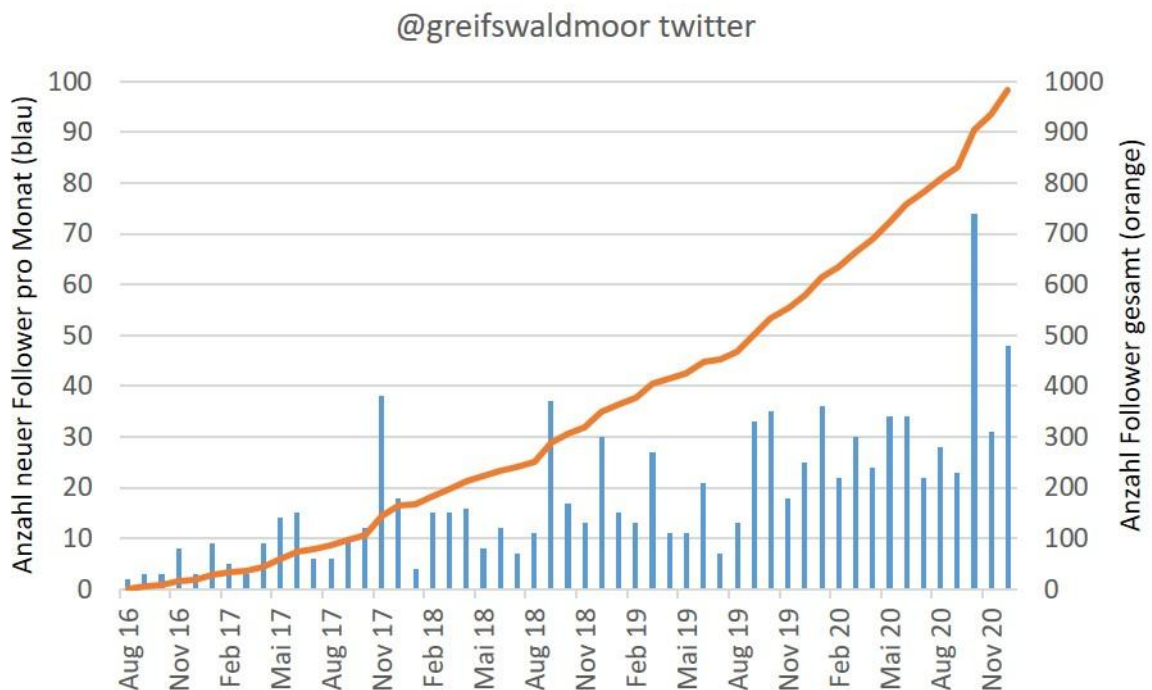


Fig. 2. Development of the number of followers of the GMC’s twitter account since its creation

As a result of the increased visibility of mires and the GMC itself, the number of media requests, but also requests for collaboration and financial support of peatland protection projects has grown.

2. Consultation and Co-creation

Peatland conservation on our doorstep

The GMC operates worldwide on a European and national level but also on its own doorstep. The GMC created an emission balance for the city of **Greifswald**, for the peatland areas in Greifswald's urban regions and formulated action-based recommendations. The results were published in the publication series of the GMC, volume 01/2019 ([Reichelt & Lechtape, Greifswalder Moorstudie](#)). It was made apparent that 10 % of Greifswald's urban areas are peatland areas (Fig. 3) with a high potential for the reduction of greenhouse gases. This was followed by a citizen resolution, in which the mayor was commissioned to develop a strategy to reduce greenhouse gases from the peatland areas belonging to the city of Greifswald, to continue peatland protection projects, to expand the emission balance of peatland areas belonging to the city of Greifswald beyond the urban areas and to examine the establishment of resources for this purpose. Additionally, the Greifswald MoorBündnis was founded, a broad alliance of environmentalists and peatland experts working and campaigning for a more climate friendly usage of peatlands in and around Greifswald. The GMC also took part in the first Peatland Action Day on the 26th June 2020, which was initiated by the Greifswald MoorBündnis.

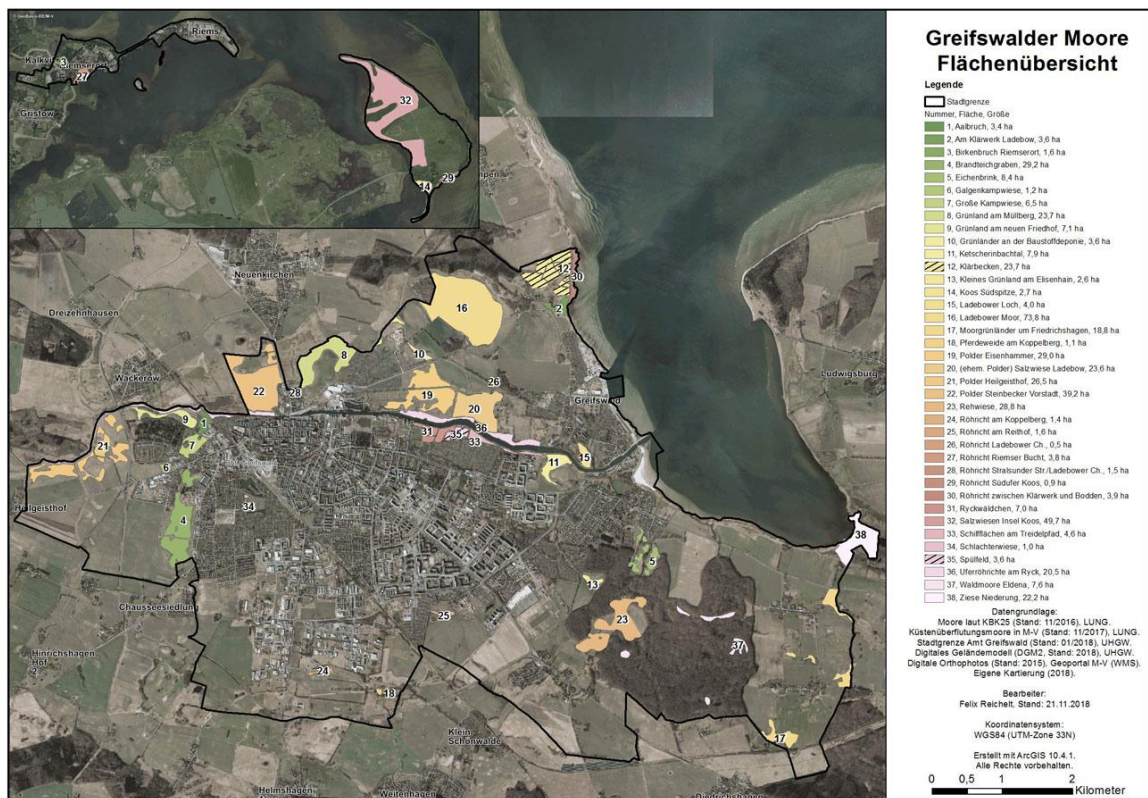


Fig. 3. Overview of the peatland areas in Greifswald with specification of surface area (from Reichelt & Lechtape 2019).

Greifswald is located in **Mecklenburg-Western Pomerania**, which, after Lower Saxony, is the federal state with the most peatlands in Germany. About 12 % of its land area is covered with peatlands (283.650 ha.). Due to the drainage-based use, the peatlands in Mecklenburg-Western Pomerania emit about 6 million tons of CO₂-eq. per year, which is a third of the total emissions of the federal state. To educate about the potential of peatlands for effective climate protection, the GMC compiled the "[Faktenpapier Moorklimaschutz MV](#)" (Fact sheet on peatland climate protection MV) for the state government. At the state press conference, which was co-developed by the GMC, the minister for agriculture and environment, Dr. Till Backhaus, declared that based on this paper, the state government would now set its goal to rewet all peatlands in Mecklenburg-Western Pomerania by 2050. In addition, the GMC contributed to statewide discussions surrounding the topic of peatland protection, such as contributions to the „MV Zukunftsdialog“ on agriculture and the advisory board for the "Friedländer Große Wiese", a board which was initiated by the state council. With 10.000 ha, this is the biggest peatland area in Mecklenburg-Western Pomerania. The appointment of Franziska Tanneberger, director of the GMC, as the co-chairwoman of the Zukunftsrat Mecklenburg-Vorpommern in September 2020, shows that the efforts for the preservation of peatlands in the state, as well as innovative ideas for the economic potential in the sustainable usage of peatlands, are recognised and appreciated on a political level.

Peatland protection in Germany

The GMC has become the reference point for countless politicians from various political backgrounds at state level, wishing to obtain more information on peatlands and their significance for climate protection. As a result, the GMC was invited to expert discussions of individual parties and received visitors in Greifswald to achieve a more personal exchange. In November 2019, Bündnis 90/ Die Grünen (Germany's Green Party) decided to take peatlands into account when discussing their measures for a climate neutral country.

In September 2019 the federal government published the "key points for the **climate protection programme 2030**". In response the GMC published a fact sheet discussing with greater specificity the measures required for effective peatland protection. Further detailed approaches were described in the final report of the MoorDialog project ([Abschlussbericht des MoorDialog-Projektes](#)), which was published as volume 03/2019 in the GMC publication series. Included in this report was an outline of a transformational pathway for German peatlands based on the 2018 IPCC report, which showed development trajectories and interim goals for the achievement of the Paris Climate Agreement in relation to peatlands.

The federal government prepared a **peatland protection strategy** for Germany, as agreed upon in their coalition agreement. In November 2020, a [first draft](#) was presented, containing the new map of organic soils in Germany, compiled by the GMC and is included in volume [01/2020 in the GMC publication series](#). The GMC actively participated in the discussion process of the peatland protection strategy, partaking in expert workshops and publishing a [scientific opinion](#) piece on the first draft, informing and influencing the position taken by other institutions. The peatland protection strategy for Germany is persistently discussed but has not yet been adopted. On a panel discussion in September 2020, environmental minister Svenja Schulze (SPD) emphasised the urgency of making paludiculture possible as an alternative usage of organic soils.

The GMC was also involved in the process of developing a governmental **peat reduction strategy**, outlining the reduction in peat extraction and usage as a raw material for horticultural substrates and potting soils. In addition to the contributions to expert discussions to the Peat Alternative Forum in Lower Saxony, the GMC, through presentations and publications, drew attention to peat moss cultivation in paludiculture. Peat moss holds the potential to reduce the CO₂ emissions from peatlands as well as replacing peat in horticulture and providing a high-quality substrate material, increasing the impact of peatland and climate protection.

Peatland protection in Europe

How **peatland protection strategies** in Europe are designed and what future strategies should take into account, was discussed in an international workshop, organised by the BfN, the Succow Foundation/GMC and Ramsar. The results were summarised in a [policy brief](#). It became clear that peatland protection strategies are not yet present in every European state and even where they exist, are often not well enforced. In addition, there is often a need for adaptations of the peatland protection strategies, to ensure that they fulfil climate protection obligations of the EU-law stated in the Paris Climate Agreement. One progressive protection strategy is that of Great Britain (UK Peatland Strategy 2018-2040), which is already being implemented. In the future, a collective European peat protection strategy, similar to the EU's forest strategy, could be advisable. Finland already announced their goal to achieve climate neutrality by 2035, which is impossible without the consideration of peatland protection strategies.

The majority of peatlands in the European Union are used for agriculture and drained for that purpose. By doing so, enormous amounts of greenhouse gases are set free, resulting in 25 % of the EU's emissions from the agricultural sector, despite peatlands only making up 3 % of the total agriculturally used area. It is therefore important to adjust the political framework to realise extensive peatland protection. A significant instrument is funding from the Common Agricultural Policy (CAP) of the EU, which was newly structured and negotiated for the new legislative period 2021-2027. The years 2019 and 2020 were significant for this development. The GMC took the CAP as an occasion to educate on peatlands on all levels and campaign for peatland protection. In close cooperation with other players, such as Wetlands International, European Environmental Bureau (EEB), IUCN, DNR and Copa Cogeca (European farmers organisation), numerous seminars and webinars, round tables and workshops were initiated and contributed to by the GMC, resulting in discussions with relevant players in the EU-commission (DG Agri, DG Klima) as well as numerous parliamentarians of the EU countries (Fig. 4). The starting point for many personal contacts with members of the European Commission and Parliament was the workshop 'Exchange of views on the post-2020 Common Agricultural Policy (CAP) and its effect on farming on organic (peat) soils', which was jointly organised by Wetlands International European Association and the GMC in Brussels in April 2019. Two briefing papers prepared under the lead of the GMC, 'Peatlands in the EU CAP' and GAEC 2 'Appropriate protection of wetlands and peatlands', compile key facts and highlight the need for action. They were sent to numerous members of the European Parliament and are available for download on the GMC website. In addition, the GMC initiated the international network 'EU CAP peatland and paludiculture', in which around 25 members from approximately ten peatland-rich EU countries regularly exchange information on the current situation in their respective countries and agree on a joint, coordinated approach, facilitated by the GMC. Within the MoKli project at the GMC,

expert dialogues and webinars were conducted at the national level to discuss peatland conservation and agricultural policy.

The awareness of peatlands at the European policy level has increased. Peatlands potential to reduce greenhouse gas emissions and enable carbon sequestration is increasingly being recognised. In spring 2019, the Agricultural Committee of the European parliament proposed changes in the GAP strategy plans concerning paludiculture and its eligibility. In the context of the extended conditionality, it is planned to introduce the condition (GLÖZ) "Erhaltung von kohlenstoffreichen Böden wie Moore und Feuchtgebiete" (Preservation of carbon-rich grounds like peatlands and wetlands). Additionally, there is an ongoing discussion on addressing peatlands in the first and second pillars as agricultural measures. In a letter to the European Commission from the GMC and its EU network partner organisations, Janusz Wojciechowski, EU commissioner for agriculture replied: "The commission will keep on advocating for a reformed GAP that meets the goals of the 'Green Deal'. The new CAP has to put a focus on peatlands to put the agricultural sector on the path to sustainability". The negotiations surrounding the new CAP continue. Prospectively the funding period will not start until 2023. Until then the GMC strives to bring and keep peatlands in the discussion.



Fig. 4. Franziska Tanneberger (GMC) in the EU parliament after conversations with vice president Mairead McGuinness (Ireland) and the agriculture focused politician Peter Jahr (Germany), November 2019. (Photo: private).

The majority of European peatlands are located outside of the European Union. A main goal of the GMC is to carry on the collaborations that were established in earlier projects such as the International Climate Initiative (IKI) in Belarus and the Ukraine. In Belarus, the REMEMBER project (funded by the BMBF) could be started, though sadly their work was complicated by the pandemic and the political situation in Belarus. In addition, Belarus' activities were included in the interregional project DESIRE within the catchment area of the Memel (Nemunas). In collaboration with peatland experts of the International Mire Conservation Group (IMCG), scientists of the GMC were invited to the Lithuanian-Belorussian LIFE-project, which has the purpose of protecting the aquatic warbler in the Ramsar-reserve Zvaniec, to give advice on the water management. In the IKI project PeatRus, the GMC was able to lay the foundations for the continuation of the collaborative work until 2023 by giving expert advice on methods for the reporting on and recording of greenhouse gas reduction in peatlands.

Peatland protection worldwide

The GMC is one of the founding members of the Global Peatland Initiative (GPI). In collaboration with strong partners, the GMC managed to organise and/or participate in numerous events at an international level in the course of an IKI project. Assisted by the GMC, at the Global Landscape Forum, as well as at the Nature's Climate Hub and the UN climate conference in Katowice (COP25), natural-based solutions for climate protection were discussed with a greater focus than ever before. Also new in the discussions was the focus on the connection of food production and ground emissions in drained peatlands, which was demonstrated with concrete examples.

Southeast Asia, as the world's biggest focal point of greenhouse gas emissions from drained peatlands, remains an important field of focus for the GMC. The GMC became involved in updating the RSPO manual for approaches for more sustainability with palm oil, participated in webinars held by the Peatland Restoration Agency Indonesia and strives for a cooperation with the ITPC (International Tropical Peatland Centre).

On the **African** continent large peat areas can also be found, though only little information on the distribution and condition is known. The GMC and Wetlands International were commissioned to investigate the potential of the Nile Basin to avoid carbon dioxide emissions in wetlands. The three-week field work in five countries in April 2019 revealed that agriculture, peat degradation and infrastructural projects pose a threat to the peatlands. Based on the mapping, recommendations for technical and political discussions are being developed.

The GMC also organised regional specific workshops concerning peatlands, their protection and possible uses with a focus on **South America** (Peru, Chile) and plans on building and expanding on this collaboration in the future.

Distribution of Permafrost Peatlands

Underneath 25% of the northern hemisphere lies permafrost

Permafrost is degrading. The southern boundaries have retreated northward by 30-80 km in recent decades

Peatlands span over vast areas in the permafrost zones. At least 1.4 million km² of permafrost peatlands have a peat layer thicker than 40 cm, and much larger area with shallower peat.

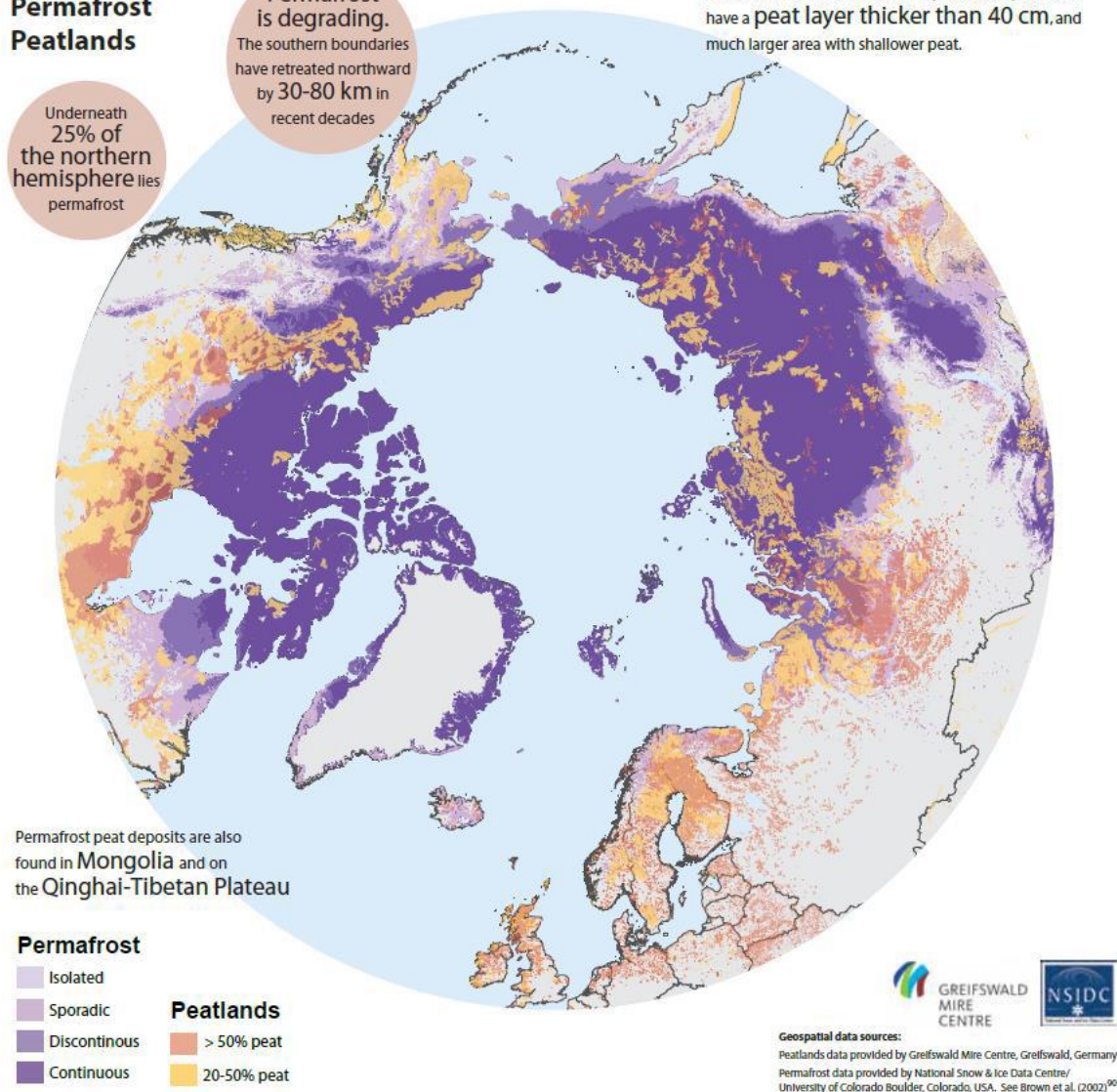


Fig. 5. Distribution of peatlands in permafrost regions.

Climate change has a big influence on the peatlands in **permafrost** regions. These connections are explained in detail under the direction of Hans Joosten/GMC in the chapter [Permafrost Peatlands: Losing ground in a warming world](#) of the UNEP-Frontiers Report [Emerging Issues of Environmental Concern](#). The circumpolar map of the distribution of permafrost and peatlands was created on the basis of the data researched by the [Global Peatland Database](#) at the GMC and is included in this document (Fig. 5).

Increasingly, peatlands are recognised by international bodies & conventions. In the IPCC special report from 2019 “Climate Change and Land”, the importance of peatlands as carbon stores and potential sinks is highlighted. In March 2019, the environmental assembly of the UN environmental program accepted a resolution that for the first time urges member states and other participants to promote the protection, the sustainable use and the restoration of peatlands (UNEP/EA.4/RES.16 ‘Conservation and Sustainable Management of Peatlands’). The GMC supported the employees of the UN environmental programme with background information. The resolution also demands more

coordinated efforts, again supported by the GMC. At a meeting of the scientific expertise centre of the Ramsar convention, visited by a representative of the GMC, it was decided to update the Ramsar guidelines on the basis of the IMCG peatland restoration manual and to entrust the GMC with the task. To achieve a stronger recognition of peatlands in the four big conventions as well as to foster new synergies, a workshop, initiated by the GMC in collaboration with the BfN, UN environmental programme and Wetlands International, was organised with representatives of the FCCC, CBD, Ramsar convention, UNCCD, CMS, water convention and further international organisations. As a result, a roadmap for further collaborative work was agreed upon.

The United Nations General Assembly proclaimed the years 2021–2030 as the Decade on Ecosystem Restoration. The GMC aims to play an active role in this initiative and thereby place a stronger focus on peatlands. Central to assessing restoration success are simple yet meaningful monitoring methods, in the development of which the GMC is involved through the FAO-established working group “Restoration Monitoring”. This also draws on experience in peatland mapping and monitoring that was published in an [FAO report](#) with the involvement of the GMC.

3. Implementation

Taking action - 150 hectares of peatland rewetted!

The Michael Succow Foundation, as one of three partners of the GMC, is owner of 1.400 ha of land, of which more than half are peatlands. Even though the majority of this peatland area is already wet, there remains a need for action for 80 ha. At the Binsenberg hillside spring fen, rewetting has been completed on 36 ha, and the drainage of 9 ha of carr forest and spring reedbeds in the Sernitz lowland has been deactivated. The rewetting of additional peatland areas is currently in the planning or preparatory phase, such as the 'Optimisation of the hydrological system of the coastal flood peatland Karrendorfer Wiesen' within the framework of the Nature Conservation Funding Directive of Mecklenburg-Western Pomerania, with a focus on peatland conservation. In addition, previously drained and agriculturally used peatlands have been rewetted within research projects: approximately 10 ha in northern Germany as part of the Paludi-PRIMA and OptiMOOS projects, and around 100 ha in Lithuania within the DESIRE project (Amalvas polder, Liepakojai and Aзуoliniai peatlands; Fig. 6).

The PaludiMed GmbH, the first spin-off company of the GMC, plans on cultivating bio-certified sundew for medical uses and has rewetted approx. 2,5 ha of peatland in May 2019.



Fig. 6. Results of the DESIRE-project: a rewetted peatland in Amalvas Polder (Lithuania); Spring 2020 (Photo: N. Zableckis).

4. Research

Creating knowledge

The University of Greifswald focuses on a goal-oriented education, as well as a solid and innovative peatland knowledge. In the years 2019 and 2020 numerous Bachelor and Master theses as well as five dissertations on the topic of peatlands and paludiculture were published. To secure peatland research at the University of Greifswald on a long-term basis, a sub-goal agreement for the establishment of Germany's first **professorship in peatland studies** was signed in December 2018 between the university and the state of Mecklenburg-Western Pomerania. Thirteen researchers applied for the position, but the appointment process concluded without a successful hire. A second appointment procedure is planned.

12 new **projects** were started at the GMC in the years 2019 and 2020 concentrating on investigations on paludiculture and the preparation and realisation of peatland rewetting:

Tab. 2

Acronym	Titel
BOnaMoor	Optimisation of biomass products on wet peatland locations and their thermal use
Paludi-PRIMA	Binging paludiculture into practice: integration - management - cultivation
OptiMOOS	Optimising Peat-moss-cultivation: water management, climate balance, biodiversity & product development
MoKli	Realising mire- and climate protection - practicable solutions with land users
Generationswechsel Moor	Supporting the transition period at the Greifswald Mire Centre
Plant3	Strategies for high-quality processing of plant-based resources in North Germany
Karrendorfer Wiesen	Optimisation of the hydrological system of the coastal flood mire Karrendorfer Wiesen
DIG-IT	Digitalisation of natural complexity for solving societal relevant ecological problems
DESIRE	Development of sustainable peatland management by restoration and paludiculture for nutrient retention in the Neman River catchment
REMEMBER	The role of emergent macrophytes in reducing the biogenous burden of water ecosystems

LIFE Climate OrgBalt	Demonstrating the potential of nutritious organic grounds in the Baltic States and Finland for moderating the effects of climate change
PeatRus3	PeatRus - peatland restoration in Russia
Nile Basin Peatlands	Assessment of Carbon (CO ₂) emissions avoidance potential from the Nile Basin peatlands

Furthermore, four assignments were processed at the GMC by DUENE:

- Assignment UBA F+E project “Developing incentives for paludiculture to reach the climate protection goals 2030 and 2050”
- Assignment Ministry of the Environment MV collection of facts “Peatlands in Mecklenburg-Vorpommern in the context of national and international climate protection goals” ([report](#))
- Assignment Ramsar “Draft technical manual and “How-to” guidance on peatland rewetting/restoration, including for tropical peatlands”
- Assignment Greenpeace Energy “Biomass potential from paludiculture for the production of biogas” ([report](#))

The immediate rewetting of peatlands worldwide to achieve climate protection goals is an urgent necessity. Paludiculture offers a significant opportunity for implementation in this regard, as it also provides prospects for sustainable use. Given this strategic window of opportunity, many of the projects at the GMC are currently focusing on the topic of paludiculture.

In the years 2019 and 2020, under the direction or contribution of people at the GMC, 49, mostly **scientific articles**, were published ([list](#)). Noteworthy is the article by Günther et al. (2020)¹ that was published in *Nature Communications* addressing the necessity of quick rewetting of drained peatlands to reduce global warming, while considering the associated methane emissions. In December 2019, the comprehensive volume [Sphagnum Species of the World](#) by *Sphagnum* expert Dr. Dierk Michaelis/GMC, was published in English. With 435 pages the book presents in detail 292 *Sphagnum* species with codes to aid identification, complete with data about their habitats, geographical distribution and lists of synonyms.

For the international scientific exchange, the University of Greifswald/GMC organised two conferences as well as co-organised peatland sessions with organisations such as the EGU. The results of the REPEAT project for peat formation in European fens were presented at the REPEAT conference in June 2019 in Tulcea, Rumania. Results of research from various subject areas in drained, rewetted or near-natural peatlands were presented at the WETSCAPES conference in September 2019 and discussed between the 160 participants. It became clear that a quick stop of peatland drainage is necessary for achieving the climate protection goals.

5. Networking

Strengthening cooperations, expanding networks

The GMC cooperates with various partners in numerous projects and operates as a part of a global network of scientists, NGOs and practitioners, who work in and for peatlands. Individual partnerships (Wetlands International, Thünen Institute, University of Rostock) were deepened in 2019 and 2020 by creating cooperation agreements or regular, intense exchanges. Especially noteworthy is the collaborative work with the BURG Giebichenstein Art Academy Halle, which dealt with peatlands from an artist's perspective, such as through the residencies of two students in the paludiculture tiny house on the Karrendorfer Wiesen near Greifswald.

At the end of 2020, the cooperation between the Michael Succow Foundation and Michael Otto Foundation was started to jointly work on peatland climate protection. The next annual report will provide details on this new collaboration.

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