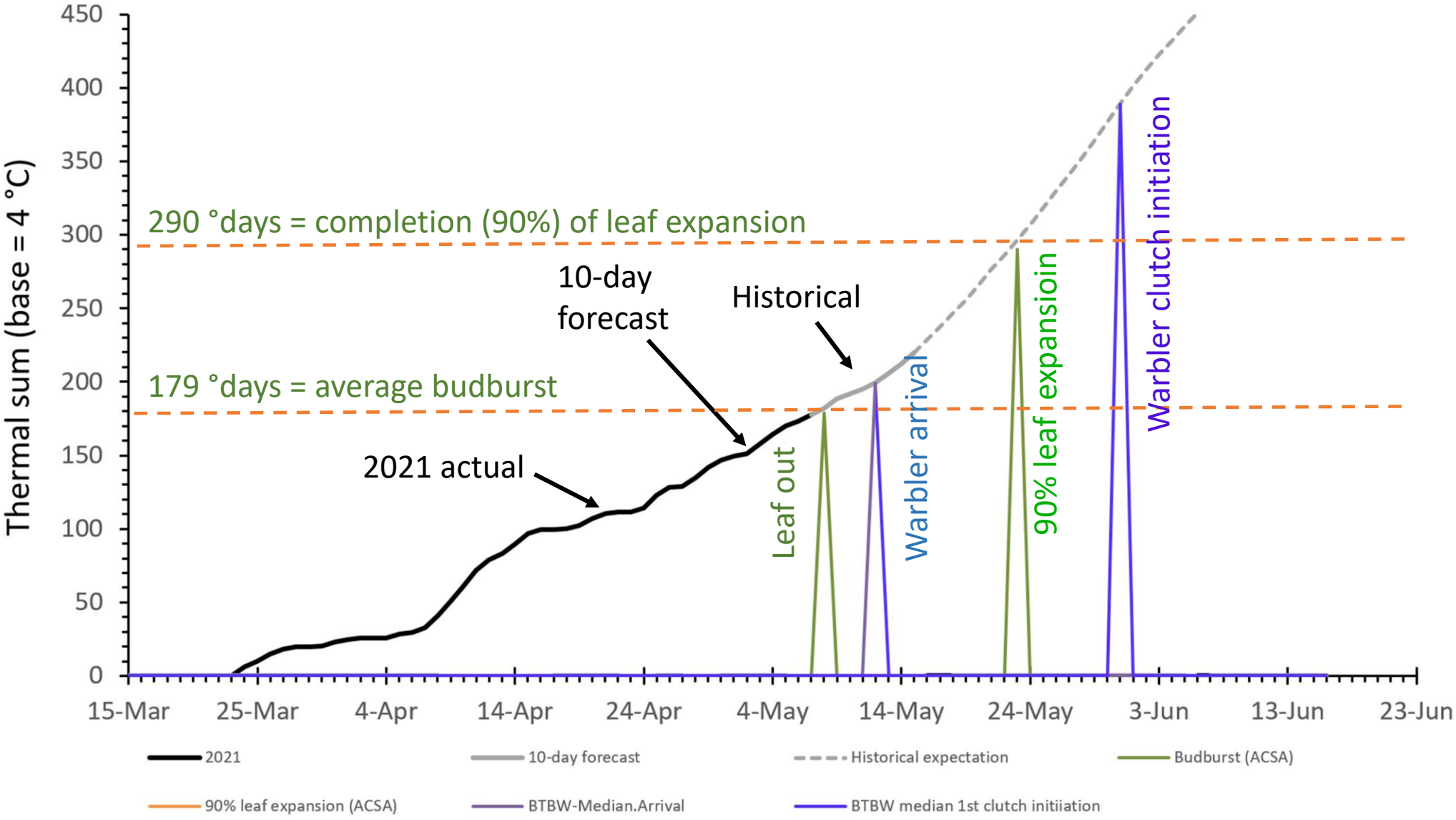
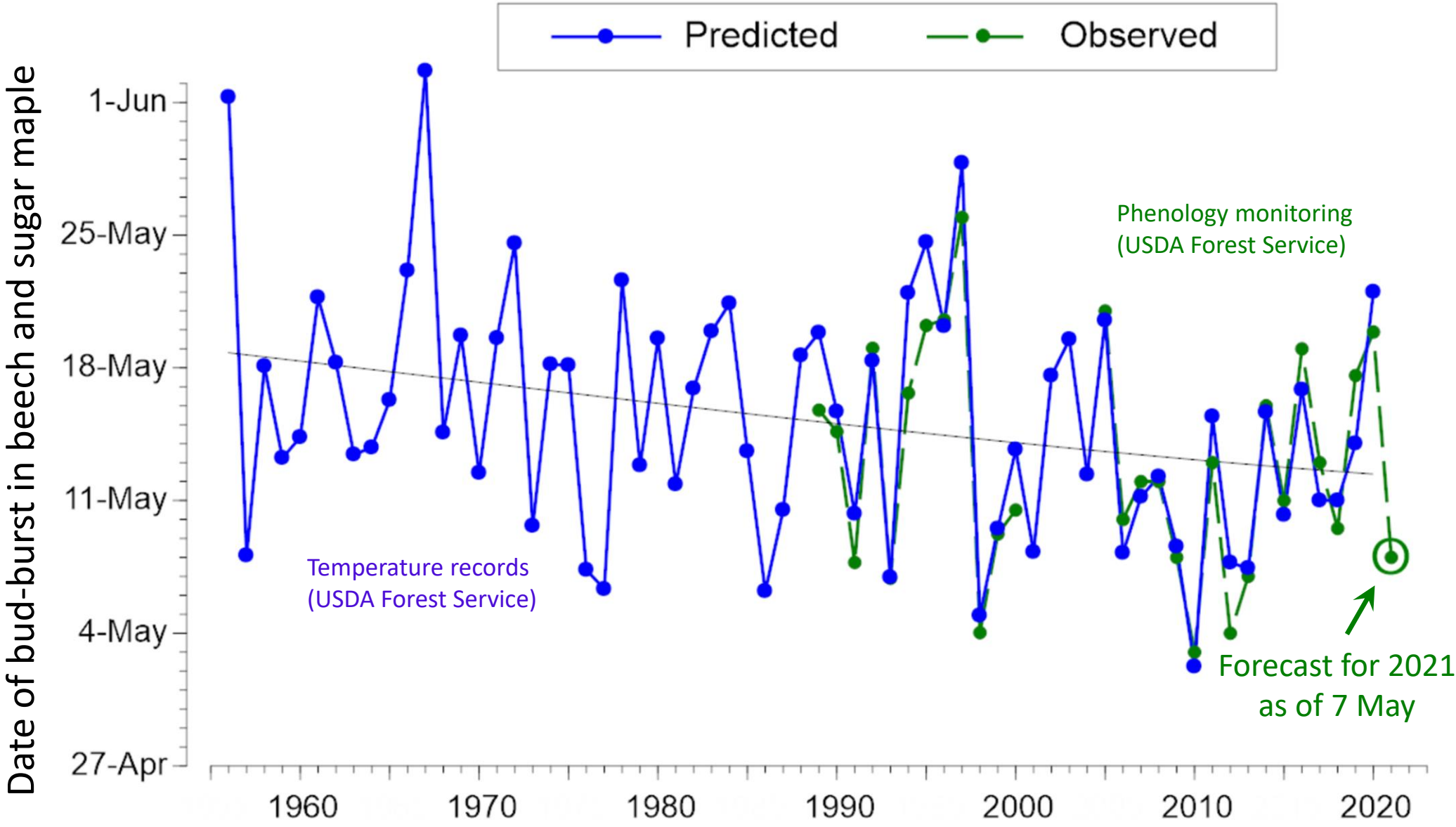
Forecast of spring phenology for mid-elevation bird plot in Hubbard Brook forest.
As of 7 May 2021, predicted dates for budburst and 90% completion of leaf expansion are:
8 May and 23 May.
Predicted median dates of Arrival and 1st clutch initiation by Black-throated Blue Warblers are:
12 May and 31 May.



Real-time temperature records from USDA National Water & Climate Center (site 2069).
Phenological models adapted from Lany et al. 2016 using long term data of USDA Forest Service.



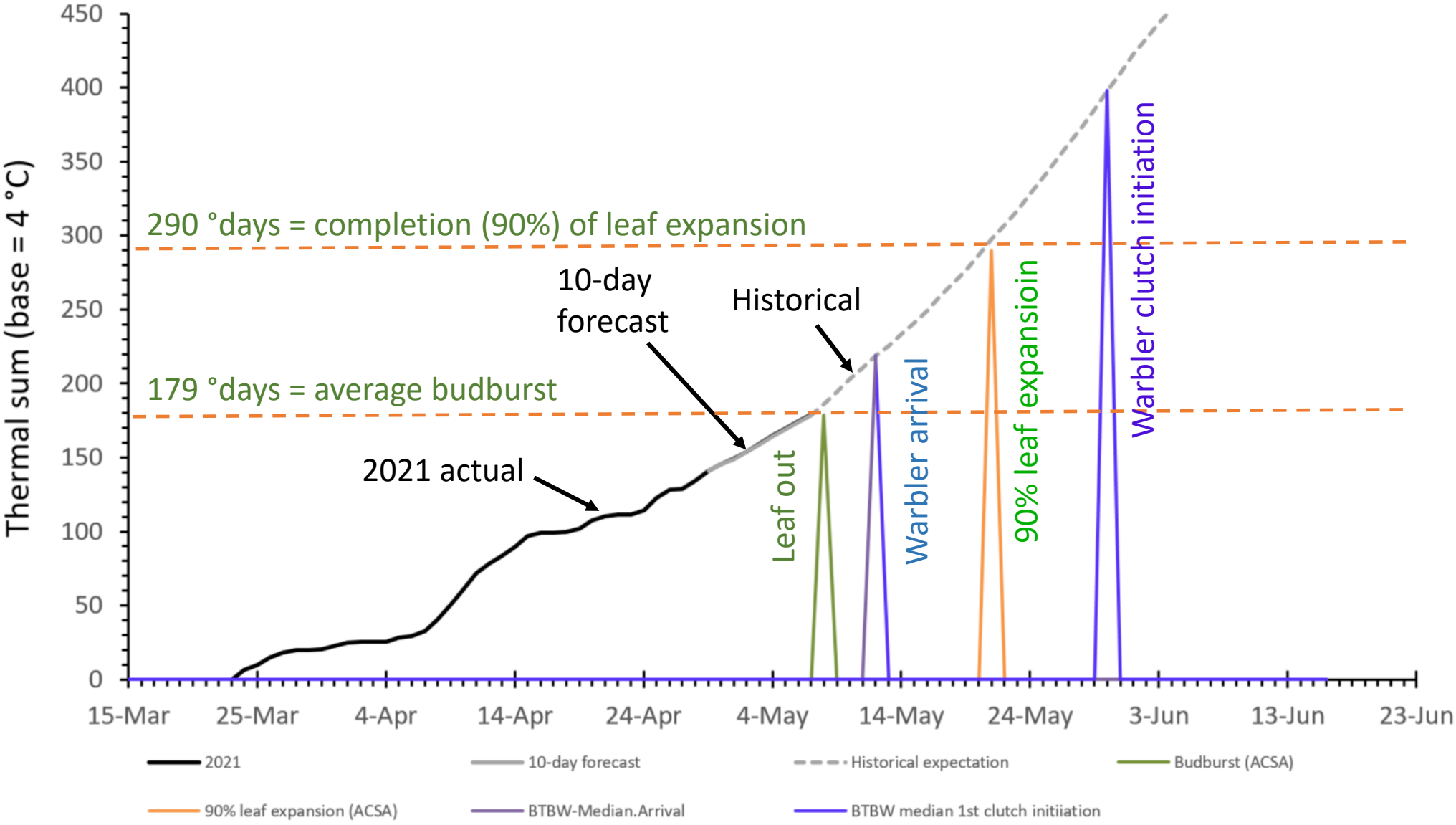
As of 7 May 2021, the forecast date of leafout is 8 May for mid-elevation bird plots at Hubbard Brook.

Phenology measurements by Amey Bailey, Northern Research Station, USDA Forest Service.
Leaf phenology model adapted from Nina Lany et al. 2016, *Oikos*.
Analyses by Matt Ayres et al., Dartmouth College.

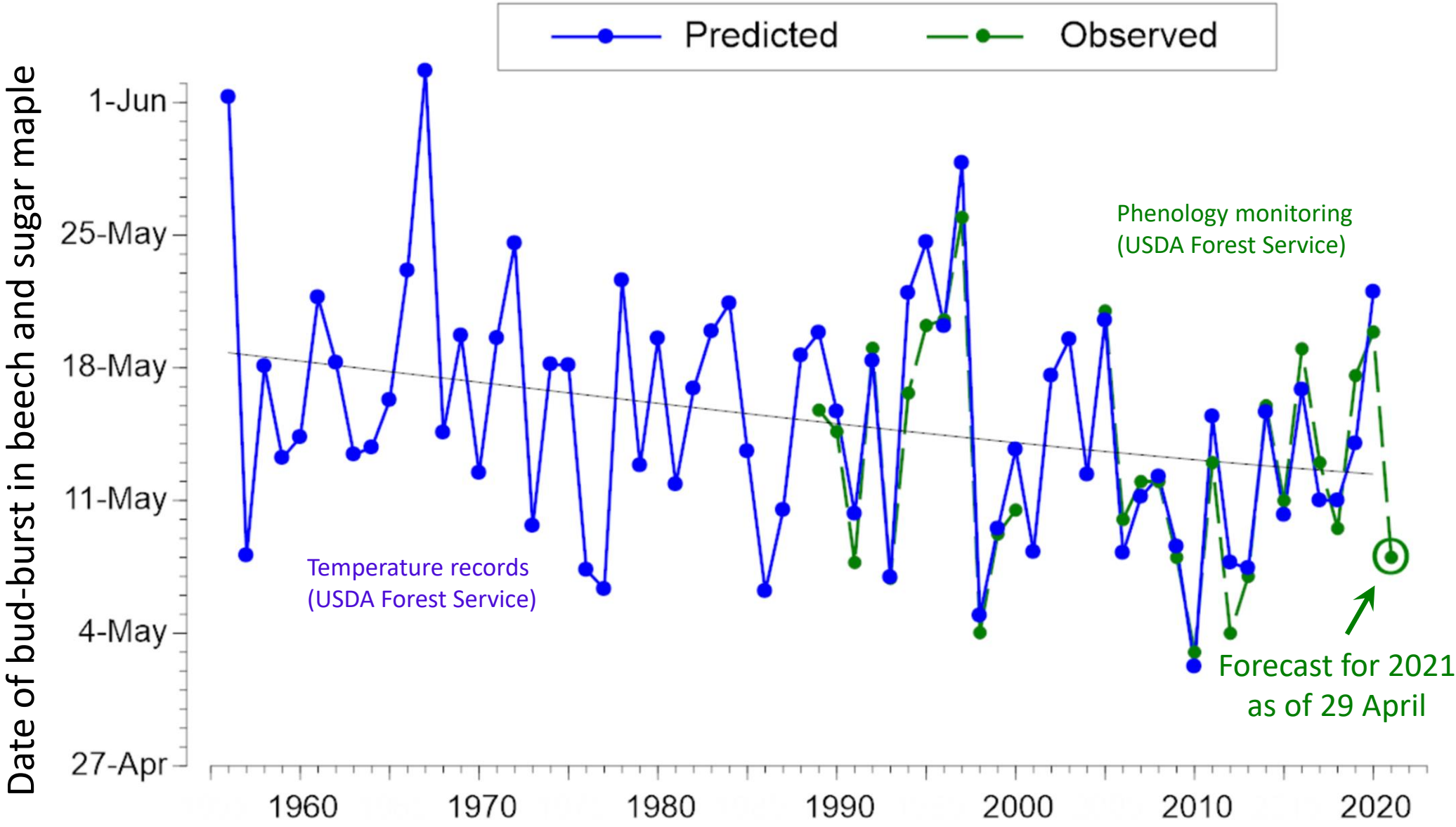
Forecast of spring phenology for mid-elevation bird plot in Hubbard Brook forest.

As of 29 April 2021, predicted dates for budburst and 90% completion of leaf expansion are:
8 May and 21 May.

Predicted median dates of Arrival and 1st clutch initiation by Black-throated Blue Warblers are:
12 May and 30 May.



Real-time temperature records from USDA National Water & Climate Center (site 2069).
Phenological models adapted from Lany et al. 2016 using long term data of USDA Forest Service.



As of 29 April 2021, the forecast date of leafout is 8 May for mid-elevation bird plots at Hubbard Brook.

Phenology measurements by Amey Bailey, Northern Research Station, USDA Forest Service.
Leaf phenology model adapted from Nina Lany et al. 2016, *Oikos*.
Analyses by Matt Ayres et al., Dartmouth College.

References

USDA Forest Service, Northern Research Station. 2021. Hubbard Brook Experimental Forest: Routine Seasonal Phenology Measurements, 1989 - present ver 12. Environmental Data Initiative. https://doi.org/10.6073/pasta/f2c18a955c24eadaec1fa0d915a7b527

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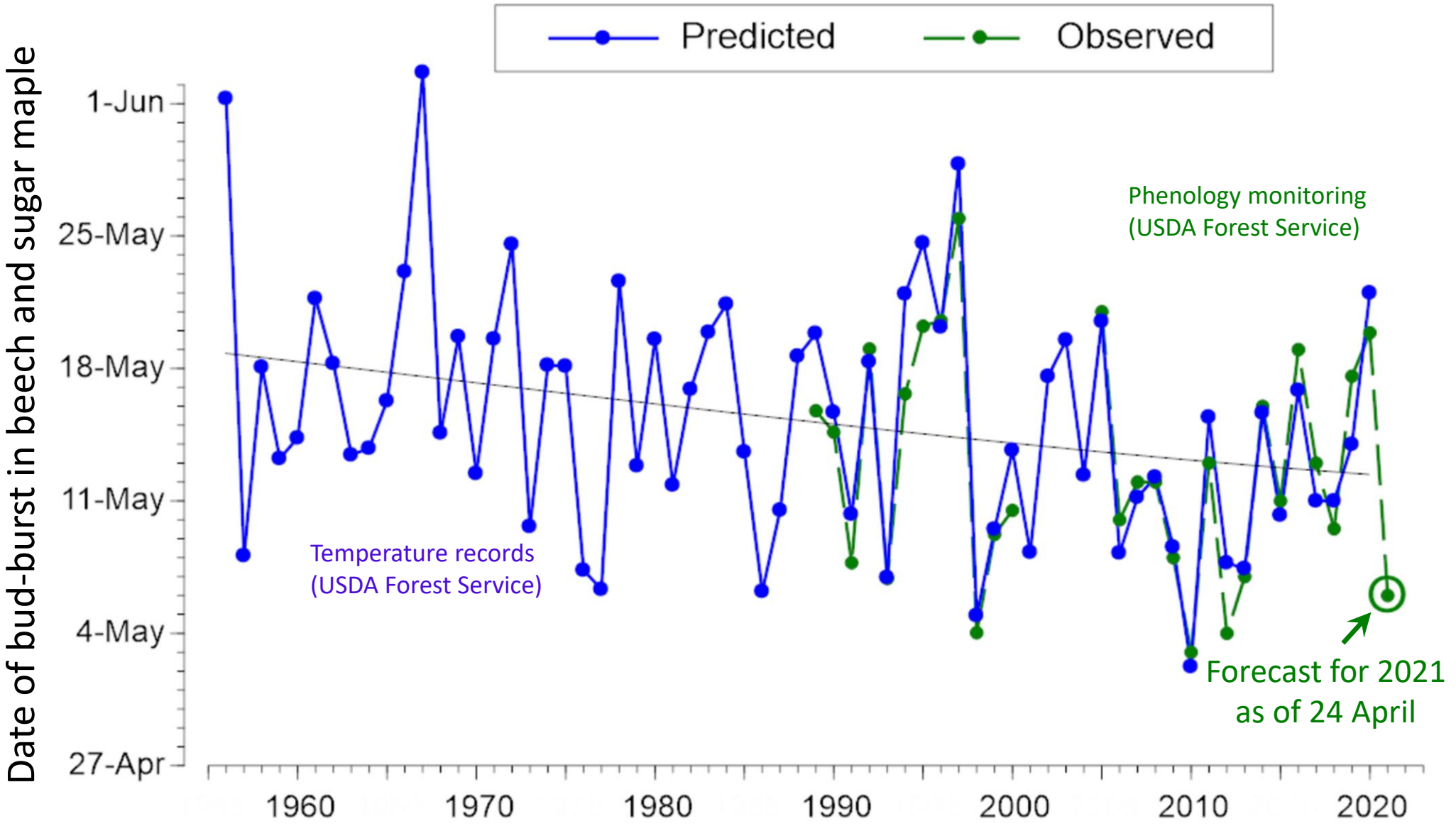
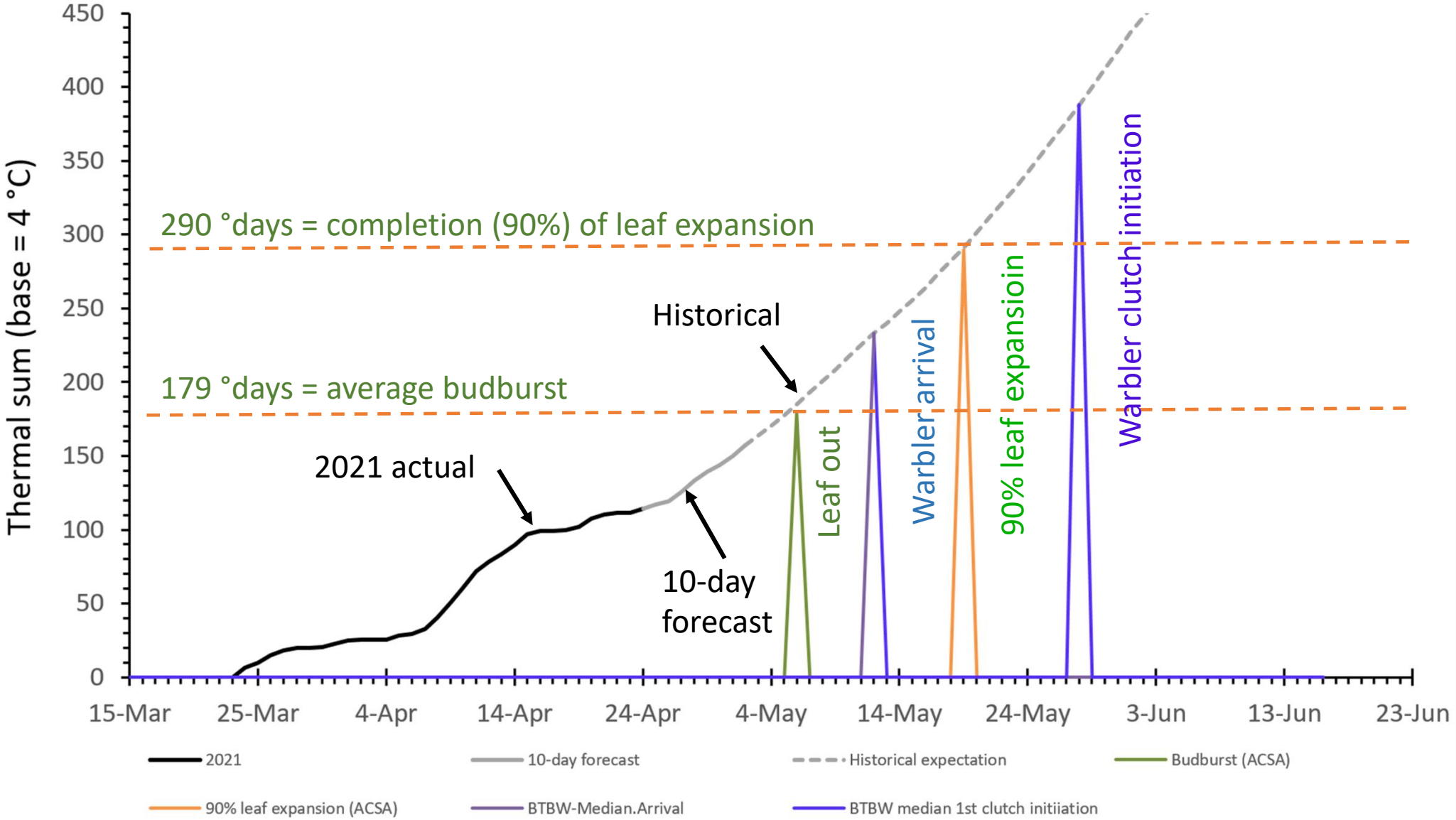
Lany, Nina K., Matthew P. Ayres, Erik E. Stange, T. Scott Sillett, Nicholas L. Rodenhouse, & Richard T. Holmes. 2016. Breeding timed to maximize reproductive success for a migratory songbird: the importance of phenological asynchrony. *Oikos* 125: 656-666. https://onlinelibrary.wiley.com/doi/abs/10.1111/oik.02412



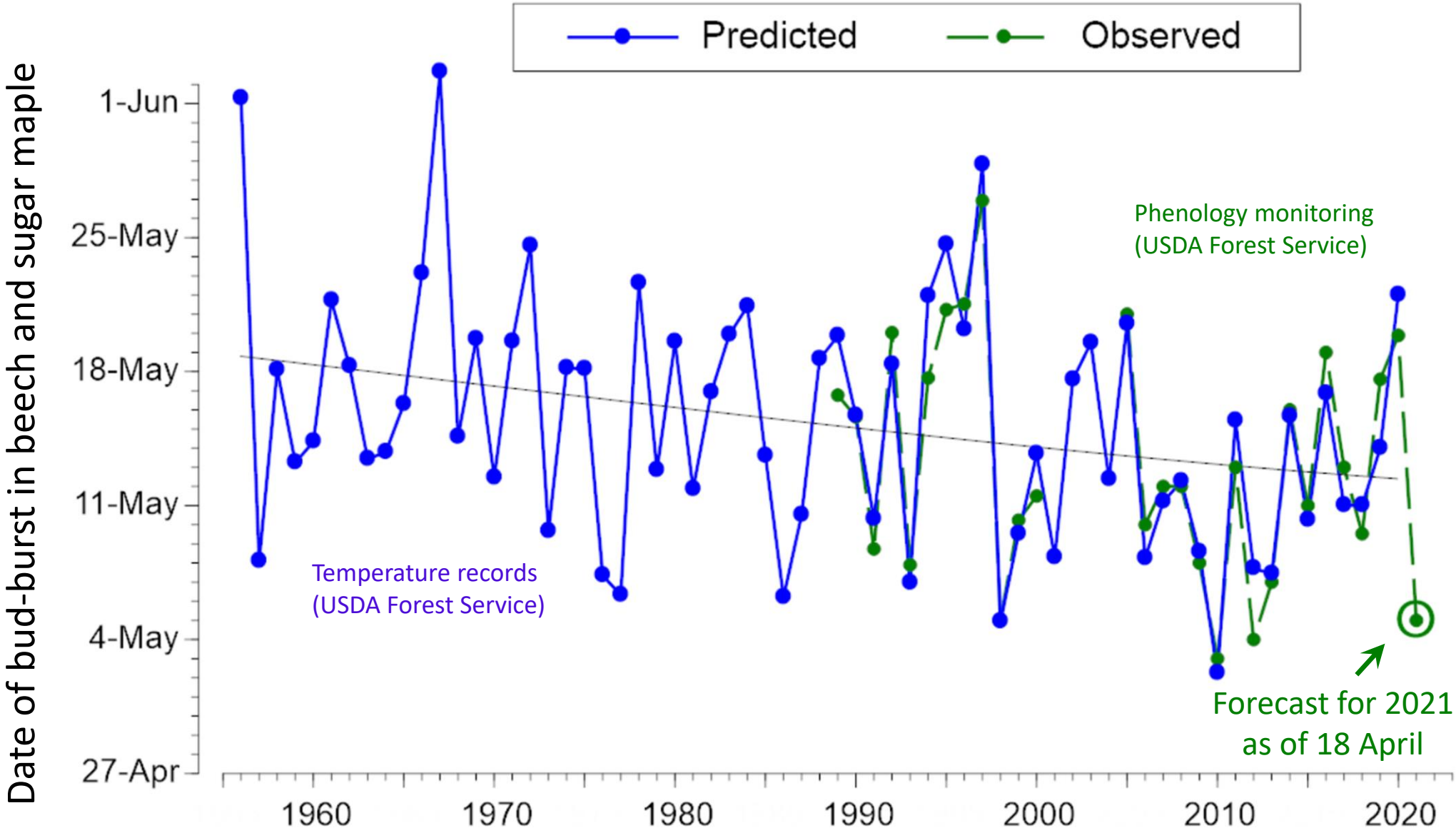
As of 24 April 2021, the forecast date of leafout is 6 May for mid-elevation bird plots at Hubbard Brook.

Phenology measurements by Amey Bailey, Northern Research Station, USDA Forest Service.
Leaf phenology model adapted from Nina Lany et al. 2016, *Oikos*.
Analyses by Matt Ayres et al., Dartmouth College.

Estimated leaf-out phenology for mid-elevation Bird Plot in 2021 based on thermal sums.
As of 24 April 2021, predicted dates for budburst and 90% completion of leaf expansion are:
6 May and 19 May.
Predicted median dates of Arrival and 1st clutch initiation by Black-throated Blue Warblers are:
12 May and 28 May.



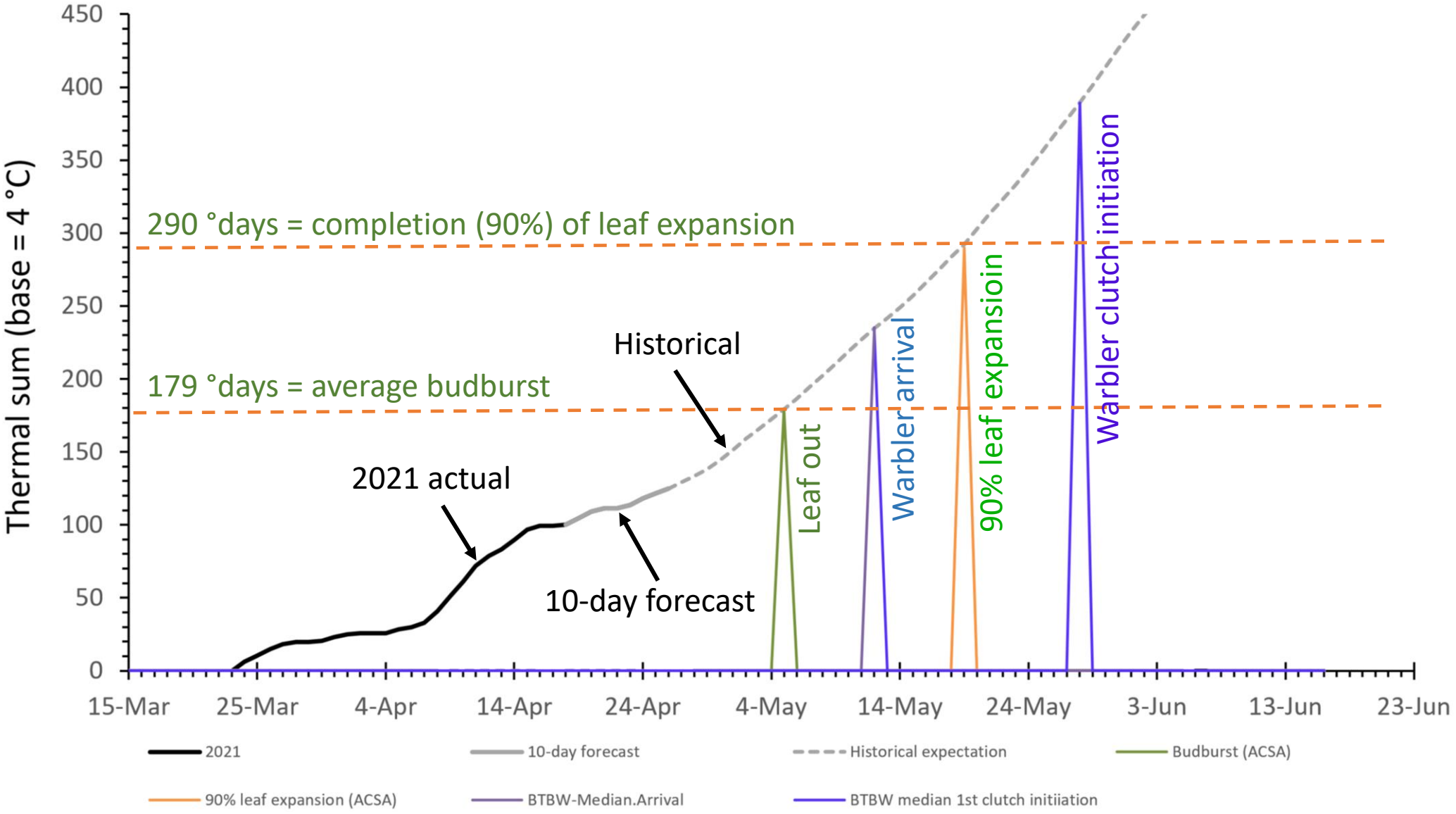
Real-time temperature records from USDA National Water & Climate Center (site 2069).
Phenological models adapted from Lany et al. 2016 using long term data of USDA Forest Service.



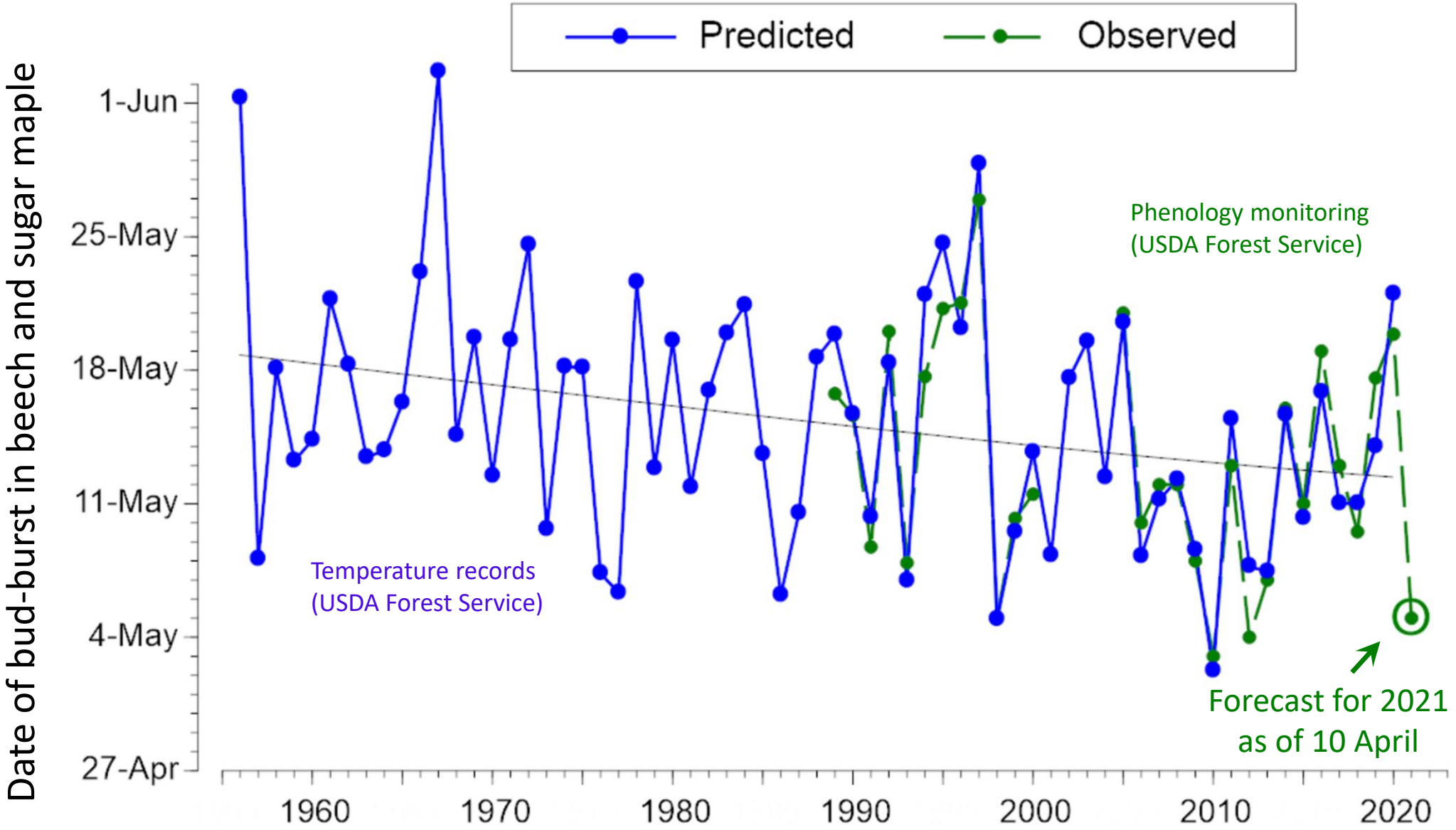
As of 18 April 2021, the forecast date of leafout is 5 May for mid-elevation bird plots at Hubbard Brook.

Phenology measurements by Amey Bailey, Northern Research Station, USDA Forest Service.
Leaf phenology model adapted from Nina Lany et al. 2016, *Oikos*.
Analyses by Matt Ayres et al., Dartmouth College.

Estimated leaf-out phenology for mid-elevation Bird Plot in 2021 based on thermal sums.
As of 18 April 2021, predicted dates for budburst and 90% completion of leaf expansion are:
5 May and 19 May.
Predicted median dates of Arrival and 1st clutch initiation by Black-throated Blue Warblers are:
12 May and 28 May.



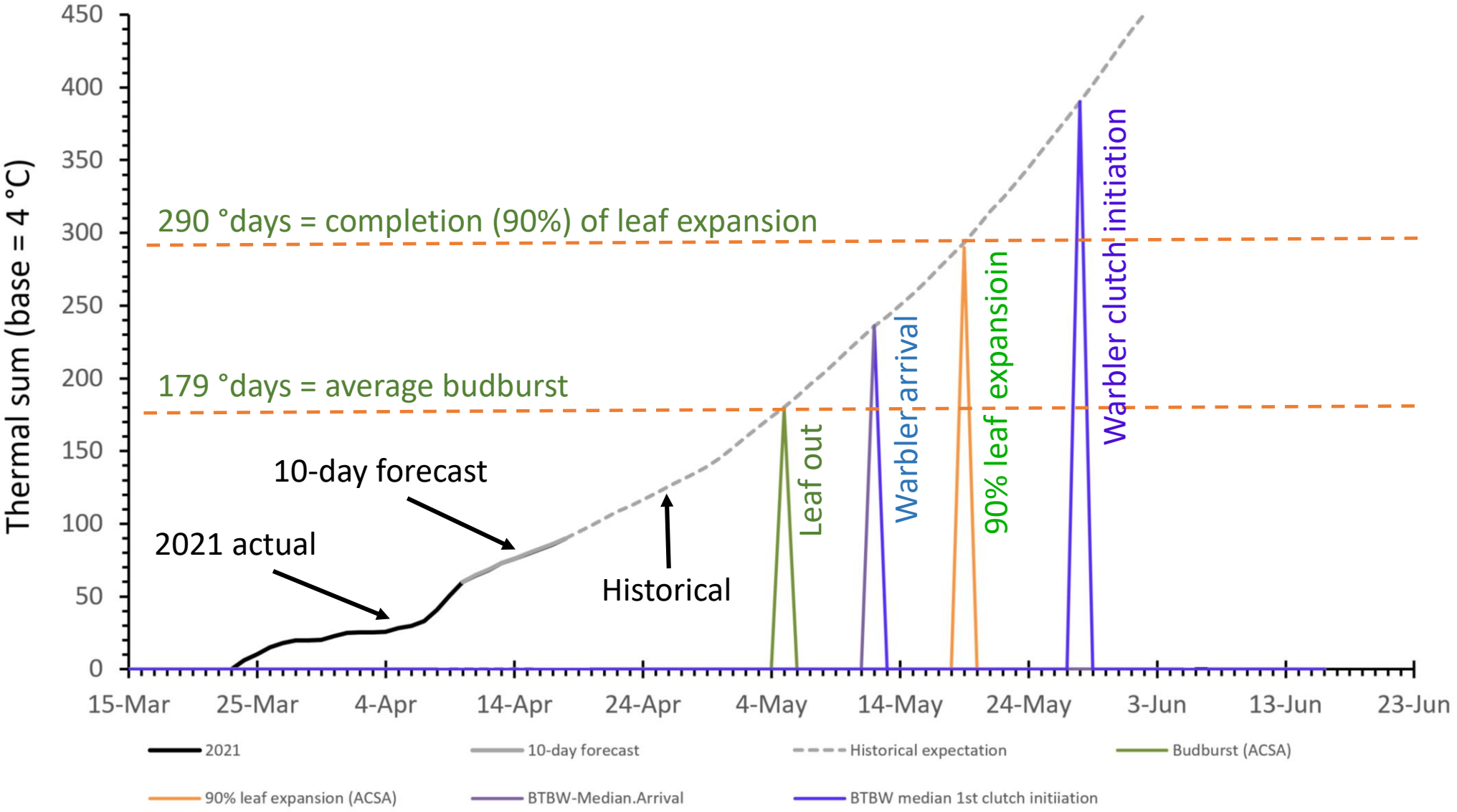
Real-time temperature records from USDA National Water & Climate Center (site 2069).
Phenological models adapted from Lany et al. 2016 using long term data of USDA Forest Service.



As of 9 April 2021, the forecast date of leafout is 5 May for mid-elevation bird plots at Hubbard Brook.

Phenology measurements by Amey Bailey, Northern Research Station, USDA Forest Service.
Leaf phenology model adapted from Nina Lany et al. 2016, *Oikos*.
Analyses by Matt Ayres et al., Dartmouth College.

Estimated leaf-out phenology for mid-elevation Bird Plot in 2021 based on thermal sums.
As of 9 April 2021, predicted dates for budburst and 90% completion of leaf expansion are:
5 May and 19 May.
Predicted median dates of Arrival and 1st clutch initiation by Black-throated Blue Warblers are:
12 May and 28 May.



Real-time temperature records from USDA National Water & Climate Center (site 2069).
Phenological models adapted from Lany et al. 2016 using long term data of USDA Forest Service.