2020 AFWA Climate Adaptation Survey

A Review of Activities at State Fish and Wildlife Agencies

A report for the AFWA Climate Adaptation Committee. Prepared by Maggie Ernest Johnson, Climate Adaptation Program Manager, Association of Fish and Wildlife Agencies.

INTRODUCTION

Since 2012, the Association of Fish and Wildlife Agencies has surveyed state and territorial fish and wildlife agency members on their climate adaptation efforts. These surveys are typically done on a biennially basis and are meant to provide a snapshot into the needs, gaps, challenges, and opportunities our members see in addressing climate change impacts to fish, wildlife, and natural resources.

A survey was sent to the state and territorial fish and wildlife agencies in May and June of 2020. The responses expressed come from those within an agency that are generally considered to be the climate change point of contact. In cases when there is no such person, a program manager typically completes the survey. Occasionally, agency leadership may complete the survey too. Agencies are not limited to one response. Survey feedback is not analyzed on an agency by agency basis, this report is meant to capture national-level trends. In some cases, regional-level priorities are reported as well. Sixty-seven individual responses were received, representing 45 states and one territory. Agencies that did not respond included Colorado, Iowa, New York, Ohio, Oklahoma, District of Columbia, and Puerto Rico. Two respondents did not identify their state or territory but did identify which region they were associated with, including the northeast and southeast. This report briefly summarizes the findings of this survey.

Some caveats to note are that this survey was not designed by a social scientist and should not be used for quantitative purposes. The survey is meant to highlight national-level trends. Many questions allowed respondents to select multiple choices, and as such, percentages relate to the number of respondents per question and do not relate between individual question choices.

AGENCY BACKGROUND ON CLIMATE

Nearly sixty percent of respondents identified as a staff scientist/specialist or manager. Most respondents work directly on or are most familiar with forests (51%), wetlands (43%), and inland water (42%) systems.

Most respondents indicated they have observed impacts to their area (90%) or agency (76%) from climate change or that their agency has considered climate change impacts (85%). There is a steep decline, however, across all regions when asked if the agency has adjusted regulations because of climate impacts (30%).

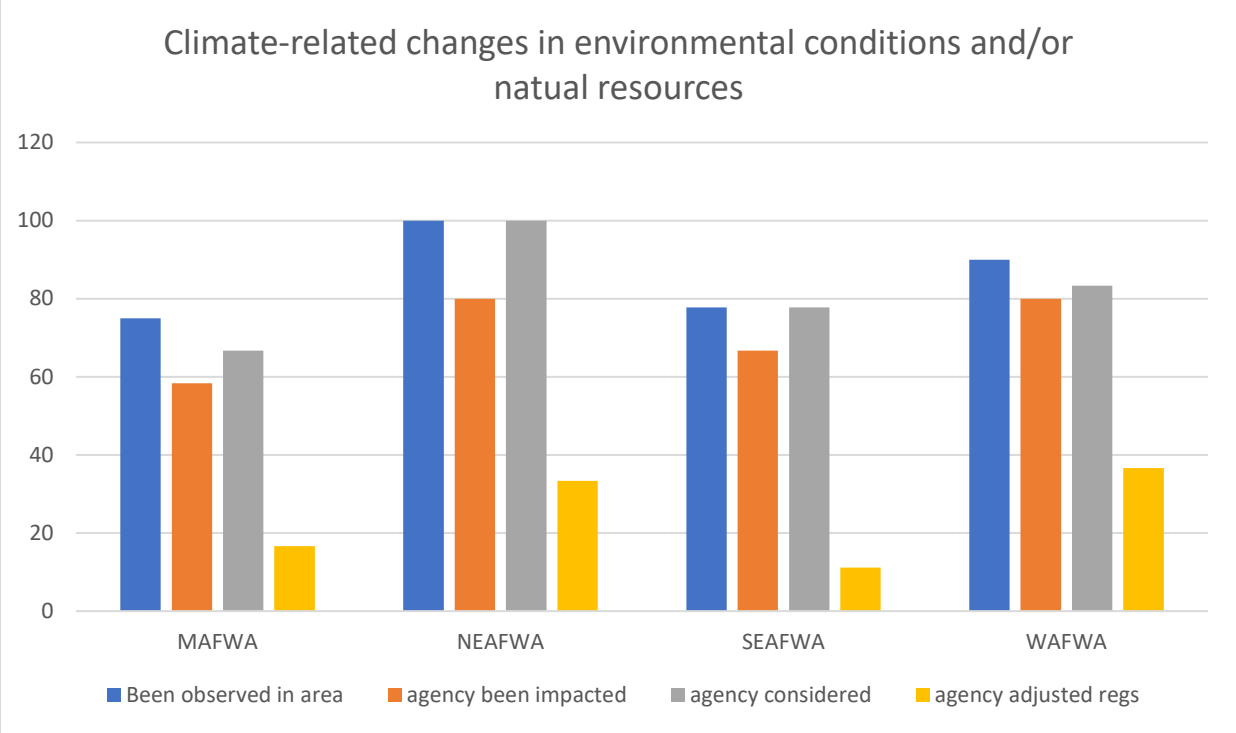

Figure 1. Percent of perceived climate-related changes in environmental conditions and/or natural resources as reported by each region: Midwest Association of Fish and Wildlife Agencies (MAFWA), Northeast Association of Fish and Wildlife Agencies (NEAFWA), Southeast Association of Fish and Wildlife Agencies (SEAFWA), and Western Association of Fish and Wildlife Agencies (WAFWA).

Respondents ranked (most concern = 1) their agency's top concern regarding climate-related changes in environmental conditions. Nationally, the top concern was changing amount or timing of precipitation. Regionally, these concerns varied with the Midwest most concerned with too much water, the Northeast concerned with increasing temperatures, the Southeast concerned with sea level rise, and the West split between too little water and changing amount or timing of precipitation.

Top concerns for climate-related changes in environmental conditions

	Too little water (e.g. Drought)	Too much water (e.g. Flooding)	Sea level rise	Fire	Increasing temperatures	Loss of sea ice or snowpack	Changing amount or timing of precipitation	Extreme weather	Ocean acidification and/or deoxygenation
MAFWA	3.7	**2.1**	8.0	5.2	4.5	6.0	2.9	3.4	7.5
NEAFWA	5.2	3.9	3.0	7.3	**2.8**	6.6	3.5	4.5	7.0
SEAFWA	3.5	2.7	**2.6**	5.7	4.5	7.3	3.8	4.1	6.6
WAFWA	**3.0**	5.7	6.9	3.9	3.5	4.8	**3.0**	5.4	4.8
National	3.8	4.2	4.6	5.2	3.6	5.8	**3.3**	4.6	5.9

Figure 2. Rank scores for concern over climate-related changes in environmental conditions by region. Most concerned = 1, least concerned = 9.

Regarding respondent's perspective on their agency's top concern for climate-related impacts on natural resources, changing species distributions and invasive species were tied as the highest concern. As expected, these also varied regionally with the Midwest concerned with invasive species, the Northeast concerned with changing species distributions, the Southeast split between changing biodiversity and changing species distributions, and the West concerned with changing population sizes.

Top concerns for climate-related impacts on natural resources

	Changing productivity	Changing biodiversity	Changing phenology	Changing species distributions	Changing population sizes	Invasive species	Changing commercial or recreational opportunities
MAFWA	3.6	3.3	4.9	3.3	3.6	**2.0**	5.5
NEAFWA	5.5	3.3	4.4	**2.8**	4.1	3.5	4.4
SEAFWA	4.6	**3.2**	4.6	**3.2**	3.8	3.4	4.6
WAFWA	3.8	3.9	4.4	3.1	**2.9**	3.2	5.7
National	4.4	3.6	4.6	**3.1**	3.4	**3.1**	5.1

Figure 3. Rank scores for concerns over climate-related impacts on natural resources by region. Most concerned = 1, least concerned = 7.

While roughly half of respondents indicated that staff are encouraged to take external climate-related training (52%), only 12 percent reported having internal climate-related training available. No respondents reported that staff are required to take climate-related training. Nearly half of respondents reported that no climate-related training is available to staff (48%).

Most staff time is allocated to learning, educating others, and/or capacity building (51%); assessing climate impacts and conducting vulnerability assessments (46%); or adaptation planning or developing management responses to climate impacts (60%). Less time is focused on on-the-ground implementation (26%) and monitoring the effects or effectiveness of climate adaptation actions (20%). Nearly thirty percent reported that no staff time has been allocated for incorporating climate information and adaptation planning into the agency's programs.

As indicated in previous surveys, lack of funding (75%) and/or lack of staff time and capacity (88%) were identified as the top barriers which have inhibited development or implementation of agency efforts to adapt to climate-related changes. Many of the comments provided identified additional barriers of political constraints or lack of agency leadership.

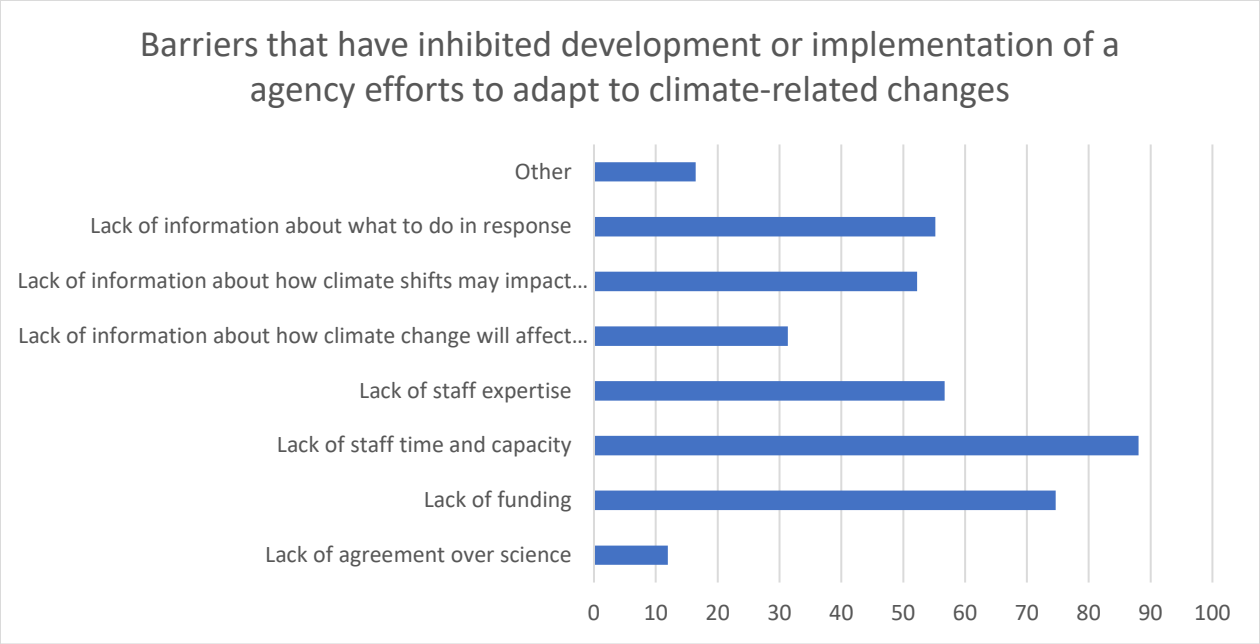

Figure 4. Barriers that respondents cited as having inhibited development of implementation of agency efforts to adapt to climate-related changes. The 'other' category included open-ended responses, many of which pointed to political constraints or lack of agency leadership.

Most respondents reported that their state does not have a comprehensive climate change plan (57%). For those that reported that they do, roughly three quarters felt that their agency was involved or provided input so that fish, wildlife, and natural resources were represented in the plan. Of note, several respondents that indicated their state did not have a comprehensive climate change plan did point out that their State Wildlife Action Plan or other similar plans include climate change considerations.

Nearly 78 percent of respondents identified that they work most closely with the water resources sector. Agriculture (37%), Energy (32%), and Transportation and Infrastructure (30%) were also identified as most likely cross-sector collaborators with their agency. The Housing and Urbanization sector came in last with less than eight percent of respondents identifying that they work closely with this sector.

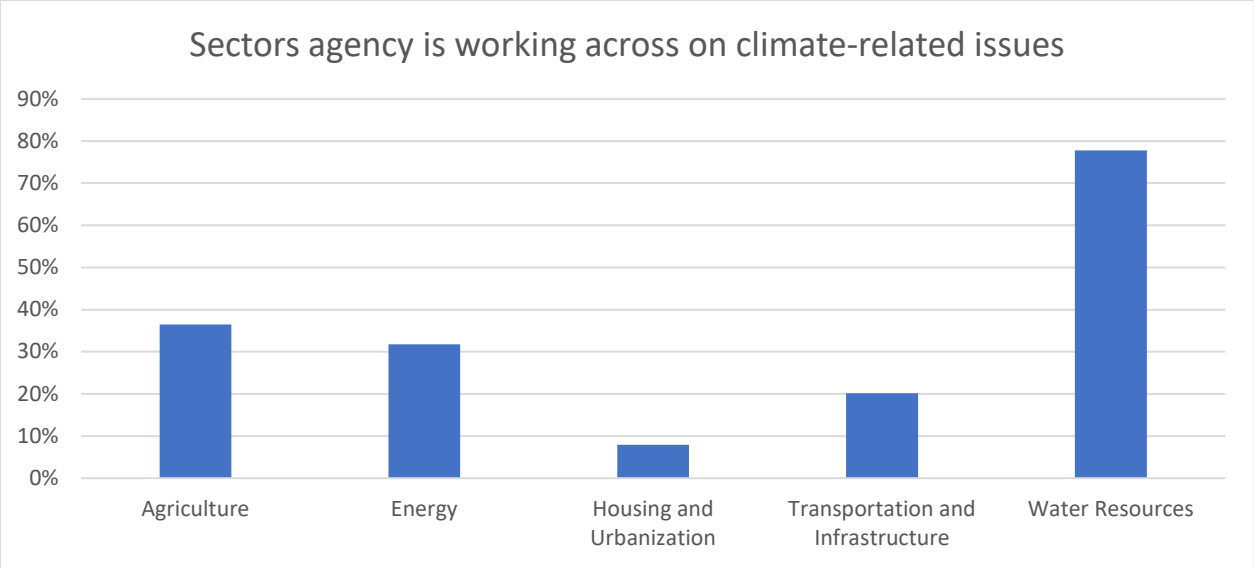

Figure 5. Cross-sector engagement with agencies on issues related to climate change and climate adaptation.

Regarding climate-related activities that agencies have implemented or are planning to implement, management plans such as SWAPs (82%), species- or habitat-specific vulnerability assessments (55% and 53%, respectively), and on-the-ground adaptation (49%) were the top reported. On-the-ground adaptation refers to conservation projects that are intentionally responding to climate-related changes or impacts. The Northeast and West reported implementing or planning to implement climate-related activities the most.

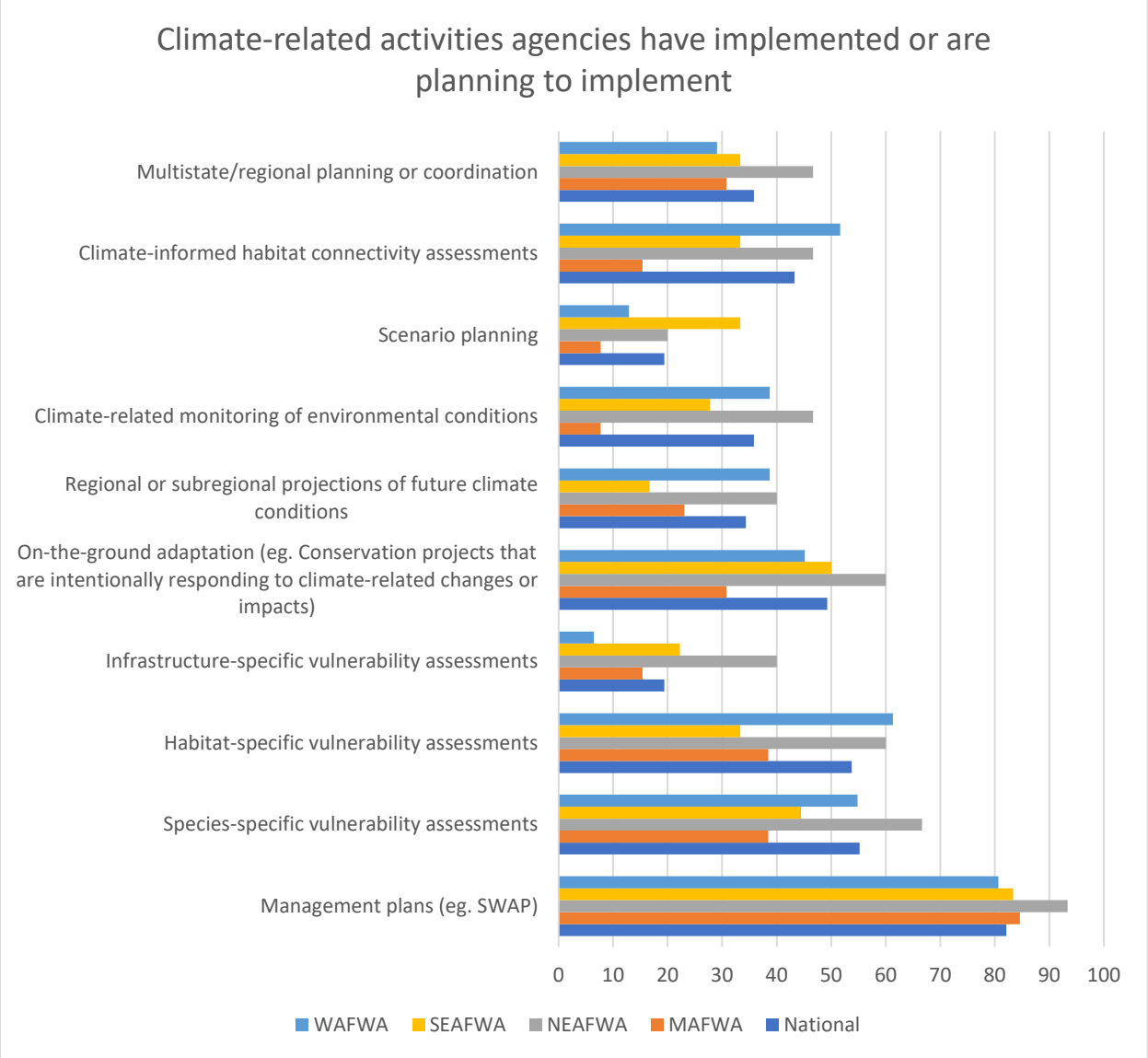

Figure 6. Climate-related activities an agency has implemented or is planning to implement. National and regional level activities identified.

Nearly three quarters of respondents reported that they are not actively tracking conservation actions that are taken intentionally to respond to climate-related change or anticipated changes in natural resources. Over half (56%) of respondents reported that their agency is actively tracking conservation actions that were not intentionally responding to climate-related changes but have known impacts from climate change. In this case, common themes in tracking related to prescribed burning, habitat restoration, infrastructure, fisheries management, and water management.

While SWAPs use a 10-year planning horizon, most climate-related impacts and responses go well beyond 10 years. When asked to what extent the agency is looking at outcomes beyond this 10-year scope, roughly half of respondents indicated that they are looking beyond this timeframe. Most reported using a mid-century timeframe in the 2040-2050 range.

Since 2012, the National Fish, Wildlife, and Plants Climate Adaptation Strategy (Strategy) has guided natural resource managers on climate-related actions for fish and wildlife management. Regarding the implementation of Strategy goals, Goal 1 (conserve and connect habitat) and Goal 2 (manage species and habitat) were cited as the goals the agency is most actively implementing (87% and 95%, respectively). This tracks closely to previously reported surveys. Of note, at least half of all respondents indicated all the goals were being actively implemented except for Goal 3 (enhance management capacity; 35%).

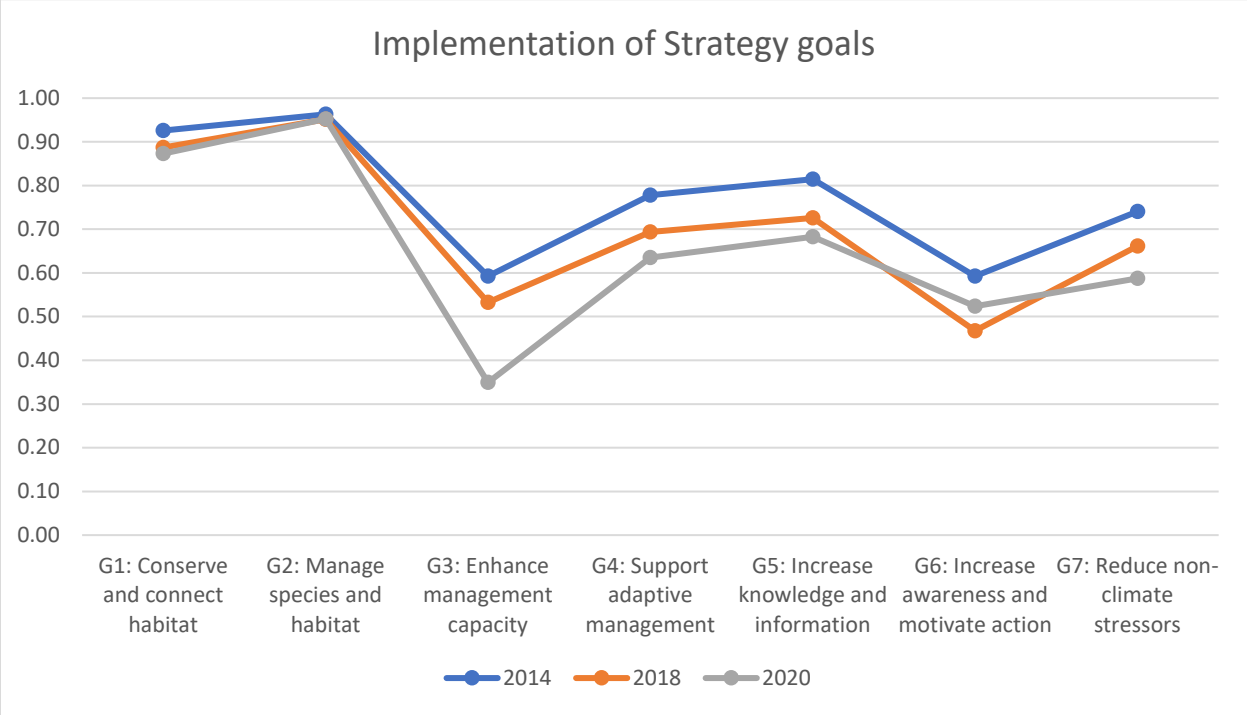

Figure 7. Goal implementation of the National Fish, Wildlife, and Plants Climate Adaptation Strategy as reported over previous years. This question was not asked in 2016.

In an open-ended question, respondents were asked what ways they would like to see their agency incorporate climate-related changes into its operations or policies. Fifty-nine respondents provided feedback. While there was a wide range of recommendations, two common themes were noted. The first is the need to enhance staff capacity through training and/or the hiring of climate adaptation specialists. The second is the desire to see climate change better integrated into the decision-making process. For example, creating a policy that mandates that climate change is considered in all management decisions was identified as a possible way of doing this.

CLIMATE INFORMATION AND NEEDS

By far, respondents indicated that they get their climate-related information from USGS (88%). Other top places included academic institutions (74%), peer-reviewed journals (68%), and NOAA (63%).

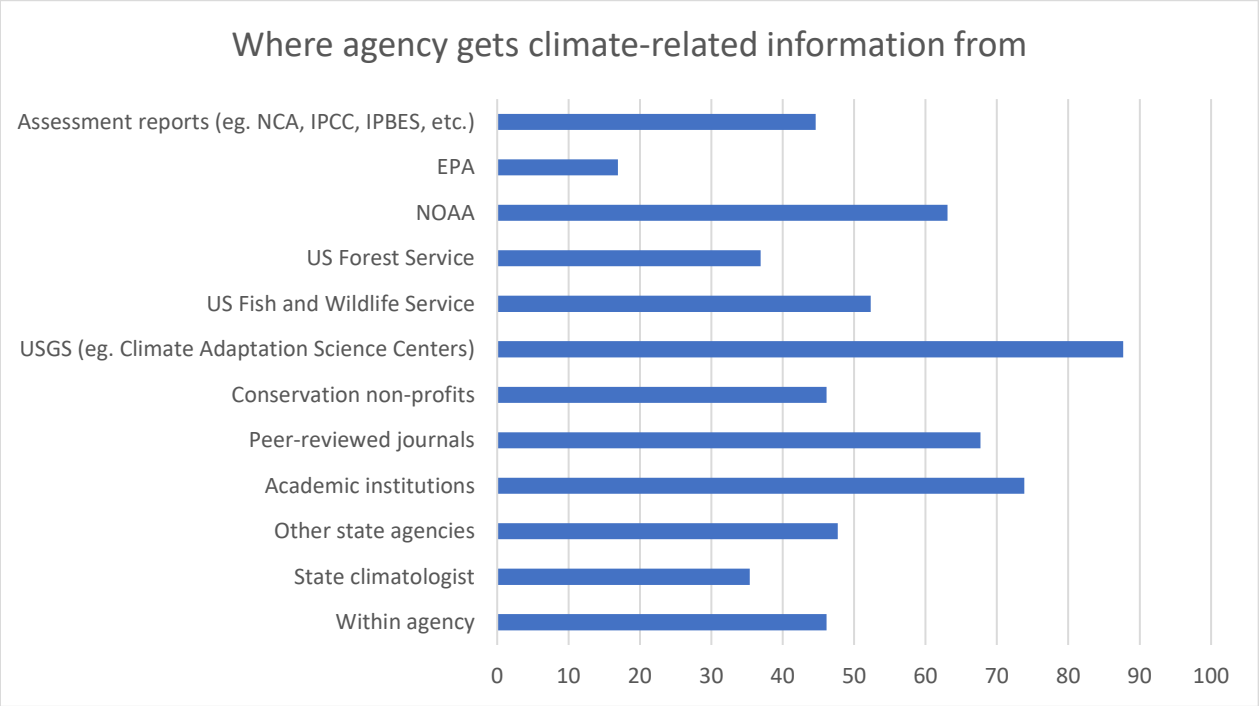

Figure 8. Where agencies are getting climate-related information from as reported by respondents.

Best management practices under expected future conditions was reported as the top product or information that would be most helpful to the respondent's agencies (67%). Additionally, examples of successful adaptation implementation (61%) and climate impacts on specific species or habitats (61%) were also identified as helpful products or information. Preferred mechanisms for accessing information included webinars (75%), workshops/in-person trainings (67%), and online resources, such as databases (49%).

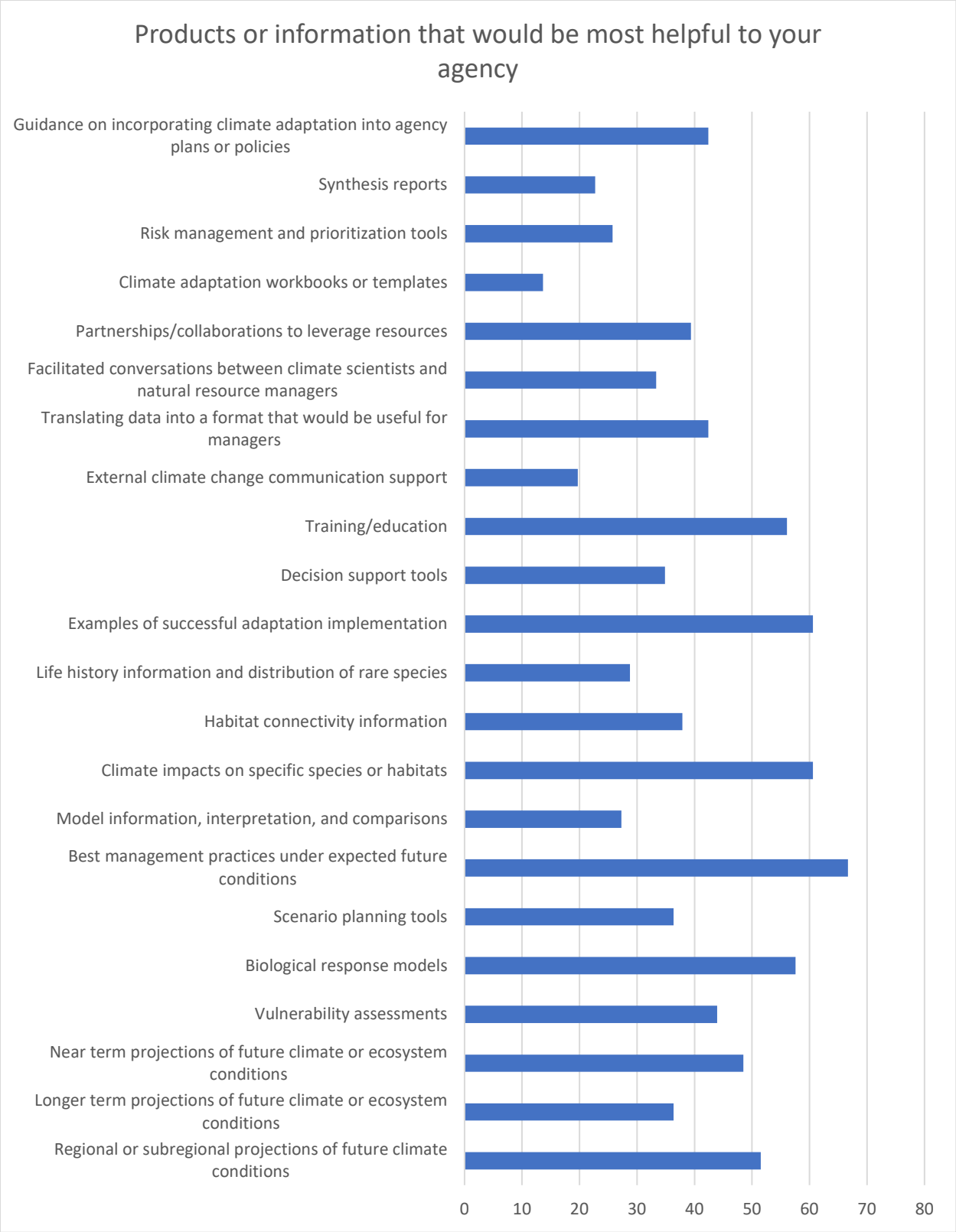

Figure 9. Products or information respondents reported as being most helpful to their agency in addressing climate change impacts.

Respondents reported that their agencies' high priority climate-related information needs include invasive species movement and range expansion (58%), species vulnerability (51%), and water quality/quantity (46%).

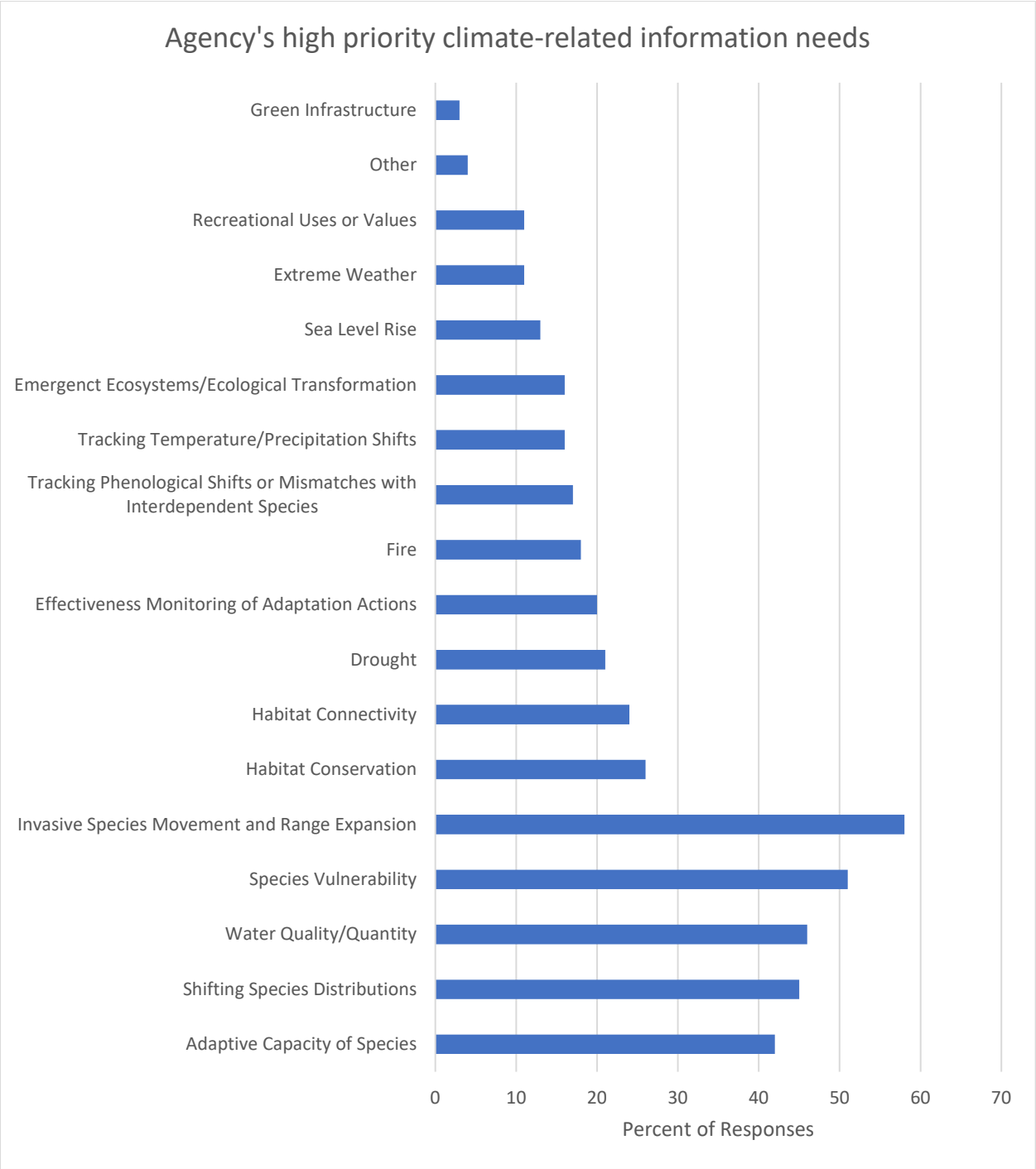

Figure 10. High priority climate-related information needs as reported by respondents.

The Association of Fish and Wildlife Agency's Climate Adaptation Committee works to address the needs of state agencies on their climate adaptation related efforts. When asked what the committee can be doing to better support the agency's ability to incorporate climate-related information into its activities, there was a broad range of responses by fifty-three individuals. Two common themes were enhancing science delivery and better engaging agency leadership in discussions around climate change.

CONCLUSION

As found in years past, state and territorial agencies continue to respond to climate change impacts on fish, wildlife, and natural resources. While there is growing recognition and urgency to address these changes, agencies still confront several barriers to advancing adaptation actions. Among these include lack of funding, staff capacity and expertise, and political constraints. Partner organizations, such as the Association of Fish and Wildlife Agencies, should use these report findings to better serve agencies needs and challenges.

For more details on survey data, contact mjohnson@fishwildlife.org.