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EDUCATION

2005 Ph.D., School of Renewable Natural Resources, University of Arizona, Tucson, AZ
1999 M.A., Geography, Western Michigan University, Kalamazoo, MI
1997 B.S., Biological Sciences, Western Michigan University, Kalamazoo, MI

PROFESSIONAL EXPERIENCE

2023-present Associate Professor, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ
2020-present Director, USA National Phenology Network, Tucson, AZ
2020-2023 Research Professor, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ
2011-2023 Associate Research Scientist, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ
2019-2020 Associate Director, USA National Phenology Network, Tucson, AZ
2015-2019 Assistant Director, USA National Phenology Network, Tucson, AZ
2007-2015 Partnerships & Outreach Coordinator, USA National Phenology Network, Tucson, AZ
2006-2007 Instructional Specialist, University of Arizona, Tucson, AZ
2002-2006 Quantitative Ecologist, Sonoran Desert Network Inventory & Monitoring, National Park Service, Tucson, AZ
2002-2004 UA/NASA Space Grant Fellow, University of Arizona, Tucson, AZ
2001-2002 Graduate Research Assistant, University of Arizona, Tucson, AZ
2001 Research GIS Consultant, Kalamazoo Nature Center, Kalamazoo, MI
1999-2001 Project Scientist, Kieser & Associates, Kalamazoo, MI
1997-2001 Graduate Assistant, Western Michigan University, Kalamazoo, MI

HONORS & AWARDS

2023 – *Science and Society Section Team Award* (with N. Acosta, S. Brewer, E. Denny, E. Posthumus, A. Rosemartin, and J. Switzer). American Geophysical Union.
2022 – *Woman of Impact Award*. University of Arizona.
2021 – *Fellow*. Linnean Society
2021 - *Enduring Achievement Award* to the USA National Phenology Network (with E. Denny, R. Marsh, E. Posthumus, A. Rosemartin, and J. Switzer). Advancing Research Impact in Society
2020 - *Shoemaker Award for Communication Product Excellence*, Webpage/Website category for “Phenology Trail Dashboards: Connecting Wildlife Refuges to Partners” (with P. Adams, L. Barnett, E. Denny, K. Gerst, R. Marsh, J. Marshall, T. Moody, J. Newman, E. Posthumus, A.

- Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). US Geological Survey.
- 2019-2020** – *Fellow, OpEd Project: Tucson Public Voices*. Women’s Foundation of Southern Arizona
- 2019** - *Outstanding Scholarly Achievement* for the USA-NPN’s Pheno Forecast maps (with L. Barnett, E. Denny, K. Gerst, R. Marsh, S. Oliver, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). School of Natural Resources and the Environment, University of Arizona
- 2018** - *Globally-Engaged Pillar Award*. College of Arts and Sciences, Western Michigan University
- 2018** - *Alumni Achievement Award*. Department of Geography, Western Michigan University
- 2018** - *Shoemaker Award for Communication Product Excellence*, Excellence for the Webpage/Website category for “Tracking the Appearance of Spring: USA National Phenology Network’s Status of Spring website and maps product” (with L. Barnett, E. Denny, K. Gerst, L. Marsh, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). US Geological Survey.
- 2018** - *Climate Adaptation Leadership Award for Natural Resources* to the USA National Phenology Network (with L. Barnett, E. Denny, K. Gerst, R. Marsh, S. Oliver, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). Association of Fish and Wildlife Agencies.
- 2018** - *Blue Pencil & Gold Screen Award of Excellence* for the USA National Phenology Network 2016 Annual Report (with E. Posthumus, J. Weltzin, and T. Moody).
- 2017** - *Outstanding Achievement Award* for USA-NPN’s Start of Spring Maps and Access Tools (with L. Barnett, E. Denny, K. Gerst, R. Marsh, S. Oliver, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). Renewable Natural Resource Foundation.
- 2016** - *Environmental Achievement Award* in Climate Champion category (with L. Barnett, E. Denny, K. Gerst, R. Marsh, S. Oliver, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). US Geological Survey.
- 2016** - *Greening the Department of Interior*, Honorable Mention (with L. Barnett, E. Denny, K. Gerst, R. Marsh, S. Oliver, E. Posthumus, A. Rosemartin, S. Schaffer, J. Switzer, and J. Weltzin). US Department of the Interior.
- 2014** - *Shoemaker Award for Communication Product Excellence*, Internet Product category for “Connecting People with Nature to Benefit Our Changing Planet: The *Nature’s Notebook* website” (with L. Barnett, C. Bush, L. Marsh, T. Moody, E. Posthumus, A. Rosemartin, S. Schaffer, E. Surina, and J. Weltzin). US Geological Survey.
- 2005** - *On-the-Spot Award*. Sonoran Desert Network, National Park Service
- 1999** - *Outstanding Graduate Research Award*. College of Arts and Sciences, Western Michigan University
- 1999** - *Graduate Research and Creative Scholar Award*. Western Michigan University Graduate College
- 1999** - *Graduate Student Outstanding Scholastic Achievement Award*. Department of Geography, Western Michigan University
- 1997** - *Clifford and Ella Chapman Distinguished Senior Scholarship*. Western Michigan University
- 1996** - *Frank Hinds Zoology Award*. Western Michigan University Department of Biology
- 1993-1997** - *Excellence Scholarship*. Western Michigan University

SELECT SERVICE ACTIVITIES

- 2016-present Editorial Board, *Ecosphere*
- 2020-present Editorial Advisory Board, *International Journal of Biometeorology*
- 2014-2017 Editorial Advisory Board, *International Journal of Biometeorology*

PUBLICATIONS

Book Chapters

1. Carter, S.L., P.D. McElwee, K.J.W. Hyde, J. West, K. Akamani, A.L. Babson, G. Bowser, J.B. Bradford, J.K. Costanza, **T.M. Crimmins**, S.C. Goslee, S.K. Hamilton, B. Helmuth, S. Hoagland, F.A.E. Hoover, M.E. Hunsicker, R. Kashuba, S.A. Moore, R.C. Munoz, G. Shrestha, M. Uriarte, and J.L. Wilkening. 2023. "Chapter 8. Ecosystems, Ecosystem Services, and Biodiversity." In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023>
2. **Crimmins, T.M.** 2022. "Preface." *Plants from Season to Season: A Guidebook for Making Phenological Observations on Plants*. Mèze, France. Editions Biotope, p 8.
3. **Crimmins, T.M.**, L. Barnett, E.G. Denny, A.H. Rosemartin, S. Schaffer, and J.F. Weltzin. 2020. "From tiny acorns grow mighty oaks: what we've learned from nurturing *Nature's Notebook*." In: *Handbook of Citizen Science in Ecology and Conservation*. Eds. C. Lepczyk, T. Vargo, and O.D. Boyle. University of California Press, pp 191-222.
4. Posthumus, E.E., L. Barnett, **T.M. Crimmins**, P.L. Warren, E. Stancioff, and J. Einerson. 2019. "Building local resilience to climate change through citizen science, environmental education, and decision-making." In: *Addressing Climate Change at the Community Level in the United States*. Eds. P.R. Lachapelle and D.E. Albrecht. New York: Routledge/Taylor & Francis, pp 50-64.
1. Schwartz, M.D., E. Beaubien, **T.M. Crimmins**, and J.F. Weltzin. 2013. "North America." In: *Phenology: An Integrative Environmental Science*. Ed. M.D. Schwartz. 2nd edition. Dordrecht: Kluwer Academic Publishers. Online: www.springer.com/life+sciences/ecology/book/978-94-007-6924-3 pp 67-89.

Refereed Journal Articles

1. Hemming, D.L., O. Anneville, Y. Aono, **T.M. Crimmins**, N. Estrella, J. Garforth, A. Menzel, J. O'Keefe, T. Park, A.D. Richardson, T. Rutishauser, T.H. Sparks, S.J. Thackeray, A. van Vliet, I. Mrekaj, and J. Rozkošný. 2023. "Phenology of primary producers." In: 2022 State of the Climate. *Bulletin of the American Meteorological Society*. 104(9): S109-S112. doi.org/10.1175/2023BAMSStateoftheClimate.1
2. Primack, R.B., A. Gallinat, E. Ellwood, **T.M. Crimmins**, M.D. Schwartz, M. Staudinger, and A.J. Miller-Rushing. Ten best practices for effective phenology research. *International Journal of Biometeorology*. doi.org/10.1007/s00484-023-02502-7
3. **Crimmins, T.M.**, E. Vogt, C.L. Brown, D. Dalan, A. Manangan, G. Robinson, Y. Song, K. Zhu, D. Katz. Volunteer-contributed observations of flowering often correlate with airborne pollen concentrations. *International Journal of Biometeorology*. doi.org/10.1007/s00484-023-02506-3
4. Beiter, C. and **T.M. Crimmins**. 2023. Multi-site analysis of sequence in leaf-out and flowering reveals evidence of local adaptation. *International Journal of Biometeorology*. doi.org/10.1007/s00484-023-02477-5
5. Li, X., T.R. Ault, C.P. Evans, F. Lehner, C.M. Carrillo, A.C. Donnelly, **T.M. Crimmins**, A.S. Gallinat, and M.D. Schwartz. 2023. Diverging Northern Hemisphere trends in meteorological versus ecological indicators of spring onset in CMIP6. *Geophysical Research Letters* 50: e2023GL102833. doi.org/10.1029/2023GL102833
6. Melichar, M., K. Didan, A. Barreto-Muñoz, J.N. Duberstein, E. Jiménez Hernández, **T. Crimmins**, H. Li, M. Traphagen, K.A. Thomas, and P.L. Nagler. 2023. Random forest classification of multitemporal Landsat 8 spectral data and phenology metrics for land cover mapping in the Sonoran and Mojave Deserts. *Remote Sensing* 15:1266. doi.org/10.3390/rs15051266
7. Denny, E.G. and **T.M. Crimmins**. 2023. Updates to standardized plant and animal observation protocols of the USA National Phenology Network. *International Journal of Biometeorology*

- 67(5): 927-930. doi.org/10.1007/s00484-023-02444-0
8. Rosemartin, A.H., **T.M. Crimmins**, K.L. Gerst, E.E. Posthumus, A. Ramirez, C.S.A. Wallace, and T.L. Morelli. 2023. Lessons learned in knowledge coproduction for conservation science. *Environmental Science & Policy* 141: 178-187. doi.org/10.1016/j.envsci.2023.01.010
 9. Katz, D., E. Vogt, A. Manangan, C.L. Brown, D. Dalan, K. Zhu, Y. Song, and **T.M. Crimmins**. 2022. Observations from the USA National Phenology Network can be leveraged to model airborne pollen. *Aerobiologia* 39(1):169-174. doi.org/10.1007/s10453-022-09774-3
 10. Miller-Rushing, A.J., L.R. Ellwood, **T.M. Crimmins**, A.S. Gallinat, M. Phillips, R.L. Sandler, and R.B. Primack. 2022. Conservation ethics in the time of the pandemic: Does increasing remote access affect social justice? *Biological Conservation* 276: 109788. doi.org/10.1016/j.biocon.2022.109788
 11. Ye, Y., X. Zhang, Y. Shen, J. Wang, **T.M. Crimmins**, and H. Scheifinger. 2022. An optimal method for validating satellite-derived land surface phenology using in-situ observations from national phenology networks. *ISPRS Journal of Photogrammetry and Remote Sensing* 194: 74-90. doi.org/10.1016/j.isprsjprs.2022.09.018
 12. **Crimmins, T.M.**, E.G. Denny, E.E. Posthumus, A.H. Rosemartin, R. Croll, M. Montano, and H. Panci. 2022. Science and management advancements made possible by the USA National Phenology Network's *Nature's Notebook* platform. *BioScience* 72(9): 908-920. doi.org/10.1093/biosci/biac061
 13. **Crimmins, T.M.** and E.E. Posthumus. 2022. Do carefully-timed email messages increase accuracy and precision in citizen scientists' reports of events? *Citizen Science Theory and Practice* 7(1):1-11. doi.org/10.5334/cstp.464
 14. **Crimmins, T.M.** and M.A. 2022. Crimmins. Large-scale citizen science programs hold potential to support ecological and climate change assessments. *Environmental Research Letters* 17: 065011. doi.org/10.1088/1748-9326/ac72b7
 15. Fuccillo Battle, K., A. Duhon, C. Vispo, **T.M. Crimmins**, T.N. Rosenstiel, L. Armstrong-Davies, and C. de Rivera. 2022. Citizen science across two centuries reveals phenological change among plant species and functional groups in the Northeastern U.S. *Journal of Ecology* 110:1757-1774. doi.org/10.1111/1365-2745.13926. Selected as Editor's Choice for August, 2022: jecologyblog.com/2022/08/10/editors-choice-1108-two-centuries-of-change/
 16. Dwivedi, D., A.L.D. Santos, M.A. Barnard, **T.M. Crimmins**, A. Malhotra, K.A. Rod, K.S. Aho, S. Bell, B. Bomfim, F. Brearley, H. Cadillo-Quiroz, J. Chen, C.M. Gough, E.B. Graham, C.R. Hakkenberg, L. Haygood, G. Koren, E. Lilleskov, L.K. Meredith, S. Naeher, Z.L. Nickerson, O. Pourret, H.-S. Song, M. Stahl, N. Tas, R. Vargas, and S. Weintraub-Leff. 2022. Biogeosciences perspectives on Integrated, Coordinated, Open, Networked (ICON) science. *Earth and Space Science* 9: e2021EA002119. doi.org/10.1029/2021EA002119
 17. Gerst, K.L., **T.M. Crimmins**, E.E. Posthumus, R.L. Marsh, J. Switzer, C. Wallace. 2021. The USA National Phenology Network's Buffelgrass Green-up Forecast map products. *Ecological Solutions and Evidence* e12109:1-6. doi.org/10.1002/2688-8319.12109
 18. Morisette, J.T., K.A. Duffy, J.F. Weltzin, D.M. Browning, R.L. R. Marsh, A.M. Friesz, L.J. Zachmann, K.D. Enns, V.A. Landau, K.L. Gerst, **T.M. Crimmins**, K.D. Jones, T. Chang, B.W. Miller, T.K. Maiersperger, A.D. Richardson. 2021. PS3: The Pheno-Synthesis Software Suite for integration and analysis of multi-scale, multi-platform phenological data. *Ecological Informatics* 65:101400. doi.org/10.1016/j.ecoinf.2021.101400
 19. Bates, A., R.B. Primack, B. Biggar, ... **T.M. Crimmins**, ... and C.M. Duarte. 2021. Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. *Biological Conservation* 263:109175. doi.org/10.1016/j.biocon.2021.109175.
 20. **Crimmins, T.M.**, E.E. Posthumus, S.N. Schaffer, and K.L. Prudic. 2021. COVID-19 impacts on participation in large scale community science projects in the United States. *Biological Conservation* 256:109017. doi.org/10.1016/j.biocon.2021.109017.

21. Weltzin, J.F., J.L. Betancourt, B.I. Cook, **T.M. Crimmins**, C.A.F. Enquist, M.D. Gerst, J.E. Gross, G.M. Henebry, R.A. Hufft, M.A. Kenny, J.S. Kimball, B.C. Reed, and S.W. Running. 2020. Seasonality of biological and physical systems as indicators of climate variation and change. *Climatic Change* 163:1755-1771. doi.org/10.1007/s10584-020-02894-0.
22. Gerst, K.L., **T.M. Crimmins**, E.E. Posthumus, A.H. Rosemartin, and M.D. Schwartz. 2020. How well do the Spring Indices predict phenological activity across plant species? *International Journal of Biometeorology* 64: 889-901 doi.org/10.1007/s00484-020-01879-z
23. **Crimmins, T.M.**, K.L. Gerst, D.G. Huerta, R.L. Marsh, E.E. Posthumus, A.H. Rosemartin, J. Switzer, J.F. Weltzin, L. Coop, N. Dietschler, D.A. Herms, S. Limbu, R.T. Trotter III, M. Whitmore. 2020. Short-term forecasts of insect phenology inform pest management. *Annals of the Entomological Society of America* 113(2): 139-148. doi.org/10.1093/aesa/saz026.
24. **Crimmins, T.M.** and M.A. Crimmins. 2019. Biologically-relevant trends in springtime temperatures across the United States. *Geophysical Research Letters* 46(21):12377-12387. doi.org/10.1029/2019GL085251.
25. Elmendorf, S.C., **T.M. Crimmins**, K.L. Gerst, and J.F. Weltzin. 2019. Time to branch out? Application of hierarchical survival models in plant phenology. *Agriculture and Forest Meteorology*. 279:107694. doi.org/10.1016/j.agrformet.2019.107694.
26. Prudic, K.L., J.K. Wilson, M.C. Toshack, K.L. Gerst, A.H. Rosemartin, **T.M. Crimmins**, and J.C. Oliver. 2019. Creating the urban Farmer's Almanac with citizen science data. *Insects* 10(9): 294. doi.org/10.3390/insects10090294.
27. Crimmins, M.A. and **T.M. Crimmins**. 2019. Does an early spring indicate an early summer? Relationships between intraseasonal growing degree day thresholds. *Journal of Geophysical Research - Biogeosciences*. 124:1-14. doi.org/10.1029/2019JG005297
28. Waller, E.K., **T.M. Crimmins**, J.J. Walker, E.E. Posthumus, and J.F. Weltzin. 2018. Differential changes in the onset of spring across US National Wildlife Refuges and North American migratory bird flyways. *PLoS ONE* 13(9): e0202495. doi.org/10.1371/journal.pone.0202495
29. Browning, D.M., **T.M. Crimmins**, D.K. James, S. Spiegel, M.R. Levi, J.P. Anderson, and D.C. Peters. 2018. Synchronous species responses reveal phenological guilds – Implications for management. *Ecosphere* 9(9): e02395. doi.org/10.1002/ecs2.2395
30. **Crimmins, T.M.** 2018. The USA National Phenology Network's growing degree day maps and online visualization tool support management decisions. *Journal of Extension*. 56: 3, 3TOT4. www.joe.org/joe/2018june/tt4.php
31. **Crimmins, T.M.**, M.A. Crimmins, K.L. Gerst, A.H. Rosemartin, and J.F. Weltzin. 2017. USA National Phenology Network's volunteer-contributed observations yield predictive models of phenological transitions. *PLoS ONE* 12: e0182919. doi.org/10.1371/journal.pone.0182919
32. Ellwood, E., **T.M. Crimmins**, and A.J. Miller-Rushing. 2017. Citizen science and conservation: Recommendations for a rapidly moving field. *Biological Conservation* 208:1-4. dx.doi.org/10.1016/j.biocon.2016.10.014
33. Wright, K.W., K.L. Vanderbilt, D.W. Inouye, C.D. Bertelsen, and **T.M. Crimmins**. 2015. Turnover and reliability of flower communities in extreme environments: Insights from long-term phenology data sets. *Journal of Arid Environments* 115:27-34.
34. Fuccillo, K.K., **T.M. Crimmins**, C. DeRivera, and T.S. Elder. 2015. Assessing accuracy in citizen science-based plant phenology monitoring. *International Journal of Biometeorology* 59:917-926. doi.org/10.1007/s00484-014-0892-7
35. **Crimmins, T.M.**, J.F. Weltzin, A.H. Rosemartin, E.M. Surina, and L. Marsh, E.G. Denny. 2014. Targeted campaign increases activity among participants in *Nature's Notebook*, a citizen science project. *Natural Sciences Education* 43:64-72.
36. **Crimmins, T.M.**, C.D. Bertelsen, and M.A. Crimmins. 2014. Within-season flowering interruptions are common in the water-limited Sky Islands. *International Journal of Biometeorology* 58:419-426. doi.org/10.1007/s00484-013-0745-9.

37. Denny, E.G., K.L. Gerst, A.J. Miller-Rushing, G.L. Tierney, **T.M. Crimmins**, C.A.F. Enquist, P. Guertin, A.H. Rosemartin, M.D. Schwartz, K.A. Thomas, J.F. Weltzin. 2014. Standardized phenology monitoring methods to track plants and animal activity for science and resource management applications. *International Journal of Biometeorology* 58:591-601. doi.org/10.1007/s00484-014-0789-5.
38. Rosemartin, A.H., **T.M. Crimmins**, C.A.F. Enquist, K.L. Gerst, J.L. Kellermann, E.E. Posthumus, J.F. Weltzin, E.G. Denny, P. Guertin, and L. Marsh. 2014. Organizing phenological data resources to inform natural resource conservation. *Biological Conservation* 173:90-97. dx.doi.org/10.1016/j.biocon.2013.07.003
39. Davies, T.J., E.M. Wolkovich, N.J.B. Kraft, N. Salamin, J.M. Allen, T.R. Ault, J.L. Betancourt, K. Bolmgren, E.E. Cleland, B.I. Cook, **T.M. Crimmins**, S.J. Mazer, G.J. McCabe, S. Pau, J. Regetz, M.D. Schwartz, S. Travers. 2013. Phylogenetic conservatism in plant phenology. *Journal of Ecology* 101:1520-1530. [doi: 10.1111/1365-2745.12154](https://doi.org/10.1111/1365-2745.12154).
40. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2013. Spring and summer patterns in flowering onset, duration, and constancy across a water-limited gradient. *American Journal of Botany* 100:1-11.
41. Posthumus, E.E., L. Barnett, **T.M. Crimmins**, G. Kish, W. Sheftall, E. Stancioff, and P. Warren. 2013. *Nature's Notebook* and Extension: Engaging citizen-scientists and 4-H youth to observe a changing environment. *Journal of Extension* 51(1): 11AW1. Online: www.joe.org/joe/2013february/iw1.php.
42. Cook, B.I., E.M. Wolkovich, T.J. Davies, T.R. Ault, J.L. Betancourt, J.M. Allen, K. Bolmgren, E.E. Cleland, **T.M. Crimmins**, N.J.B. Kraft, L.T. Lancaster, S.J. Mazer, G.J. McCabe, B.J. McGill, C. Parmesan, S. Pau, J. Regetz, N. Salamin, M.D. Schwartz, S.E. Travers. 2012. Sensitivity of spring phenology to warming across temporal and spatial climate gradients in two independent databases. *Ecosystems* DOI: 10.1007/s10021-012-9584-5.
43. Wolkovich, E.M., B.I. Cook, J.M. Allen, **T.M. Crimmins**, S. Travers, S. Pau, J. Regetz, T.J. Davies, J.L. Betancourt, N.J.B. Kraft, T.R. Ault, K. Bolmgren, S.J. Mazer, G.J. McCabe, B.J. McGill, C. Parmesan, N. Salamin, M.D. Schwartz, and E.E. Cleland. 2012. Warming experiments underpredict plant phenological responses to climate change. *Nature* 485: 494-497. doi.org/10.1038/nature11014
44. Deiz, J.M., I. Ibañez, A.J. Miller-Rushing, S.J. Mazer, **T.M. Crimmins**, M.A. Crimmins, C.D. Bertelsen, D.W. Inouye. 2012. Forecasting phenology: from species variability to community patterns. *Ecology Letters* 15:545-553.
45. Cleland, E.E., J.M. Allen, **T.M. Crimmins**, S. Pau, S.E. Travers, E.M. Wolkovich. 2012. Phenological tracking enables positive species responses to climate change. *Ecology* 93: 1765-1771.
46. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2011. Onset of summer flowering in a 'Sky Island' is driven by monsoon moisture. *New Phytologist* 191:468-479.
47. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2010. Complex responses to climate drivers in onset of spring flowering across a semi-arid elevation gradient. *Journal of Ecology* 98:1042-1051.
48. **Crimmins, T.M.** and C.L. Rupperecht. 2010. Testing Online learning modules for an extension program – useful and utilized? *Journal of Natural Resources and Life Sciences Education* 39:102-108.
49. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2009. Flowering range changes across an elevation gradient in response to warming summer temperatures. *Global Change Biology* 15:1141-1152.
50. ***Crimmins, T.M.** and G.R. McPherson. 2008. Vegetation and seed bank response to *Eragrostis lehmanniana* removal. *Weed Research* 48:542-551.
51. Crimmins, M.A. and **T.M. Crimmins**. 2008. Monitoring plant phenology using digital repeat

- photography. *Environmental Management* 41:949-958.
52. **Crimmins, T.M.**, M.A. Crimmins, D. Bertelsen, and J. Balmat. 2008. Relationships between flowering diversity and climatic variables along an elevation gradient. *International Journal of Biometeorology* 52:353-366.
 53. **Crimmins, T.**, M.S. Mauzy, and S.E. Studd. 2008. Assessing exotic plant distribution, abundance, and impact at Montezuma Castle and Tuzigoot National Monuments in Arizona, USA. *Ecological Restoration* 26:47-53.
 54. Crimmins, M.A., G. Zaimes, N. Haas, C.K. Jones, G. Garfin, and **T.M. Crimmins**. 2007. Changes on the range: A novel exercise to explore interactions between range management decision making and climate change. *Journal of Natural Resources and Life Sciences Education*. 36:76-86.
 55. ***Mau-Crimmins, T.** 2007. Effects of removing *Cynodon dactylon* from a recently abandoned agricultural field. *Weed Research*. 47:212-221.
 56. ***Schussman, H.R.**, E.L. Geiger, **T.M. Mau-Crimmins**, and J. Ward. 2006. Spread and current potential distribution of an alien grass, *Eragrostis lehmanniana* Nees, in the southwestern USA: comparing historical data and ecological niche models. *Diversity and Distributions* 12:582-592.
 57. ***Mau-Crimmins, T.**, H.R. Sc49hussman, and E.L. Geiger. 2006. Can the invaded range of a species be predicted sufficiently using only native-range data?: Lehmann lovegrass (*Eragrostis lehmanniana*) in the southwestern United States. *Ecological Modelling* 193:736-746.
 58. ***Mau-Crimmins, T.**, J.E. de Steiguer, and D. Dennis. 2005. The Analytic Hierarchy Process and public participation in forest planning: A pilot study involving natural resource students. *Forest Economics & Policy* 7(4):501-514.
 59. ***Mau-Crimmins, T.** and D.S. Lemberg. 2003. Reserve site selection at a non-profit educational nature center. *The Great Lakes Geographer*. 10(1): 34-45.
 60. ***de Steiguer, J.E.** and **T. Mau-Crimmins**. 2002. Economic analysis in watershed management planning: Methods, applications and education. *Annals of Arid Zone* 41: 343-357.

*Based on work conducted as a graduate student

Other Peer-Reviewed Publications

1. Rosenblatt, L., B. Han, E. Posthumus, **T. Crimmins**, B. Howe. 2023. Top-down green-ups: satellite sensing and deep models to predict buffelgrass phenology. Proceedings of the Conference on Neural Information Processing Systems (NeurIPS) meeting. <https://www.climatechange.ai/events/neurips2023>. Preprint: <https://arxiv.org/abs/2310.00740>
2. Gerst, K.L., A.H. Rosemartin, E.E. Posthumus, and **T.M. Crimmins**. 2022. Successes and challenges on a spectrum of stakeholder engagement. Pages 149-160 *in*: Neary, D.G. and Gottfried, G.J., eds. Collaboration Now for the Future: Biodiversity and Management of the Madrean Archipelago VI meeting proceedings, Tucson, Arizona, May 14-18, 2018. Proceedings RMRS-P-79. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 495 p. doi.org/10.2737/RMRS-P-79
3. Vogt, E., **T. Crimmins**, D. Dalan, D. Katz, A. Manangan and C. Brown. 2022. How well do volunteer-contributed observations of flowering characterize the springtime airborne pollen season? Published abstract. *Journal of Allergy and Clinical Immunology* 149(2): AB198 doi.org/10.1016/j.jaci.2021.12.653
4. **Crimmins, T.M.** 2021. Reading the leaves to track environmental hazards and health. *Eos* 102. doi.org/10.1029/2021EO157181. Published on 16 April 2021.
5. **Crimmins, T.M.** 2021. The USA National Phenology Network: Big idea, productivity and potential – and now, at big risk. *Bulletin of the Ecological Society of America* 102: e01802. doi.org/10.1002/bes2.1802.

6. Asrar, G., Y. Zhou, **T.M. Crimmins**, A. Sapkota. 2020. Eyes in the sky improve pollen tracking. *Eos*. doi.org/10.1029/2020EO147021. Published online 20 Jul 2020.
7. Bradford, J.B., J.F. Weltzin, M. McCormick, J. Baron, Z. Bowen, S. Bristol, D. Carlisle, T. Crimmins, P. Cross, J. DeVivo, M. Dietze, M. Focazio, M. Freeman, K. Gaddis, J. Goldberg, M. Hooten, L. Hsu, K. Jenni, J. Keisman, J. Kennen, K. Lee, D. Lesmes, K. Loftin, B. Miller, P. Murdoch, J. Newman, K. Nowak, K. Prentice, I. Rangwala, J. Read, J. Sieracki, H. Sofaer, S. Taylor, S. Thur, G. Toevs, F. Werner, C.L. White, T. White, and M. Wiltermuth. Ecological Forecasting: 21st century science for 21st century management. U.S. Geological Survey Open-File Report 2020-1073, 54 p., doi.org/10.3133/ofr20201073.
8. Rosemartin, A.R., M.L. Langseth, **T.M. Crimmins**, and J.F. Weltzin. 2018. Development and release of phenological data products--A case study in compliance with federal open data policy. U.S. Geological Survey Open-File Report 2018-1007. doi.org/10.3133/ofr20181007.
9. Rosemartin, A.H., E.G. Denny, K.L. Gerst, R. L. Marsh, **T.M. Crimmins**, and J.F. Weltzin. 2018. USA National Phenology Network Observational Data Documentation. U.S. Geological Survey Open-File Report 2018-1060. doi.org/10.3133/ofr20181060
10. **Crimmins, T.M.**, R.L. Marsh, J. Switzer, M.A. Crimmins, K.L. Gerst, A.H. Rosemartin, and J.F. Weltzin. 2017. USA National Phenology Network gridded products documentation. U.S. Geological Survey Open-File Report 2017-1003. doi.org/10.3133/ofr20171003.
11. Langseth, M.L., Hsu, L., Amberg, J., Bliss, N., Bock, A.R., Bolus, R.T., Bristol, R.S., Chase, K.J., **Crimmins, T.M.**, Earle, P.S., Erickson, R., Everette, A.L., Falgout, J., Faundeen, J.L., Fienen, M., Griffin, R., Guy, M.R., Henry, K.D., Hoebelheinrich, N.J., Hunt, R., Hutchison, V.B., Ignizio, D.A., Infante, D.M., Jarnevich, C., Jones, J.M., Kern, T., Leibowitz, S., Lightsom, F.L., Marsh, R.L., McCalla, S.G., McNiff, M., Morissette, J.T., Nelson, J.C., Norkin, T., Preston, T.M., Rosemartin, A., Sando, R., Sherba, J.T., Signell, R.P., Sleeter, B.M., Sundquist, E.T., Talbert, C.B., Viger, R.J., Weltzin, J.F., Waltman, S., Weber, M., Wieferich, D.J., Williams, B., Windham-Myers, L. 2017. Community for Data Integration 2016 annual report: U.S. Geological Survey Open-File Report 2017-1053. doi.org/10.3133/ofr20171053.
12. Andrianandrasana, H.T., D. Becker, A. Berardi, R. Bodmer, M. Chandler, J.A. Cousins, **T.M. Crimmins**, F. Danielsen, A.P. Giorgi, M. Huxham, A. Leslie, J. Mistry, B. Mora, M. Nelson, M.K. Poulsen, A.K. Pratihast, L.M. See, I. Theilade, P. Constantino, T. Vakil, and J. Williams. 2017. "The value and opportunities of community- and citizen-based approaches to tropical forest biodiversity monitoring." In: *A Sourcebook of Methods and Procedures for Monitoring Essential Biodiversity Variables in Tropical Forests with Remote Sensing*. Eds. GOF-C-GOLD & GEO BON. Report version UNCBD COP-13, GOF-C-GOLD Land Cover Project Office, Wageningen University, The Netherlands. ISSN:2542-6729.
13. Czech, B., S. Covington, **T.M. Crimmins**, J.A. Ericson, C. Flather, M. Gale, K. Gerst, M. Higgins, M. Kaib, E. Marino, T. Moran, J. Morton, N. Niemuth, H. Peckett, D. Savignano, L. Saperstein, S. Skorupa, E. Wagener, B. Wilen, and B. Wolfe. 2014. *Planning for Climate Change on the National Wildlife Refuge System*. U.S. Fish and Wildlife Service, National Wildlife Refuge System, Washington, DC. www.fws.gov/refuges/vision/pdfs/PlanningforClimateChangeontheNWRS.pdf
14. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. Temporal patterns in species flowering in Sky Islands of the Sonoran Desert ecoregion. 2013. Pages 33-39 in: Gottfried, Gerald J.; Ffolliott, Peter F.; Gebow, Brooke S.; and Eskew, Lane G., compilers. 2012. Merging science and management in a rapidly changing world: biodiversity and management of the Madrean Archipelago III. 2012 May 1-5, Tucson, AZ. Proceedings RMRS-P-67. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Online: www.fs.fed.us/rm/pubs/rmrs_p067/rmrs_p067_033_039.pdf.
15. Luvall, J.C., W. Sprigg, E. Levetin, A. Huete, S. Nickovic, G. Pejanovic, P Van de Water, O. Myers, A. Budge, **T. Crimmins**, H. Krapfl, and A. Zelicoff. 2011. Use of MODIS satellite

- images and an atmospheric dust transport model to evaluate *Juniperus* spp. pollen phenology and dispersal to support public health alerts. *Journal of Allergy and Clinical Immunology*. 127(2): AB19. doi.org/10.1016/j.jaci.2010.12.086
16. Luvall, J.C., W.A. Sprigg, E. Levetin, A. Huete, S. Nickovic, G.A. Pejanovic, A. Vukovic, P.K. Van de Water, O.B. Myers, A.M. Budge, A.P. Zelicoff, L. Bunderson, **T.M. Crimmins**. 2011. Use of MODIS satellite images and an atmospheric dust transport model to evaluate *Juniperus* spp. pollen phenology and dispersal. Proceedings of the 34th International Symposium on Remote Sensing of Environment. Sydney, Australia. Online: www.isprs.org/proceedings/2011/ISRSE-34/211104015Final00129.pdf.
 17. Schwartz, K, **T. Crimmins**, and J. D'Agostino. An Online Innovation to Enhance Instruction and Assess Learning. Learning It by Living It: A Wild Ride through the Water Cycle. Proceedings of the North American Association for Environmental Education, 37th Annual Conference. 15-18 October 2008, Wichita, Kansas. Online: www.allacademic.com/meta/p240856_index.html
 18. **Mau-Crimmins, T.** and E. Porter. 2007. Air quality monitoring protocol and standard operating procedures for the Sonoran Desert Network. Natural Resources Technical Report NPS/SODN/NRTR-2007/003.
 19. Powell, B.F., A.D. Flesch, **T. Mau-Crimmins**, D. Angell, K. Beupre, and W.L. Halvorson. 2007. Landbird monitoring protocol and standard operating procedures for the Sonoran Desert Network. Natural Resource Report NPS/SODN/NRR-2007/021.
 20. **Mau-Crimmins, T.M.** and B.J. Orr. 2005. Monitoring nonnative plants using hand-held GIS technology. 2005. Pages 298-301 *in*: Gottfried, Gerald J.; Gebow, Brooke S.; Eskew, Lane G.; and Edminster, Carl, compilers. Biodiversity and Management of the Madrean Archipelago II. Proceedings RMRS-P-36. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Online: www.treesearch.fs.fed.us/pubs/23218
 21. Stitt, E.W., **T. Mau-Crimmins**, and D.E. Swann. 2005. Biogeography of Amphibians and Reptiles in Arizona. 2005. Pages 140-144 *in*: Gottfried, Gerald J.; Gebow, Brooke S.; Eskew, Lane G.; and Edminster, Carl, compilers. Biodiversity and Management of the Madrean Archipelago II. Proceedings RMRS-P-36. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Online: www.treesearch.fs.fed.us/pubs/23185
 22. Swann, D.E., **T. Mau-Crimmins**, and E.W. Stitt. 2005. In Search of the Madrean Line: Biogeography of Herpetofauna in the Sky Island Region. 2005. Pages 149-153 *in*: Gottfried, Gerald J.; Gebow, Brooke S.; Eskew, Lane G.; and Edminster, Carl, compilers. Biodiversity and Management of the Madrean Archipelago II. Proceedings RMRS-P-36. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Online: www.treesearch.fs.fed.us/pubs/23187
 23. Crimmins, M. and **T. Mau-Crimmins**. Climate Variability and the Spread of Non-native Plant Species at the Santa Rita Experimental Range, Arizona. *Proceedings of the Santa Rita Experimental Range: One-Hundred Years of Accomplishments and Contributions*, 30 Oct-1 Nov, 2003, Tucson, Arizona, p. 111-115.
 24. Geiger, E., **T. Mau-Crimmins**, and H. Schussman. Predicting Lehmann Lovegrass Spread in Southeastern Arizona, USA. *Proceedings of the Santa Rita Experimental Range: One-Hundred Years of Accomplishments and Contributions*, 30 Oct-1 Nov, 2003, Tucson, Arizona, p. 116-120.

Dataset Publications

1. **Crimmins, T.M.** and C. Beiter. 2023. Data and code associated with How consistently do species leaf out or flower in the same order? Understanding the factors that shape this characteristic of plant communities. Zenodo dataset publication: doi.org/10.5281/zenodo.7605562
2. **Crimmins, T.M.** and M.A. Crimmins. 2022. Data release in support of: Large-scale citizen science programs hold potential to support ecological and climate change assessments. Zenodo

- dataset publication: doi.org/10.5281/zenodo.5941007
3. **Crimmins, T.** and E. Posthumus. 2022. Data and code from: Do carefully-timed email messages increase accuracy and precision in citizen scientists' report of events? Zenodo dataset publication: doi.org/10.5281/zenodo.6618222
 4. Crimmins, M.A. and **T.M. Crimmins**. 2019. Data from: Does an early spring indicate an early summer? relationships between intra-seasonal growing degree day thresholds. Dryad Digital Repository. doi.org/10.5061/dryad.pp045j3
 5. Weltzin, J.F., **T.M. Crimmins**, E.E. Posthumus, J.J. Walker, and E.K. Waller. 2018. Spring leaf and bloom index dates (1880-2013) and migratory bird flyways: U.S. Geological Survey data release, doi.org/10.5066/P9Z4C9LE.
 6. **Crimmins, T.M.** and Crimmins, M.A. 2017. Plant Phenology Site Phenometrics + Accumulated Growing Degree Day Calculations for the continental United States (2009-2016): U.S. Geological Survey data release, doi.org/10.5066/F7XG9Q0X

Other Outreach Publications

1. **Crimmins, T.** Got early spring fever? *Old Farmer's Almanac Garden Guide*. In press for 2024.
2. **Crimmins, T.**, E. Posthumus, A. Rosemartin, B. Barker, and L. Coop. 2023. [Enhanced forecasts of emerald ash borer activity](#). *City Trees* Jul-Aug 2023.
3. USA-NPN National Coordinating Office. 2022. *USA National Phenology Network 2021 Annual Report*. USA-NPN Programmatic Series 2022-001. www.usanpn.org/files/npn/reports/USA-NPN_AnnualReport2021.pdf
4. Posthumus, E., **T. Crimmins**, and J.A. Santiago-Blay. 2022. [Participate in citizen science: The redbud project](#). *Life: The Excitement of Biology*. 9(1): 27-28.
5. **Crimmins, T.**, E. Posthumus, and K. Prudic. [Citizen scientists are filling research gaps created by the pandemic](#). *The Conversation*, Feb 3, 2021. Republished on [Phys.org](#), [EcoWatch](#), and other outlets.
6. USA-NPN National Coordinating Office. 2021. *USA National Phenology Network 2020 Annual Report*. USA-NPN Programmatic Series 2021-001. Primary author.
7. Crimmins, M.A. and **T.M. Crimmins**. 2021. The ebb and flow of desert rains and blooms. *Vermillion Flycatcher: Tucson Audubon Magazine*. 66:6-9.
8. USA-NPN National Coordinating Office. 2020. *USA National Phenology Network 2019 Annual Report*. USA-NPN Programmatic Series 2020-001. Primary author.
9. **Crimmins, T.** and M. Crimmins. [Spring 2020 started with a bang; how did it wind up?](#) *Nature Ecology & Evolution Community*, 16 Jun 2020.
10. **Crimmins, T.** [You can take the person out of the natural area...](#) *Springer Nature Sustainable Community*, 11 May, 2020. Reposted on [Nature Ecology & Evolution Community](#), 12 May 2020.
11. **Crimmins, T.** and L. Barnett. 2020. Tracking phenology – the timing of seasonal events – cultivates a sense of belonging. *Environmental Education* 123: 25-26.
12. **Crimmins, T.** [Citizen science programs offer great options for families affected by recent school closures](#). *Arizona Daily Star*, 26 Mar, 2020.
13. Posthumus, E.E., M.P. Miller, and **T. Crimmins**. 2020. Nature's Notebook—*A tool for recording the timing of seasonal activity of plants and animals*. U.S. Geological Survey Fact Sheet 2020–3022. 4 p., doi.org/10.3133/fs20203022.
14. Posthumus, E., **T. Crimmins**, and J.F. Weltzin. 2020. *Tracking seasonal changes to support science, natural resource management, and society*. USA-NPN Information Sheet.
15. **Crimmins, T.** [What do allergies, blueberries and the Masters Tournament have in common? Early spring](#). *The Hill*, 12 Mar, 2020.
16. **Crimmins, T.** [Spring is arriving earlier across the U.S., and that's not always good news](#). *The Conversation*, 4, Mar, 2020. Republished on [Phys.org](#), [Salon.com](#), [Fast Company](#), [EcoWatch](#), and

more.

17. **Crimmins, T.** [Reconnect with seasonal cycles to ease climate change anxiety](#). *Scientific American*, 5 Jan, 2020.
18. **Crimmins, T.** [Hanging out with plants can do us all a world of good](#). *Arizona Daily Star*, 8 Nov, 2019.
19. **Crimmins, T.** Maps can help you manage troublesome insects. Arbor Day Foundation blog, 15 Apr, 2019. <https://arbordayblog.org/uncategorized/maps-can-help-you-manage-troublesome-insects/>
20. USA-NPN National Coordinating Office. 2019. *USA National Phenology Network 2018 Annual Report*. USA-NPN Programmatic Series 2019-001. Primary author. pubs.er.usgs.gov/publication/70203369
21. **Crimmins, T.**, K. Gerst, E. Posthumus, A. Rosemartin, and J. Weltzin. 2019. *Pheno Forecasts predict seasonal activity of pest and invasive species to support decision making*. USA-NPN Information Sheet. <https://pubs.er.usgs.gov/publication/70204926>
22. **Crimmins, T.**, K. Gerst, L. Marsh, E. Posthumus, A. Rosemartin, and J. Switzer. [The USA National Phenology Network expands daily pest forecasts to twelve insect pests](#). *City Trees*. May-Jun 2019.
23. **Crimmins, T.** USA-NPN Daily Pest Forecasts Guide Timing of Pest Control Activities. *The Forestry Source*. August 2018, vol 23, no. 8.
24. **Crimmins, T.**, K. Gerst, L. Marsh, E. Posthumus, A. Rosemartin, and J. Switzer. [USA-NPN daily pest forecasts guide timing of treatment for insect pests](#). *City Trees*. May-Jun 2018.
25. **Crimmins, T.** [Growing degree day \(GDD\) maps pinpoint management windows for tree pests](#). *City Trees*. Jan-Feb 2018.
26. USA-NPN National Coordinating Office. 2018. *USA National Phenology Network 2017 Annual Report*. USA-NPN Programmatic Series 2018-001. www.usanpn.org. Primary author.
27. USA-NPN National Coordinating Office. 2017. *USA National Phenology Network 2016 Annual Report*. USA-NPN Programmatic Series 2017-001. www.usanpn.org. Primary author.
28. USA-NPN National Coordinating Office. 2016. *USA National Phenology Network 2015 Annual Report*. USA-NPN Programmatic Series 2016-001. www.usanpn.org. Primary author.
29. USA-NPN National Coordinating Office. 2016. *USA National Phenology Network Phenology Model Workshop Report*. USA-NPN Programmatic Series 2016-002. www.usanpn.org. Co-author.
30. USA-NPN National Coordinating Office. 2016. *Review Implementation Plan*. USA-NPN Programmatic Series 2016-003. www.usanpn.org. Primary author.
Crimmins, T. Ready or not, here comes autumn. WxShift blog post, 16 Sep 2015. <https://wxshift.com/news/blog/ready-or-not-here-comes-autumn>
31. USA-NPN National Coordinating Office. 2015. *USA National Phenology Network 2014 Annual Report*. USA-NPN Programmatic Series 2015-001. www.usanpn.org. Primary author.
32. Gerst, K.A., A.H. Rosemartin, E.G. Denny, C.A.F. Enquist, R.L.Marsh, D.J.P. Moore, **T.M. Crimmins**, J.F. Weltzin. 2015. USA National Phenology Network data product development framework and data product catalog, v 1.0. USA-NPN Technical Series 2015-001. www.usanpn.org.
33. **Crimmins, T.** and M.D. Schwartz. 2014. Scientists love lilacs almost as much as you do. *Lilacs*.
34. **Crimmins, T.** and D. Hartel. 2014. Timing is Everything: Phenology as a Tool for City Foresters. *City Trees*. Mar-Apr 2014. <http://read.dmtmag.com/i/271060>
35. USA-NPN National Coordinating Office. 2014. *USA National Phenology Network 2013 Annual Report*. USA-NPN Programmatic Series 2014-001. www.usanpn.org. Primary author.
36. USA-NPN National Coordinating Office. 2013. *USA National Phenology Network 2012 Annual Report*. USA-NPN Programmatic Series 2013-001. www.usanpn.org. Primary author.
37. Kellermann, J.L., **T.M. Crimmins**, E.G. Denny, C.A.F. Enquist, K.L. Gerst, A.H. Rosemartin,

- and J.F. Weltzin. 2013. *Nature's Notebook: 2012 State of the Data*. USA-NPN Technical Series 2013-001. www.usanpn.org.
38. **Crimmins, T.M.** and M.A. Crimmins. 2012. Appreciating and archiving present-day naturalists' contributions to science. *BioScience* 62:531-532.
 39. Rosemartin, A.H., **T.M. Crimmins**, and the USA-NPN National Coordinating Office development team. 2012. *An Evaluation of Observer Engagement Strategies for Nature's Notebook*. USA-NPN Technical Series 2012-002. www.usanpn.org.
 40. Kellermann, J.L., **T.M. Crimmins**, E.G. Denny, C.A.F. Enquist, R.L. Marsh, A.H. Rosemartin, J.F. Weltzin. 2012. *USA National Phenology Network 2011 Data & Participant Summary*. USA-NPN Technical Series 2012-001. www.usanpn.org.
 41. USA-NPN National Coordinating Office. 2012. *USA National Phenology Network 2011 Annual Report*. USA-NPN Programmatic Series 2011-001. www.usanpn.org. Primary author.
 42. USA-NPN National Coordinating Office. 2011. *USA National Phenology Network 2010 Annual Report*. USA-NPN Programmatic Series 2011-003. www.usanpn.org. Primary author.
 43. Posthumus, E. and **T. Crimmins**. 2011. *Nature's Notebook: A Tool for Education and Research*. *Bulletin of the Ecological Society of America* 92:185-187. dx.doi.org/10.1890/0012-9623-92.2.185
 44. Enquist, C., **T. Crimmins**, and L. Marsh. 2011. "The USA National Phenology Network: A Partner for Tracking the Impacts of Climate Change on Natural Resources in the Southwest and Beyond." *Sky Islands Alliance Newsletter*, Summer 2011.
 45. **Crimmins, T.** and E. Posthumus. 2011. "Join the USA National Phenology Network in Tracking Plants and Animals in Your Own Backyard!" *The Plant Press*, Winter 2010/11. Online: <http://www.aznps.com/documents/2011.02.PP.pdf>.
 46. Rosemartin, A., E. Posthumus, and **T. Crimmins**. 2010. "A National Observation and Information Management Network for Phenology." *LTER Network News*, 21 December. Online: <http://news.lternet.edu/article2263.html>.
 47. **Crimmins, T.M.**, A.H. Rosemartin, R.L. Marsh, E.G. Denny, C.A.F. Enquist, J.F. Weltzin. 2010. *USA National Phenology Network 2010 Data & Participant Summary*. USA-NPN Technical Series 2011-001. www.usanpn.org.
 48. **Crimmins, T.M.**, A.H. Rosemartin, K.A. Thomas, R.L. Marsh, E.G. Denny, J.F. Weltzin. 2010. *USA National Phenology Network 2009 Data Summary*. USA-NPN Technical Series 2010-002. www.usanpn.org.
 49. Thomas, K.A., J.F. Weltzin, E. Denny, A. Miller-Rushing, **T.M. Crimmins**, and A. Rosemartin. 2010. *The National Phenology Monitoring System, v0.1*. USA-NPN Technical Series 2010-001. www.usanpn.org.
 50. USA-NPN National Coordinating Office. 2010. *USA National Phenology Network 2009 Annual Report*. USA-NPN Programmatic Series 2010-001. www.usanpn.org. **Primary author.**
 51. **Crimmins, T.M.**, A.H. Rosemartin, A. Lincicome, J.F. Weltzin. 2010. *USA National Phenology Network 2009 Observer Survey Report*. USA-NPN Technical Series 2010-003. www.usanpn.org.
 52. **Crimmins, T.** and K. Waser. "Making Simple Rainwater Harvesting Strategies Accessible: An Online Learning Module Unveiled." *Backyards & Beyond*, Fall 2009.
 53. **Crimmins, T.** and M. Crimmins. "The Critical Role that Citizen Scientists Can Play in Identifying Adaptation Strategies." *Arid Lands Newsletter*, June 2008. Online: <http://ag.arizona.edu/OALS/ALN/aln60/crimmins.pdf>
 54. Havens, K., P. Vitt, J. Schwartz, B. Orr, and **T. Crimmins**. "Chicago Botanic Garden's conservation and outreach efforts on climate change." *BGjournal* 4(2):13-16.
 55. **Crimmins, T.** "Five Miles & Twenty Years Later... Dave Bertelsen's Amazing Data Set." *Sky Islands Alliance Newsletter*, Summer 2007.