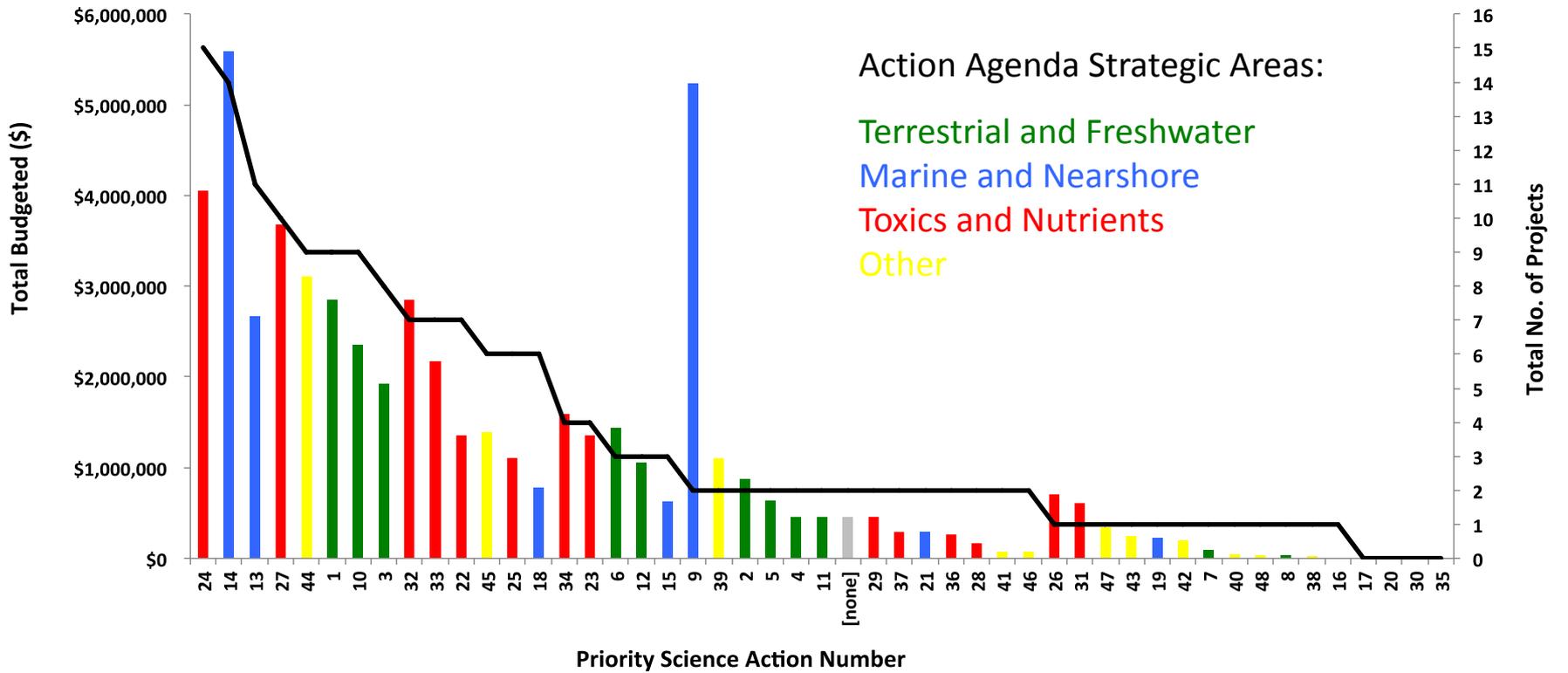


Update on 2014-16 Biennial Science Work Plan



1. Updates on development of the 'staff draft' of the 2014-16 BSWP

- Summary of the conference call among SP members about the first draft:
 - consensus that the doc was generally suitable; recommendations were:
 - not to take anything out,
 - add text about the need for synthesis;
 - ensure the text does not imply that recovery can be engineered;
 - add to the Executive Summary comments made in Part IV about Adaptive Management.
- the suggested approach of using 'Implementation Strategies' to identify research priorities was generally approved, but members agreed that a case for greater emphasis on Adaptive Management should be made in the next State of the Sound, rather than this BSWP.
- Report salient details of the meeting at EPA on April 3, 2014.
- Report current status of the 'staff draft'.
 - All comments and feedback to date have been attended to.
 - Sections on 'PSA orphans', Ocean Acidification, forage fish have been completed.
 - Forage fish recommendations upgraded to priority research because they were the product of an expert workshop.

2. Topics that staff and Panel members have identified as issues to resolve in developing the final 2014-16 BSWP:

- The problem of selecting research priorities for 2014-16 from shortlisted 'candidates' in Part III.
- Members endorsed the suggested approach of using separate 'Recovery Groups' to develop 'Implementation Strategies' for each target. What action should be taken on this issue in the coming biennium?
- While most agreed with the notion that the scope of the recovery strategy should be narrowed, there was no discussion about *how* this could be achieved.

3. Discuss staff and Panel member next steps in engaging the science community, stakeholders, and Partnership boards in review of the draft 2014-16 BSWP

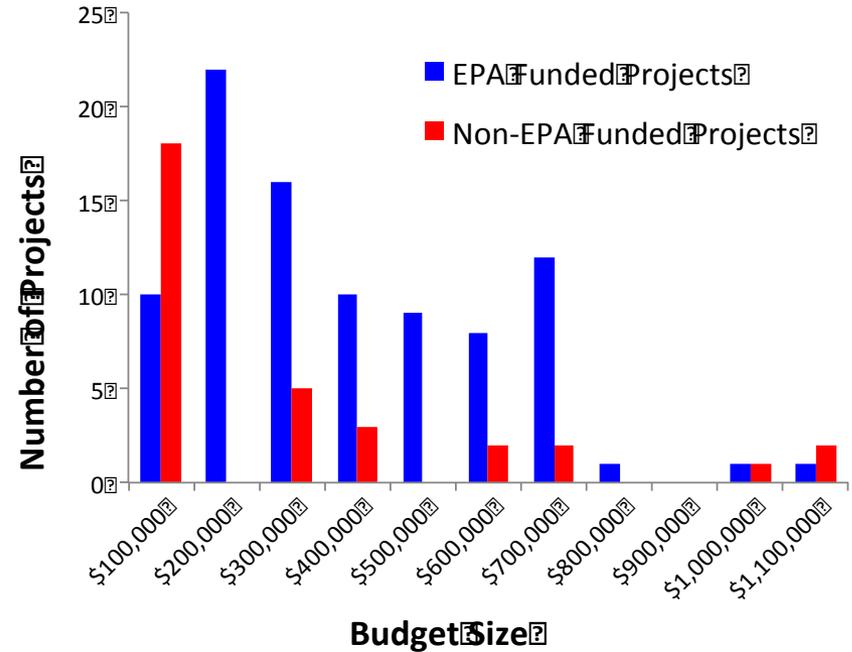
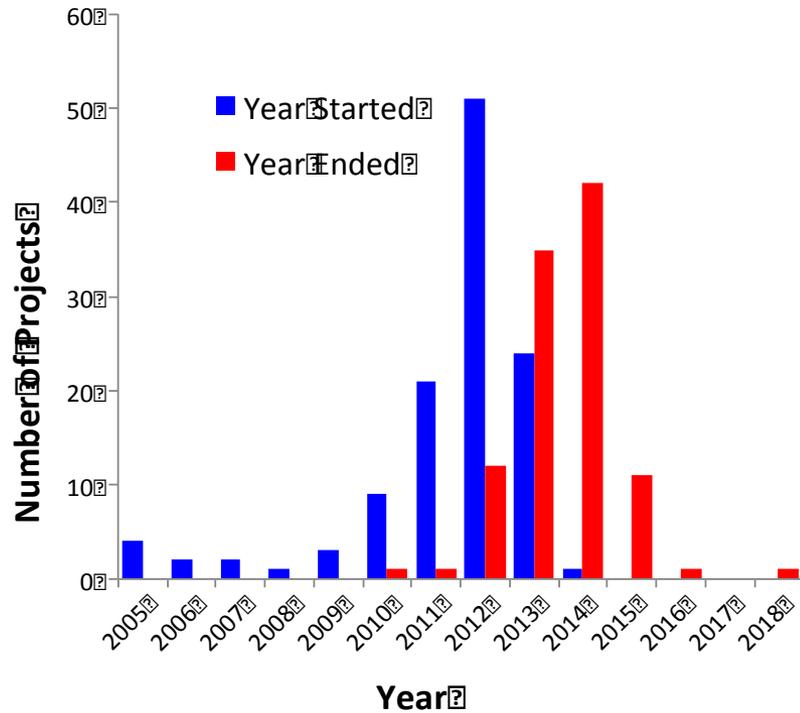
- BSWP 'staff draft' is currently open to review
- Presentations to stakeholder community, ECB, and LC

Statute requires BSWP to address four areas:

- I) assess how well ongoing research is addressing decision-critical uncertainties relating to the recovery of Puget Sound;
- II) identify additional science needs for recovery;
- III) make recommendations for priority science actions in the coming biennium;
- I) suggest how science can better support recovery.

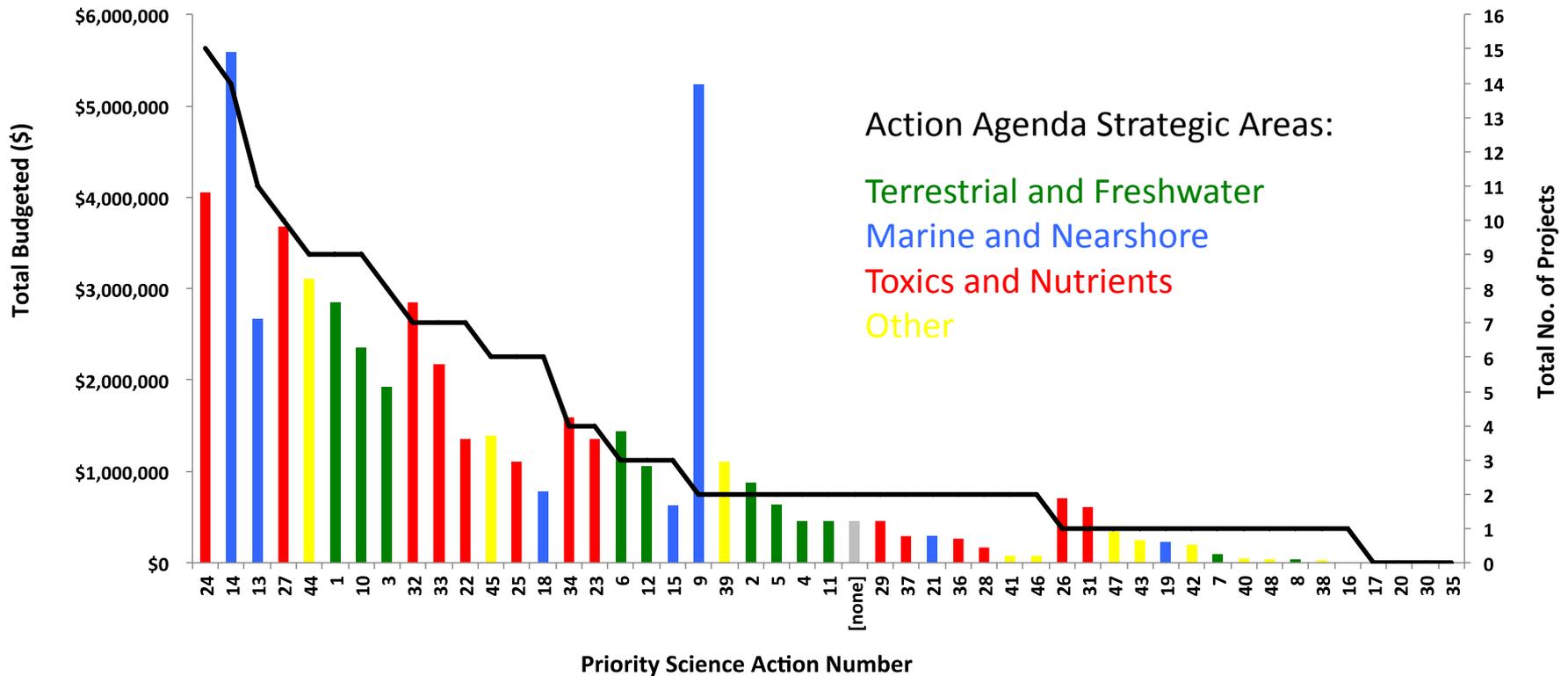
BSWP Part I. Assessment of ongoing and recently completed research

Inventory of Projects



- Total number of projects: > 181
- Half of them funded by EPA
- Survey period: roughly 2009-2016
- Total expenditure: > \$50 million, or > \$7 million per year

Distribution of research projects among 48 'decision-critical' *Priority Science Actions*



- No clear over-emphasis on any one AA strategic area
- Coverage of PSAs by projects was uneven; some PSAs received little or no attention
- Conclusion: ongoing recovery science does broadly address decision-critical priorities *as they are stated in the 2011-13 BSWP*.
- HOWEVER, PSAs lacked criteria by which to judge when they have been attained. Thus, it is difficult to evaluate progress, or determine when a PSA can be removed from the list. Consequently, the list of PSAs can grow, but cannot shrink.

BSWP Part II: Description of recommended studies

- 87 recommendations were received from individuals.
- To these were added recommendations from four reports:
 - the Blue Ribbon Panel's 2012 report on Ocean Acidification (19 research priorities),
 - an expert panel on forage fish (7 research priorities),
 - a workshop intended to list candidate priorities for research in social sciences (8 candidates).
- The total number of recommended studies was 121, the largest proportion focusing on marine and nearshore issues.
- Research recommended by expert, consensus-building processes like the OA panel and the forage fish workshop are automatic candidates for priority status. However, selection of candidates for research priority status from individual recommendations, and from the list of social science candidates, requires an equivalent consensus-building process that currently is not available.

BSWP Part III: Research priorities for the next biennium

Candidates for research priorities in the next biennium include:

- The five PSAs that were not assigned projects and / or funds in Part I;
- A subset of 11 recommendations from 19 in the report by the Blue Ribbon Panel on Ocean Acidification;
- 7 recommendations from a report on forage fish;
- 8 candidate recommendations from a report on research priorities for social sciences;

In principle, all of the original 48 PSAs remain on the list of research priorities for the next biennium, because none could be eliminated on the grounds that their objectives had been met.

Weaknesses

- Recovery progress in Puget Sound may be imperceptible because capacity and resources are spread too thinly over too many targets and across too large an area for recovery gains to be detectable.
- The imagined impact of >181 research projects focusing on such a diverse array of recovery priorities generates expectation that we will have a clearer vision of how recovery should proceed, and a better understanding of why recovery progress has been slower than expected. The fact that we currently have neither amplifies the need for advances in discovery that arise from research to be more directly and efficiently applied to the recovery of Puget Sound.
- The problem of not progressing towards recovery targets is compounded by not knowing *why*. There is pressing need to better understand the effectiveness of recovery actions.
- Adaptive Management (AM) is the favored approach by which progress towards recovery can be made under uncertainty. In Puget Sound, however, AM has been adopted as the default approach, but applied in a patchy and incomplete manner, partly because of insufficient resources.

A way forward:

- **Implementation strategies:** Recently renewed support has been for creation and application of 'implementation strategies' for each recovery target includes the Science Panel. These yield conceptual models that describe the mechanistic theories and causal pathways by which recovery targets are expected to be attained. Their creation is a key step in the AM programmatic cycle. They catalyze progress by making assumptions explicit, promoting coordination, facilitating adaptation, and ensuring continuity. They should relieve many of the difficulties relating to identification and selection of decision-critical research that were highlighted earlier.
- **Parallel processing:** In Puget Sound's recovery program, many implementation strategies have been sketched, but not completed or applied, largely because resources and therefore capacity were lacking to tackle so many at once. Completion of implementation strategies by a separate 'Recovery Group' for each target would allow application of AM to proceed 'in parallel' for each target. The Science Panel also endorses this approach, recognizing that Recovery Groups will need appointment, guidance, management, coordination, and funding. Subsequent to the completion of implementation strategies, funds not only for recovery research but also for implementation of actions should be awarded to proposals that explicitly address topics featured in implementation strategies, and specify how recovery will be advanced.