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Publications:

Potential for cumulative effects of human stressors on fish, sea birds and marine mammals in Arctic waters

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, NIVA Denmark Water Research, Università degli Studi della Tuscia, Aarhus University, Greenland Institute of Natural Resources, Stanford University
Authors: Andersen, J. H. (Ekstern), Berzaghi, F. (Ekstern), Christensen, T. (Ekstern), Geertz-Hansen, O. (Ekstern), Mosbech, A. (Ekstern), Stock, A. (Ekstern), Zinglersen, K. B. (Ekstern), Wisz, M. S. (Intern)
Pages: 202-206
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Publication information
Journal: Estuarine, Coastal and Shelf Science
Volume: 184
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Web of Science (2018): Indexed yes
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.43 SJR 0.997 SNIP 1.127
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Scopus rating (2015): SJR 1.107 SNIP 1.186 CiteScore 2.44
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.067 SNIP 1.257 CiteScore 2.28
Web of Science (2014): Indexed yes
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ISI indexed (2013): ISI indexed yes
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BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.256 SNIP 1.419 CiteScore 2.52
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
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ISI indexed (2011): ISI indexed yes
Biological introduction risks from shipping in a warming Arctic

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Tromsø University Museum, UiT The Arctic University of Norway, Flødevig Research Station, Danish Meteorological Institute, Commonwealth Scientific and Industrial Research Organisation, Russian Academy of Sciences, Polish Academy of Sciences, University of Fribourg
Authors: Ware, C. (Ekstern), Berge, J. (Ekstern), Jelmert, A. (Ekstern), Olsen, S. M. (Ekstern), Pellissier, L. (Ekstern), Wisz, M. (Intern), Kriticos, D. (Ekstern), Semenov, G. (Ekstern), Kwaśniewski, S. (Ekstern), Alsos, I. G. (Ekstern)
Pages: 340-349
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Journal of Applied Ecology
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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
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Food security: Protect aquaculture from ship pathogens

General information
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Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, DHI, Singapore., University of Tartu
Number of pages: 1
Pages: 31
Publication date: 2016
Past climate-driven range shifts and population genetic diversity in arctic plants

High intra-specific genetic diversity is necessary for species adaptation to novel environments under climate change, but species tracking suitable conditions are losing alleles through successive founder events during range shift. Here, we investigated the relationship between range shift since the Last Glacial Maximum (LGM) and extant population genetic diversity across multiple plant species to understand variability in species responses.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, University Centre in Svalbard, UiT The Arctic University of Norway, University of Fribourg, University of Innsbruck, University of Salzburg, Norwegian Institute for Nature Research, University of Lausanne, ETH Zurich, Aarhus University, University of Oslo, Tromsø University Museum, University of Helsinki

Impact of biotic interactions on biodiversity varies across a landscape

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, University of Helsinki, University of Pretoria, Finnish Environment Institute
Authors: Mod, H. K. (Ekstern), Heikkinen, R. K. (Ekstern), le Roux, P. C. (Ekstern), Wisz, M. S. (Intern), Luoto, M. (Ekstern)
Pages: 2412–2423
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Main Research Area: Technical/natural sciences

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Journal: Journal of Biogeography
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.35
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 4.33
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.58
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.54
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 4.42
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 3.95
BFI (2010): BFI-level 2
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Web of Science (2007): Indexed yes
Original language: English
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Source: Findit
Source-ID: 2305871368
Publication: Research - peer-review › Journal article – Annual report year: 2016
The regional species richness and genetic diversity of Arctic vegetation reflect both past glaciations and current climate:
Glaciation effect on arctic vegetation diversity

Aim
The Arctic has experienced marked climatic differences between glacial and interglacial periods and is now subject to a rapidly warming climate. Knowledge of the effects of historical processes on current patterns of diversity may aid predictions of the responses of vegetation to future climate change. We aim to test whether plant species and genetic diversity patterns are correlated with time since deglaciation at regional and local scales. We also investigate whether species richness is correlated with genetic diversity in vascular plants.

Location
Circumarctic.

Methods
We investigated species richness of the vascular plant flora of 21 floristic provinces and examined local species richness in 6215 vegetation plots distributed across the Arctic. We assessed levels of genetic diversity inferred from amplified fragment length polymorphism variation across populations of 23 common Arctic species. Correlations between diversity measures and landscape age (time since deglaciation) as well as variables characterizing current climate were analysed using spatially explicit simultaneous autoregressive models.

Results
Regional species richness of vascular plants and genetic diversity were correlated with each other, and both showed a positive relationship with landscape age. Plot species richness showed differing responses for vascular plants, bryophytes and lichens. At this finer scale, the richness of vascular plants was not significantly related to landscape age, which had a small effect size compared to the models of bryophyte and lichen richness.

Main conclusion
Our study suggests that imprints of past glaciations in Arctic vegetation diversity patterns at the regional scale are still detectable today. Since Arctic vegetation is still limited by post-glacial migration lag, it will most probably also exhibit lags in response to current and future climate change. Our results also suggest that local species richness at the plot scale is more determined by local habitat factors.
Archived DNA reveals fisheries and climate induced collapse of a major fishery

Fishing and climate change impact the demography of marine fishes, but it is generally ignored that many species are made up of genetically distinct locally adapted populations that may show idiosyncratic responses to environmental and anthropogenic pressures. Here, we track 80 years of Atlantic cod (Gadus morhua) population dynamics in West Greenland using DNA from archived otoliths in combination with fish population and niche based modeling. We document how the interacting effects of climate change and high fishing pressure lead to dramatic spatiotemporal changes in the proportions and abundance of different genetic populations, and eventually drove the cod fishery to a collapse in the early 1970s. Our results highlight the relevance of fisheries management at the level of genetic populations under future scenarios of climate change.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Ecosystem based Marine Management, Greenland Climate Research Centre, WSL Swiss Federal Research Institute, Stanford University, Greenland Institute of Natural Resources, Danish Meteorological Institute, Marine Research Institute, Aarhus University
Publication date: 2015
Main Research Area: Technical/natural sciences

Publication information
Journal: Scientific Reports
Volume: 5
Article number: 15395
Arctic warming will promote Atlantic-Pacific fish interchange

Throughout much of the Quaternary Period, inhospitable environmental conditions above the Arctic Circle have been a formidable barrier separating most marine organisms in the North Atlantic from those in the North Pacific. Rapid warming has begun to lift this barrier, potentially facilitating the interchange of marine biota between the two seas. Here, we forecast the potential northward progression of 515 fish species following climate change, and report the rate of potential species interchange between the Atlantic and the Pacific via the Northwest Passage and the Northeast Passage. For this, we projected niche-based models under climate change scenarios and simulated the spread of species through the passages when climatic conditions became suitable. Results reveal a complex range of responses during this century, and accelerated interchange after 2050. By 2100 up to 41 species could enter the Pacific and 44 species could enter the Atlantic, via one or both passages. Consistent with historical and recent biodiversity interchanges, this exchange of fish species may trigger changes for biodiversity and food webs in the North Atlantic and North Pacific, with ecological and economic consequences to ecosystems that at present contribute 39% to global marine fish landings.

General information

State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, University of Lausanne, Universite de Bordeaux, Greenland Climate Research Centre, Aarhus University, DHI Denmark, University of Copenhagen, Danish Meteorological Institute
Authors: Wisz, M. (Intern), Broennimann, O. (Ekstern), Grønkjær, P. (Ekstern), Møller, P. R. (Ekstern), Olsen, S. M. (Ekstern), Swingedouw, D. (Ekstern), Hedeholm, R. (Ekstern), Eg Nielsen, E. (Intern), Guisan, A. (Ekstern), Pellissier, L. (Ekstern)
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Publication date: 2015
Main Research Area: Technical/natural sciences

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Journal: Nature Climate Change
Volume: 5
Issue number: 3
Coral bleaching events threaten coral reef habitats globally and cause severe declines of local biodiversity and productivity. Related to high sea surface temperatures (SST), bleaching events are expected to increase as a consequence of future global warming. However, response to climate change is still uncertain as future low-latitude climatic conditions have no present-day analogue. Sea surface temperatures during the Eocene epoch were warmer than forecasted changes for the coming century, and distributions of corals during the Eocene may help to inform models forecasting the future of coral reefs. We coupled contemporary and Eocene coral occurrences with information on their respective climatic conditions to model the thermal niche of coral reefs and its potential response to projected climate change. We found that under the RCP8.5 climate change scenario, the global suitability for coral reefs may increase up to 16% by 2100, mostly due to improved suitability of higher latitudes. In contrast, in its current range, coral reef suitability may decrease up to 46% by 2100. Reduction in thermal suitability will be most severe in biodiversity hotspots, especially in the Indo-Australian Archipelago. Our results suggest that many contemporary hotspots for coral reefs, including those that have been refugia in the past, spatially mismatch with future suitable areas for coral reefs posing challenges to conservation actions under climate change.

General information
State: Published
Organisations: DHI Denmark, University of Fribourg, Laboratoire Ecologie des Systèmes Marins Côtières, University of Perpignan, University of Sydney, Danish Meteorological Institute, Universite de Bordeaux, Institut pour la Recherche en Développement
Authors: Descombes, P. (Ekstern), Wisz, M. S. (Intern), Leprieur, F. (Ekstern), Parravicini, V. (Ekstern), Heine, C. (Ekstern), Olsen, S. M. (Ekstern), Swingedouw, D. (Ekstern), Kulbicki, M. (Ekstern), Mouillot, D. (Ekstern), Pellissier, L. (Ekstern)
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Scopus rating (2015): SJR 5.239 SNIP 2.585 CiteScore 8.48
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Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 4.624 SNIP 2.655 CiteScore 8.4
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Web of Science (2013): Indexed yes
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Scopus rating (2012): SJR 4.228 SNIP 2.388 CiteScore 7.2
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
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Scopus rating (2010): SJR 4.394 SNIP 2.257
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Web of Science (2009): Indexed yes
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Scopus rating (2008): SJR 3.934 SNIP 2.203
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.09 SNIP 1.837
Web of Science (2007): Indexed yes
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Scopus rating (2005): SJR 2.529 SNIP 1.877
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.679 SNIP 1.682
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.557 SNIP 1.561
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 2.456 SNIP 1.574
Scopus rating (2001): SJR 2.74 SNIP 1.488
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 2.912 SNIP 1.605
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Original language: English
Fish, Fossil, Sea surface temperature, Specialists, Species distribution model, Species richness
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Source-ID: 2263196982
Reply to 'Sources of uncertainties in cod distribution models'

**General information**

State: Published
Organisations: National Institute of Aquatic Resources, Section for Ecosystem based Marine Management, Section for Marine Living Resources, University of Lausanne, University of Copenhagen, Aarhus University, Danish Meteorological Institute, Université de Bordeaux
Authors: Wisz, M. (Intern), Broennimann, O. (Ekstern), Grønkjær, P. (Ekstern), Møller, P. D. R. (Ekstern), Olsen, S. M. (Ekstern), Swingedouw, D. (Ekstern), Hedeholm, R. (Ekstern), Eg Nielsen, E. (Intern), Guisan, A. (Ekstern), Pellissier, L. (Ekstern)
Pages: 790-791
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**Publication information**

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- Web of Science (2018): Indexed yes
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- Scopus rating (2016): CiteScore 10.06
- Web of Science (2016): Indexed yes
- BFI (2015): BFI-level 1
- Scopus rating (2015): CiteScore 9.64
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 1
- Scopus rating (2014): CiteScore 7.38
- Web of Science (2014): Indexed yes
- BFI (2013): BFI-level 1
- Scopus rating (2013): CiteScore 5.86
- ISI indexed (2013): ISI indexed yes
- Web of Science (2013): Indexed yes
- Scopus rating (2012): CiteScore 2.91
- ISI indexed (2012): ISI indexed no
- ISI indexed (2011): ISI indexed no
Original language: English
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- 10.1038/nclimate2762

The history of cod in Greenland: A major fishery collapse explained by archived DNA

**General information**

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Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Section for Ecosystem based Marine Management, University of Fribourg
Number of pages: 1
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Event: Abstract from ICES Annual Science Conference 2015, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Climate change, non-indigenous species and shipping: assessing the risk of species introduction to a high-Arctic archipelago

Aim
Anticipated changes in the global ocean climate will affect the vulnerability of marine ecosystems to the negative effects of non-indigenous species (NIS). In the Arctic, there is a need to better characterize present and future marine biological introduction patterns and processes. We use a vector-based assessment to estimate changes in the vulnerability of a high-Arctic archipelago to marine NIS introduction and establishment.

Location
Global, with a case study of Svalbard, Norway.

Methods
We base our assessment on the level of connectedness to global NIS pools through the regional shipping network and predicted changes in ocean climates. Environmental match of ports connected to Svalbard was evaluated under present and future environmental conditions (2050 and 2100 predicted under the RCP8.5 emissions scenario). Risk of NIS introduction was then estimated based on the potential for known NIS to be transported (in ballast water or as biofouling), environmental match, and a qualitative estimate of propagule pressure.

Results
We show that Svalbard will become increasingly vulnerable to marine NIS introduction and establishment. Over the coming century, sea surface warming at high latitudes is estimated to increase the level of environmental match to nearly one-third of ports previously visited by vessels travelling to Svalbard in 2011 (n=136). The shipping network will then likely connect Svalbard to a much greater pool of known NIS, under conditions more favourable for their establishment. Research and fishing vessels were estimated to pose the highest risk of NIS introduction through biofouling, while ballast water discharge is estimated to pose an increased risk by the end of the century.

Main conclusions
In the absence of focused preventative management, the risk of NIS introduction and establishment in Svalbard, and the wider Arctic, will increase over coming decades, prompting a need to respond in policy and action.
Herbicide and fertilizers promote analogous phylogenetic responses but opposite functional responses in plant communities

Throughout the world, herbicides and fertilizers change species composition in agricultural communities, but how do the cumulative effects of these chemicals impact the functional and phylogenetic structure of non-targeted communities when they drift into adjacent semi-natural habitats? Based on long-term experiment we show that fertilizer and herbicides (glyphosate) have contrasting effects on functional structure, but can increase phylogenetic diversity in semi-natural plant communities. We found that an increase in nitrogen promoted an increase in the average specific leaf area and canopy height at the community level, but an increase in glyphosate promoted a decrease in those traits. Phylogenetic diversity of plant communities increased when herbicide and fertilizer were applied together, likely because functional traits facilitating plant success in those conditions were not phylogenetically conserved. Species richness also decreased with increasing levels of nitrogen and glyphosate. Our results suggest that predicting the cumulative effects of agrochemicals is more complex than anticipated due to their distinct selection of traits that may or may not be conserved phylogenetically. Precautionary efforts to mitigate drift of agricultural chemicals into semi-natural habitats are warranted to prevent unforeseeable biodiversity shifts. © 2014 IOP Publishing Ltd.
Incorporating dominant species as proxies for biotic interactions strengthens plant community models

**General information**

**State:** Published  
**Organisations:** Aarhus University  
**Authors:** le Roux, P. C. (Ekstern), Pellissier, L. (Ekstern), Wisz, M. (Intern), Luoto, M. (Ekstern)  
**Pages:** 767-775  
**Publication date:** 2014

**Publication information**

**Journal:** Journal of Ecology  
**Volume:** 102  
**ISSN (Print):** 0022-0477
Predicting the distribution of deep-sea vulnerable marine ecosystems using high-resolution data: Considerations and novel approaches

Little is known about species distribution patterns in deep-sea environments, primarily because sampling surveys in the high seas are expensive and time consuming. The increasing need to manage and protect vulnerable marine ecosystems, such as cold-water corals, has motivated the use of predictive modelling tools, which produce continuous maps of potential species or habitat distribution from limited point observations and full coverage environmental data. Rapid advances in acoustic remote sensing, oceanographic modelling and sampling technology now provide high quality datasets, facilitating model development with high spatial detail. This paper provides a short overview of existing methodologies for predicting deep-sea benthic species distribution, and illustrates emerging issues related to spatial and thematic data resolution, and the use of transect-derived species distribution data. In order to enhance the ecological relevance and reliability of deep-sea species distribution models, novel techniques are presented based on a case study predicting the distribution of the cold-water coral Lophelia pertusa in three carbonate mound provinces in Irish waters. Specifically, the study evaluates (1) the capacity of newly developed high-resolution (250 m grid cell size) hydrodynamic variables to explain local scale cold-water coral distribution patterns, (2) the potential value of species occurrence proportion data to maintain semi-quantitative information of coral prevalence (i.e. coverage) and sampling effort per grid cell within the response variable, and (3) mixed effect modelling to deal with spatially grouped transect data. The study
shows that predictive models using vertical and horizontal flow parameters perform significantly better than models based on terrain parameters only. Semiquantitative proportion data may decrease model uncertainty and increase model reliability, and provide a fruitful avenue of research for analysing large quantities of video data in a detailed yet time-efficient manner. The study concludes with an outlook of how species distribution models could improve our understanding of vulnerable marine ecosystem functioning and processes in the deep sea. (C) 2014 Elsevier Ltd. All rights reserved.
Predictive habitat modelling of humpback (Megaptera novaeangliae) and Antarctic minke (Balaenoptera bonaerensis) whales in the Southern Ocean as a planning tool for seismic surveys

Seismic surveys are frequently a matter of concern regarding their potentially negative impacts on marine mammals. In the Southern Ocean, which provides a critical habitat for several endangered cetacean species, seismic research activities are undertaken at a circumpolar scale. In order to minimize impacts of these surveys, pre-cruise planning requires detailed, spatio-temporally resolved knowledge on the likelihood of encountering these species in the survey area. In this publication we present predictive habitat modelling as a potential tool to support decisions for survey planning. We associated opportunistic sightings (2005-2011) of humpback (Megaptera novaeangliae, N=93) and Antarctic minke whales (Balaenoptera bonaerensis, N=139) with a range of static and dynamic environmental variables. A maximum entropy algorithm (Maxent) was used to develop habitat models and to calculate daily basinwide/circumpolar prediction maps to evaluate how species-specific habitat conditions evolved throughout the spring and summer months. For both species, prediction maps revealed considerable changes in habitat suitability throughout the season. Suitable humpback whale habitat occurred predominantly in ice-free areas, expanding southwards with the retreating sea ice edge, whereas suitable Antarctic minke whale habitat was consistently predicted within sea ice covered areas. Daily, large-scale prediction maps provide a valuable tool to design layout and timing of seismic surveys as they allow the identification and consideration of potential spatio-temporal hotspots to minimize potential impacts of seismic surveys on Antarctic cetacean species. (C) 2014 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/3.0/).

General information
State: Published
Organisations: Aarhus University
Authors: Bombosch, A. (Ekstern), Zitterbart, D. P. (Ekstern), Van Opzeeland, U. (Ekstern), Frickenhaus, S. (Ekstern), Burkhardt, E. (Ekstern), Wisz, M. S. (Intern), Boebel, O. (Ekstern)
Pages: 101-114
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Journal: Current Biology
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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
Projecting future distribution of the seagrass *Zostera noltii* under global warming and sea level rise

In future decades, coastal ecosystems are expected to be exposed to increased risk of experiencing adverse consequences related to climate change, exacerbated by human induced pressures. The seagrass *Zostera noltii* forms meadows mainly within the intertidal zone, leading it to be particularly vulnerable to seawater temperature increase and sea level rise (SLR). Considering the presently declining situation and the predicted scenarios of increasing seawater temperature and SLR by the end of the 21st century, we assessed the response of *Z. noltii* to climate change (i) accounting for changes in seawater temperature at its entire biogeographical range level; and (ii) under SLR scenarios at estuary level (Oka estuary, Basque Country, south-eastern Bay of Biscay). Objectives were addressed coupling habitat suitability models with climate change simulations. By the end of the 21st century, seawater temperature increase will trigger a northward distributional shift of 888 km in the suitable habitat of the species, and a retreat of southernmost populations. The loss of southernmost populations due to climate change may imply future conservation problems. In contrast, SLR and derived changes in current velocities are expected to induce the landward migration of the species in the Oka estuary, increasing the available suitable intertidal areas (14-18%) to limits imposed by anthropogenic barriers. This modelling approach could lead to an advanced understanding of the species’ response to climate change effects; moreover, the information generated might support conservation actions towards the sites where the habitat would remain suitable for the species under climate change. © 2013 Elsevier Ltd.
Quaternary coral reef refugia preserved fish diversity

General information
State: Published
Organisations: Aarhus University
Authors: Pellissier, L. (Ekstern), Leprieur, F. (Ekstern), Parravicini, V. (Ekstern), Cowman, P. F. (Ekstern), Kulbicki, M. (Ekstern), Litsios, G. (Ekstern), Olsen, S. M. (Ekstern), Wisz, M. (Intern), Bellwood, D. R. (Ekstern), Mouillot, D. (Ekstern)
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Main Research Area: Technical/natural sciences

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The determinants of alpine butterfly richness and composition vary according to the ecological traits of species

General information
State: E-pub ahead of print
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Authors: Sonnay, V. (Ekstern), Pellissier, L. (Ekstern), Pradervand, J. (Ekstern), Maiorano, L. (Ekstern), Dubuis, A. (Ekstern), Wisz, M. (Intern), Guisan, A. (Ekstern)
Combining food web and species distribution models for improved community projections

General information
State: Published
Organisations: Aarhus University
Authors: Pellissier, L. (Ekstern), Rohr, R. (Ekstern), Ndiribe, C. (Ekstern), Pradervand, J. (Ekstern), Salamin, N. (Ekstern), Guisan, A. (Ekstern), Wisz, M. (Intern)
Pages: 4572-4583
Publication date: 2013
Main Research Area: Technical/natural sciences
Horizontal, but not vertical, biotic interactions affect fine-scale plant distribution patterns in a low-energy system

Studies of species range determinants have traditionally focused on abiotic variables (typically climatic conditions), and therefore the recent explicit consideration of biotic interactions represents an important advance in the field. While these studies clearly support the role of biotic interactions in shaping species distributions, most examine only the influence of a single species and/or a single interaction, failing to account for species being subject to multiple concurrent interactions. By fitting species distribution models (SDMs), we examine the influence of multiple vertical (i.e., grazing, trampling, and manuring by mammalian herbivores) and horizontal (i.e., competition and facilitation; estimated from the cover of dominant plant species) interspecific interactions on the occurrence and cover of 41 alpine tundra plant species. Adding plant-plant interactions to baseline SDMs (using five field-quantified abiotic variables) significantly improved models' predictive power for independent data, while herbivore-related variables had only a weak influence. Overall, abiotic variables had the strongest individual contributions to the distribution of alpine tundra plants, with the importance of horizontal interaction variables exceeding that of vertical interaction variables. These results were consistent across three modeling techniques, for both species occurrence and cover, demonstrating the pattern to be robust. Thus, the explicit consideration of multiple biotic interactions reveals that plant-plant interactions exert control over the fine-scale distribution of vascular species that is comparable to abiotic drivers and considerably stronger than herbivores in this low-energy system. © 2013 by the Ecological Society of America.
Rescuing valuable Arctic vegetation data for biodiversity models, ecosystem models and a Panarctic vegetation classification

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Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.484 SNIP 0.636 CiteScore 0.99
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.558 SNIP 0.766 CiteScore 1.09
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.558 SNIP 0.598 CiteScore 1.02
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.48 SNIP 0.637 CiteScore 1.08
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.623 SNIP 0.786 CiteScore 1.32
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.569 SNIP 0.893 CiteScore 1.18
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.603 SNIP 0.56
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 0.588 SNIP 0.751
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.638 SNIP 0.839
Scopus rating (2007): SJR 0.536 SNIP 0.913
Scopus rating (2006): SJR 0.715 SNIP 1.196
Scopus rating (2005): SJR 0.699 SNIP 0.88
Scopus rating (2004): SJR 0.648 SNIP 0.933
Scopus rating (2003): SJR 0.664 SNIP 0.797
Spatiotemporal SNP analysis reveals pronounced biocomplexity at the northern range margin of Atlantic cod Gadus morhua

Accurate prediction of species distribution shifts in the face of climate change requires a sound understanding of population diversity and local adaptations. Previous modeling has suggested that global warming will lead to increased abundance of Atlantic cod (Gadus morhua) in the ocean around Greenland, but the dynamics of earlier abundance fluctuations are not well understood. We applied a retrospective spatiotemporal population genomics approach to examine the temporal stability of cod population structure in this region and to search for signatures of divergent selection over a 78-year period spanning major demographic changes. Analyzing >900 gene-associated single nucleotide polymorphisms in 847 individuals, we identified four genetically distinct groups that exhibited varying spatial distributions with considerable overlap and mixture. The genetic composition had remained stable over decades at some spawning grounds, whereas complete population replacement was evident at others. Observations of elevated differentiation in certain genomic regions are consistent with adaptive divergence between the groups, indicating that they may respond differently to environmental variation. Significantly increased temporal changes at a subset of loci also suggest that adaptation may be ongoing. These findings illustrate the power of spatiotemporal population genomics for revealing biocomplexity in both space and time and for informing future fisheries management and conservation efforts.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Living Resources, Greenland Institute of Natural Resources, Marine Research Institute, Greenland Climate Research Centre, Aarhus University
Pages: 690-705
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Evolutionary Applications (Online)
Volume: 6
Issue number: 4
ISSN (Print): 1752-4563
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 4.96 SJR 2.299 SNIP 1.478
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.666 SNIP 1.392 CiteScore 4.27
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.356 SNIP 1.402 CiteScore 4.23
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.478 SNIP 1.432 CiteScore 4.48
ISI indexed (2013): ISI indexed yes
Suitability, success and sinks: How do predictions of nesting distributions relate to fitness parameters in high arctic waders?

General information
State: Published
Organisations: Aarhus University, Greenland Climate Research Centre
Authors: Pellissier, L. (Ekstern), Meltofte, H. (Ekstern), Hansen, J. (Ekstern), Schmidt, N. (Ekstern), Tamstorf, M. (Ekstern), Maiorano, L. (Ekstern), Aastrup, P. (Ekstern), Olsen, J. (Ekstern), Guisan, A. (Ekstern), Wisz, M. (Intern)
Pages: 1496-1505
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Diversity and Distributions
Volume: 19
Issue number: 12
ISSN (Print): 1366-9516
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.651 SNIP 1.542 CiteScore 4.64
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.687 SNIP 1.637 CiteScore 4.49
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.721 SNIP 2.012 CiteScore 5.01
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.03 SNIP 1.964 CiteScore 5.71
Testing species distribution models across space and time: High latitude butterflies and recent warming

General information
State: Published
Organisations: Aarhus University
Pages: 1293-1303
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Global Ecology and Biogeography
Volume: 22
ISSN (Print): 1466-822X
Ratings:

BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.4 SJR 4.061 SNIP 1.903
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 4.57 SNIP 2.051 CiteScore 6.67
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 4.433 SNIP 2.386 CiteScore 6.92
BFI (2013): BFI-level 2
The role of biotic interactions in shaping distributions and realised assemblages of species: implications for species distribution modelling

Predicting which species will occur together in the future, and where, remains one of the greatest challenges in ecology, and requires a sound understanding of how the abiotic and biotic environments interact with dispersal processes and history across scales. Biotic interactions and their dynamics influence species’ relationships to climate, and this also has important implications for predicting future distributions of species. It is already well accepted that biotic interactions shape species’ spatial distributions at local spatial extents, but the role of these interactions beyond local extents (e.g. 10 km(2) to global extents) are usually dismissed as unimportant. In this review we consolidate evidence for how biotic interactions shape species distributions beyond local extents and review methods for integrating biotic interactions into species distribution modelling tools. Drawing upon evidence from contemporary and palaeoecological studies of individual species ranges, functional groups, and species richness patterns, we show that biotic interactions have clearly left their mark on species distributions and realised assemblages of species across all spatial extents. We demonstrate this with examples from within and across trophic groups. A range of species distribution modelling tools is available to quantify species environmental relationships and predict species occurrence, such as: (i) integrating pairwise dependencies, (ii) using integrative predictors, and (iii) hybridising species distribution models (SDMs) with dynamic models. These methods have typically only been applied to interacting pairs of species at a single time, require a priori ecological knowledge about which species interact, and due to data paucity must assume that biotic interactions are constant in space and time. To better inform the future development of these models across spatial scales, we call for accelerated collection of spatially and temporally explicit species data. Ideally, these data should be sampled to reflect variation in the underlying environment across large spatial extents, and at fine spatial resolution. Simplified ecosystems where there are relatively few interacting species and sometimes a wealth of existing ecosystem monitoring data (e.g. arctic, alpine or island habitats) offer settings where the development of modelling tools that account for biotic interactions may be less difficult than elsewhere.

General information
State: Published
Organisations: Aarhus University
Authors: Wisz, M. (Intern), Pottier, J. (Ekstern), Kissling, W. D. (Ekstern), Pellissier, L. (Ekstern), Lenoir, J. (Ekstern), Damgaard, C. F. (Ekstern), Dormann, C. F. (Ekstern), Forchhammer, M. C. (Ekstern), Grytnes, J. (Ekstern), Guisan, A. (Ekstern), Heikkinen, R. K. (Ekstern), Hoye, T. T. (Ekstern), Kuehn, I. (Ekstern), Luoto, M. (Ekstern), Maiorano, L.
Caribou collaring project in West Greenland - an update

General information
State: Published
Organisations: Aarhus University
Authors: Aastrup, P. (Ekstern), Mortensen, L. O. (Intern), Simonsen, C. E. (Ekstern), Wisz, M. (Intern), Cuyler, C. (Ekstern)
Publication date: 2010
Main Research Area: Technical/natural sciences
Source: FindIt
Source-ID: 2185880427
Publication: Research › Conference abstract for conference – Annual report year: 2010

General models of the spatial distribution of porpoises require representative data and parsimony: Comment on Skov & Thomsen (2008)

General information
State: Published
Organisations: Aarhus University
Authors: Tougaard, J. (Ekstern), Wisz, M. (Intern)
Pages: 295-297
Publication date: 2010
Main Research Area: Technical/natural sciences
Source: FindIt
Source-ID: 234657649
Publication: Research - peer-review › Journal article – Annual report year: 2013
Modelling spatial patterns in harbour porpoise satellite telemetry data using maximum entropy

General information
State: Published
Organisations: Aarhus University
Authors: Edren, S. M. (Ekstern), Wisz, M. S. (Intern), Teilmann, J. (Ekstern), Dietz, R. (Ekstern), Söderkvist, J. (Ekstern)
Pages: 698-708
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Ecography
Volume: 33
Issue number: 4
ISSN (Print): 0906-7590
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 3.592 SNIP 1.983 CiteScore 5.59
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 3.409 SNIP 1.765 CiteScore 5.09
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.786 SNIP 1.72 CiteScore 4.56
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.776 SNIP 1.772 CiteScore 5.07
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.488 SNIP 1.99 CiteScore 5.43
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.954 SNIP 1.646 CiteScore 4.63
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.895 SNIP 1.608
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.146 SNIP 1.915
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.751 SNIP 1.501
Scopus rating (2007): SJR 2.515 SNIP 1.428
Do pseudo-absence selection strategies influence species distribution models and their predictions? An information-theoretic approach based on simulated data

General information
State: Published
Organisations: Aarhus University
Authors: Wisz, M. (Intern), Guisan, A. (Ekstern)
Pages: 1-16
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Journal: BMC Ecology
Volume: 9
Issue number: 8
ISSN (Print): 1472-6785
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.309 SNIP 1.148 CiteScore 2.7
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.374 SNIP 0.875 CiteScore 2.51
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.248 SNIP 0.837 CiteScore 2.07
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.271 SNIP 1.118 CiteScore 2.35
ISI indexed (2013): ISI indexed no
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.998 SNIP 0.978 CiteScore 2.32
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.134 SNIP 0.97 CiteScore 2.32
ISI indexed (2011): ISI indexed no
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.788 SNIP 0.66
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.753 SNIP 0.993
Effects of sample size on the performance of species distribution models

General information
State: Published
Organisations: Aarhus University
Authors: Wisz, M. (Intern), Hijmans, R. J. (Ekstern), Li, J. (Ekstern), Peterson, A. T. (Ekstern), Graham, C. H. (Ekstern), Guisan, A. (Ekstern)
Pages: 763-773
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Diversity and Distributions
Volume: 14
Issue number: 5
ISSN (Print): 1366-9516
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.651 SNIP 1.542 CiteScore 4.64
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.687 SNIP 1.637 CiteScore 4.49
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.721 SNIP 2.012 CiteScore 5.01
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.03 SNIP 1.964 CiteScore 5.71
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 3.422 SNIP 1.93 CiteScore 5.65
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.825 SNIP 1.643 CiteScore 4.91
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.624 SNIP 1.756
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.527 SNIP 1.604
BFI (2008): BFI-level 2
Modelling pink-footed goose (Anser brachyrhynchus) wintering distributions for the year 2050: potential effects of land-use change in Europe

Feeding on farmland by overwintering populations of pink-footed goose (Anser brachyrhynchus) conflicts with agricultural interests in Northern Europe. In order to forecast the potential future of this conflict, we used generalized linear models to relate the presence and absence of pink-footed geese to variables describing the contemporary landscape, and predicted their future distributions in relation to two land-use scenarios for the year 2050. One future scenario represented a global, economically orientated world (A1) and the other represented a regional, environmentally concerned world (B2). The probability of goose occurrence increased within cropland and grassland, and could be explained by their proximity to coast, elevation, and the degree of habitat closure. Predictions to future scenarios revealed noticeable shifts in the suitability of goose habitat evident at the local and regional scale in response to future shifts in land use. In particular, as grasslands and croplands give way to unsuitable land-use types (e.g. woody biofuel crops, increased urbanization, and forest) under both future scenarios, our models predicted a decrease in habitat suitability for geese. If coupled with continued goose population expansion, we expect that the agricultural conflict will intensify under the A1 and particularly the B2 scenarios.

General information
State: Published
Organisations: Aarhus University
Pages: 721-731
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Diversity and Distributions
Volume: 14
Issue number: 5
ISSN (Print): 1366-9516
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.651 SNIP 1.542 CiteScore 4.64
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.687 SNIP 1.637 CiteScore 4.49
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.721 SNIP 2.012 CiteScore 5.01
Web of Science (2014): Indexed yes
Prediction of the distribution of Arctic-nesting pink-footed geese under a warmer climate scenario

Global climate change is expected to shift species ranges polewards, with a risk of range contractions and population declines of especially high-Arctic species. We built species distribution models for Svalbard-nesting pink-footed geese to relate their occurrence to environmental and climatic variables, and used the models to predict their distribution under a warmer climate scenario. The most parsimonious model included mean May temperature, the number of frost-free months and the proportion of moist and wet moss-dominated vegetation in the area. The two climate variables are indicators for whether geese can physiologically fulfil the breeding cycle or not and the moss vegetation is an indicator of suitable feeding conditions. Projections of the distribution to warmer climate scenarios propose a large north- and eastward expansion of the potential breeding range on Svalbard even at modest temperature increases (1 and 2 degrees C increase in summer temperature, respectively). Contrary to recent suggestions regarding future distributions of Arctic wildlife, we predict that warming may lead to a further growth in population size of, at least some, Arctic breeding geese.
Prioritizing refuge sites for migratory geese to alleviate conflicts with agriculture

General information
State: Published
Organisations: Aarhus University
Authors: Jensen, R. A. (Ekstern), Wisz, M. (Intern), Madsen, J. (Ekstern)
Pages: 1806-1818
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Biological Conservation
Volume: 141
Issue number: 7
ISSN (Print): 0006-3207
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.322 SNIP 1.684 CiteScore 4.22
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.567 SNIP 1.834 CiteScore 4.24
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.517 SNIP 1.903 CiteScore 4.1
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.624 SNIP 2.008 CiteScore 4.55
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.554 SNIP 1.973 CiteScore 4.14
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.798 SNIP 2.002 CiteScore 4.3
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.181 SNIP 1.832
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.398 SNIP 1.878
BFI (2008): BFI-level 2
The influence of spatial errors in species occurrence data used in distribution models

General information
State: Published
Organisations: Aarhus University
Pages: 239-247
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Applied Ecology
Volume: 45
Issue number: 1
ISSN (Print): 0021-8901
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.5 SJR 2.869 SNIP 2.008
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 3.242 SNIP 1.96 CiteScore 5.38
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.998 SNIP 2.171 CiteScore 5.25
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 3.031 SNIP 2.225 CiteScore 5.45
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Where might the western Svalbard tundra be vulnerable to pink-footed goose (Anser brachyrhynchus) population expansion? Clues from species distribution models

General information
State: Published
Organisations: Aarhus University
Authors: Wisz, M. (Intern), Tamstorf, M. (Ekstern), Madsen, J. (Ekstern), Jespersen, M. (Ekstern)
Pages: 26-37
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Diversity and Distributions
Volume: 14
Issue number: 1
ISSN (Print): 1366-9516
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.651 SNIP 1.542 CiteScore 4.64
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.687 SNIP 1.637 CiteScore 4.49
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.721 SNIP 2.012 CiteScore 5.01
Web of Science (2014): Indexed yes
Sensitivity of predictive species distribution models to change in grain size

General information
State: Published
Organisations: Aarhus University
Pages: 332-340
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Diversity and Distributions
Volume: 13
Issue number: 3
ISSN (Print): 1366-9516
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 2.651 SNIP 1.542 CiteScore 4.64
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.687 SNIP 1.637 CiteScore 4.49
Spectral measures and mixed models as valuable tools for investigating controls on land surface phenology in high arctic Greenland

Background: Changes in land surface phenology are of major importance to the understanding of the impact of recent and future climate changes in the Arctic. This paper presents an extensive study from Zackenberg Ecological Research Operations (ZERO) where snow melt, climate and growing season characteristics of six major high arctic vegetation types has been monitored during 1999 to 2005. We investigate the growth dynamics for dry, mesic and wet types using hand held measurements of far red normalised difference vegetation index (NDVI-FR) and generalized additive mixed models (GAMM).

Results: Snow melt and temperature are of major importance for the timing of the maximum growth as well as for the seasonal growth. More than 85% of the variance in timing of the maximum growth is explained by the models and similar for the seasonal growth of mesic and wet vegetation types. We find several non-linear growth responses to the environmental variables.

Conclusion: We conclude that the uses of GAMMs are valuable for investigating growth dynamics in the Arctic. Contrary to several other studies in the Arctic we found a significant decreasing trend of the seasonally integrated NDVI-FR (SINDVI) in some vegetation types. This indicates that although greening might occur wide-spread in the Arctic there are variations on the local scale that might influence the regional trends on the longer term.
Using potential distributions to explore determinants of Western Palaearctic migratory songbird species richness in sub-Saharan Africa

General information
State: Published
Organisations: Aarhus University
Authors: Wisz, M. (Intern), Walther, B. A. (Ekstern), Rahbek, C. (Ekstern)
Pages: 828-841
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Novel methods improve prediction of species' distributions from occurrence data
 Prediction of species' distributions is central to diverse applications in ecology, evolution and conservation science. There is increasing electronic access to vast sets of occurrence records in museums and herbaria, yet little effective guidance on how best to use this information in the context of numerous approaches for modelling distributions. To meet this need, we compared 16 modelling methods over 226 species from 6 regions of the world, creating the most comprehensive set of model comparisons to date. We used presence-only data to fit models, and independent presence-absence data to evaluate the predictions. Along with well-established modelling methods such as generalised additive models and GARP and BIOCLIM, we explored methods that either have been developed recently or have rarely been applied to modelling species' distributions. These include machine-learning methods and community models, both of which have features that may make them particularly well suited to noisy or sparse information, as is typical of species' occurrence data. Presence-only data were effective for modelling species' distributions for many species and regions. The novel methods consistently outperformed more established methods. The results of our analysis are promising for the use of data from museums and herbaria, especially as methods suited to the noise inherent in such data improve.

General information
State: Published
Organisations: Aarhus University
Pages: 129-151
Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Ecography
Known and predicted African winter distributions and habitat use of the endangered Basra reed warbler (Acrocephalus griseldis) and the near-threatened cinereous bunting (Emberiza cineracea)
The Basra reed warbler (Acrocephalus griseldis) and the cinereous bunting (Emberiza cineracea) are the only two Western Palearctic passerine bird species that overwinter in East Africa and are classified by BirdLife International as endangered and near-threatened, respectively. To refine the African wintering ranges of these two species, we made an effort to collect as much distributional data as possible. We then used the available point-locality data to predict the wintering distributions using a Geographic Information Systems (GIS) based inductive modelling technique called BIOCLIM. For this purpose, we developed four environmental GIS layers that are presumed to reflect the environmental preferences of migrant birds. Our data showed that the known winter distribution of the Basra reed warbler was concentrated in Kenya, Tanzania, Malawi and Mozambique, where it was usually found in dense vegetation growing in coastal scrub, woodland thickets, swamps, marshes, flooded pools and grasslands, and along ditches and edges of rivers, ponds, lagoons and lakes. The predicted winter distribution of this species includes most of East Africa but, given the habitat preferences of this species, is probably limited to low-lying areas near the coastline. The known winter distribution of the cinereous bunting is so far limited to Eritrea, where the species has been observed in October, November, February and March, in sparsely vegetated, sandy or rocky habitats on coastal plains and deserts. The predicted winter distribution of this species includes the plains and hills along the Red Sea coasts in southern Egypt, Sudan, Eritrea, Ethiopia and Sudan, as well as a few inland areas in Sudan, Ethiopia and Kenya.

General information
State: Published
Organisations: University of Copenhagen
Authors: Walther, B. (Ekstern), Wisz, M. (Intern), Rahbek, C. (Ekstern)
Pages: 287-299
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Ornithology
Volume: 145
Issue number: 4
ISSN (Print): 2193-7192
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.828 SNIP 0.774 CiteScore 1.52
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.959 SNIP 0.909 CiteScore 1.49
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.11 SNIP 1.111 CiteScore 1.8
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.111 SNIP 0.976 CiteScore 1.84
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.775 SNIP 0.926 CiteScore 1.45
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.827 SNIP 0.821 CiteScore 1.6
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.876 SNIP 0.832
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.083 SNIP 0.924
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.861 SNIP 0.756
Scopus rating (2007): SJR 0.843 SNIP 1.083
Scopus rating (2006): SJR 0.569 SNIP 0.962
Scopus rating (2005): SJR 0.455 SNIP 0.488
Scopus rating (2004): SJR 0.622 SNIP 0.971
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.41 SNIP 0.685
Scopus rating (2002): SJR 0.423 SNIP 0.514
Integrating biodiversity priorities with conflicting socio-economic values in the Guinean-Congolian forest region

General information
State: Published
Organisations: Zoological Museum, University of Copenhagen
Authors: Williams, P. H. (Ekstern), Moore, J. L. (Ekstern), Toham, A. K. (Ekstern), Brooks, T. M. (Ekstern), Strand, H. (Ekstern), D'Amico, J. (Ekstern), Wisz, M. (Intern), Burgess, N. (Ekstern), Balmford, A. (Ekstern), Rahbek, C. (Ekstern)
Pages: 1297-1320
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Biodiversity and Conservation
Issue number: 12
ISSN (Print): 0960-3115
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.169 SNIP 1.122 CiteScore 2.5
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.238 SNIP 1.143 CiteScore 2.44
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.236 SNIP 1.381 CiteScore 2.48
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.178 SNIP 1.286 CiteScore 2.59
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.195 SNIP 1.14 CiteScore 2.26
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.494 SNIP 1.299 CiteScore 2.61
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.088 SNIP 1.231
BFI (2009): BFI-level 1
BFI (2008): BFI-level 1
Projects:

**Determining the influence of benthic substrate on Biodiversity-Ecosystem Function relationships in coral reef ecosystems**

National Institute of Aquatic Resources  
Period: 01/04/2017 → 31/03/2020  
Number of participants: 4  
Phd Student:  
Maginnis, Neil (Intern)  
Supervisor:  
Keith, Sally A. (Ekstern)  
Wisz, Mary (Intern)  
Main Supervisor:  
Lindegren, Martin (Intern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Samfinansieret - Andet  
Project: PhD

**Bycatch of marine mammals and seabirds - Assessment and mitigation (39337)**  
The aim of the project is to develop innovative mitigation methods to reduce the unintended bycatch of marine mammals and seabirds in Danish gillnet fisheries.

The project includes the following components:  
- determine the distribution in time and space of the bycatches;  
- identify the factors that determine the occurrence of the bycatch and its distribution;  
- identify behaviour that are correlated with bycatch;  
- conduct pilot trials of mitigation methods;  
- propose further mitigation methods to test in a continuation of the project.

The results of the project will contribute to a better management of protected species of marine mammals and seabirds, as well as placing Denmark in a better position with respect to its obligations in relation to the EU Habitats Directive, the EU Bird Directive, the EU Marine Strategy Framework Directive, the EU Council Resolution 812/2004 and the EU Action Plan for reduction of seabird bycatch.

This project is coordinated by DTU Aqua.

The project is funded by the Ministry of Environment and Food of Denmark and the European Maritime and Fisheries Fund (EMFF).

National Institute of Aquatic Resources  
Section for Ecosystem based Marine Management
Kolmården Wildlife Park
Period: 01/03/2016 → 28/02/2018
Number of participants: 5
Research areas: Ecosystem based Marine Management & Coastal Ecology
Project participant:
Sørensen, Thomas Kirk (Intern)
Rindorf, Anna (Intern)
Wisz, Mary (Intern)
Project Manager, academic:
Kindt-Larsen, Lotte (Intern)
Project Coordinator:
Larsen, Finn (Intern)

Project FishHab-II (39345)
The aim of the project is to map fish habitats to improve data and information for Maritime Spatial Planning. The project focuses on mapping the habitats for 9 commercially important fish species and one invertebrate species in the inner Danish waters. Within the project methods will be developed to map habitats in data-poor as well as data-rich areas. Data derived from different sources; surveys, fisheries, citizen science will be used and combined with information derived from fisher interviews. The mapping will include coastal habitats to provide the basis for advice on management of coastal fish nursery areas.

This project is coordinated by DTU Aqua.

The project is funded by the Ministry of Environment and Food of Denmark and the European Maritime and Fisheries Fund (EMFF).

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
Danish Fishermen's Association
University of Copenhagen
Period: 01/03/2016 → 28/02/2018
Number of participants: 7
Research areas: Coastal Ecology & Ecosystem based Marine Management
Project participant:
Wisz, Mary (Intern)
Sørensen, Thomas Kirk (Intern)
Vinther, Morten (Intern)
Egekvist, Josefine (Intern)
Svendsen, Jon Christian (Intern)
Phd Student:
Brown, Elliot John (Intern)
Project Manager, academic:
Støttrup, Josianne Gatt (Intern)

Relations
Press / Media items:
Bønnerup og Grenaa: Små fisk – skal gerne blive større
Fintælling af bugtens fisk
Forsker undersøger fisk langs kysten
An Expedition covering covering the Danish Coast’s from the 18th July - 22nd August, 2016
Indslag i 24NORDJYSKE

Project A systems approach framework for coastal research and management in the Baltic (BaltCoast) (39201)
The ultimate objective of this project is a coherent and systematic management approach that encompasses multiple impacts in a spatially heterogeneous context.

In BaltCoast we tackle this complex task using the Systems Approach Framework (SAF). The SAF is an issue oriented
investigation and methodology that applies a holistic perspective. It investigates and quantifies the functions of systems in order to simulate specific questions concerning their functions or policies. It comprises the process from issue identification through system analyses to policy implementation.

This Systems Approach can, hence, competently address implementation of international directives (e.g. Water Framework Directive (WFD), Marine Strategy Framework Directive (MSFD)). In BaltCoast we address multiple issues through case studies that reflect current regional management challenges and develop a generic tool for integrated system assessment.

This project is coordinated by Leibniz-Institute for Baltic Sea Research (IOW).

The project is funded by EU, BONUS (Science for a Better Future of the Baltic Sea Region), ERA-NET.

National Institute of Aquatic Resources
Section for Ecosystem based Marine Management
Leibniz-Institute for Baltic Sea Research
Klaipeda University
Tallinn University
University of Latvia
Polish Academy of Sciences
Swedish University of Agricultural Sciences
Period: 01/04/2015 → 31/03/2018
Number of participants: 8
Research areas: Coastal Ecology & Marine Populations and Ecosystem Dynamics & Marine Living Resources & Ecosystem based Marine Management
Contact person:
Støtrup, Josianne Gatt (Intern)
Project participant:
Dinesen, Grete E. (Intern)
Wisz, Mary (Intern)
Neuenfeldt, Stefan (Intern)
Hüssy, Karin (Intern)
Kristensen, Kasper (Intern)
Vinther, Morten (Intern)
Sørensen, Thomas Kirk (Intern)
Project

A trait-based approach to Plankton Biogeography

National Institute of Aquatic Resources
Period: 01/12/2013 → 08/02/2017
Number of participants: 6
Phd Student:
Brun, Philipp Georg (Intern)
Supervisor:
Kiørboe, Thomas (Intern)
Main Supervisor:
Payne, Mark (Intern)
Examiner:
Wisz, Mary (Intern)
Borregaard, Michael K. (Ekstern)
Record, Nicholas R. (Ekstern)
Financing sources
Source: Internal funding (public)
Name of research programme: Eksternt finansieret virksomhed
Project: PhD