WDFW Science Enterprise

Enterprise: A systematic, purposeful activity that requires boldness and energy

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Agenda

History of Science Programs at WDFW

What Questions Drive Our Science

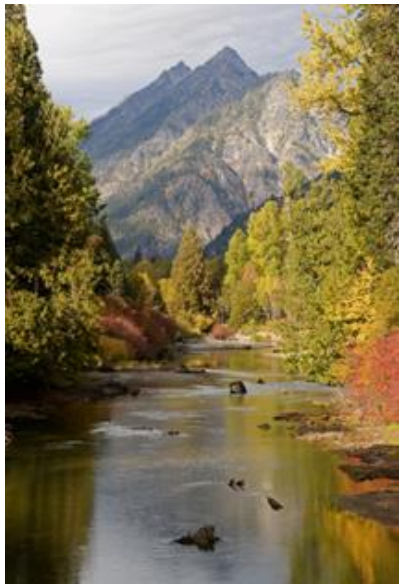
Striving for Scientific Integrity

Science informing Policy

1930's - 1999 Science at WDFW

- Prior to current configuration, scientific efforts occurred in small clusters across the agency
- Agency scientists/biologists conducted studies as time and resources allowed
- Little known about the process, i.e., study questions, methods and review
- Much work published in agency reports, rather than journals
- Substantial work on fish genetics and health compared to other topics

Science Divisions Established in 1999

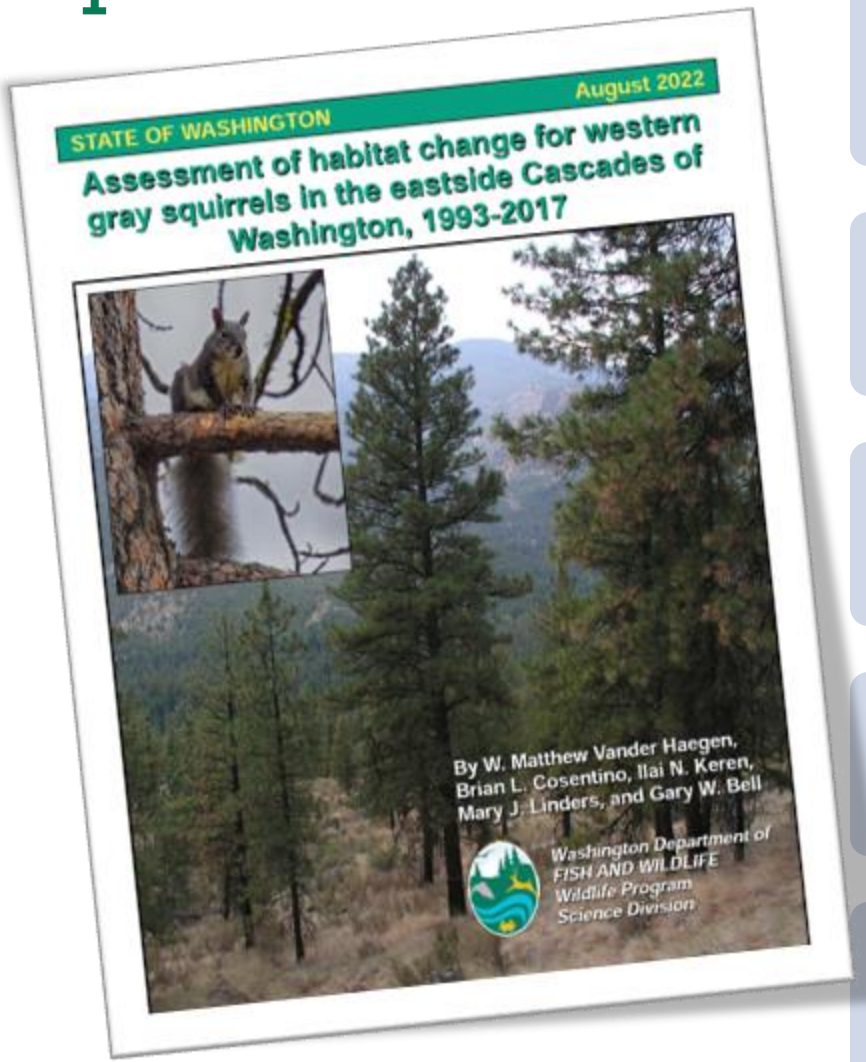


- Science Divisions created in Fish, Wildlife, and Habitat Programs and managed by a Chief Scientist
- Chief Scientists are responsible for guiding the Science Enterprise in their Programs
- Implement *adaptive management* programs to measure Program success
- Facilitate collaborative research studies within and across Programs
- Set standards for internal review of study designs, (question, methods, analysis) and manuscript reviews
- Hired two social scientists in 2021 – more to come

Evolution of WDFW's Science Enterprise post 1999

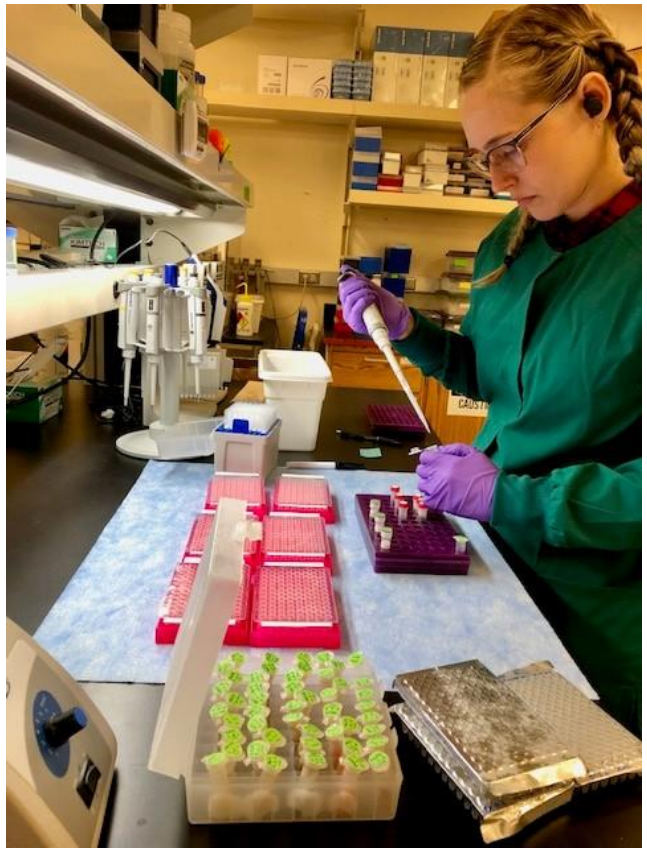
- Policy 5004: Conservation Principles 2018-19: Science Team and EMT
- Policy 5408: Addressed the Risks of Climate Change: Science Team and EMT
- WDFW hired a librarian/historian and fully funded the NRB (now DFW) Library: Science Team and EMT
- 25-Year Strategic Plan (2020-2045): Science Team and EMT
- Evidence of a substantial increase of peer-reviewed publications in Fish and in Wildlife related journals

Science Programs: Inform WA most pressing F&W & H questions

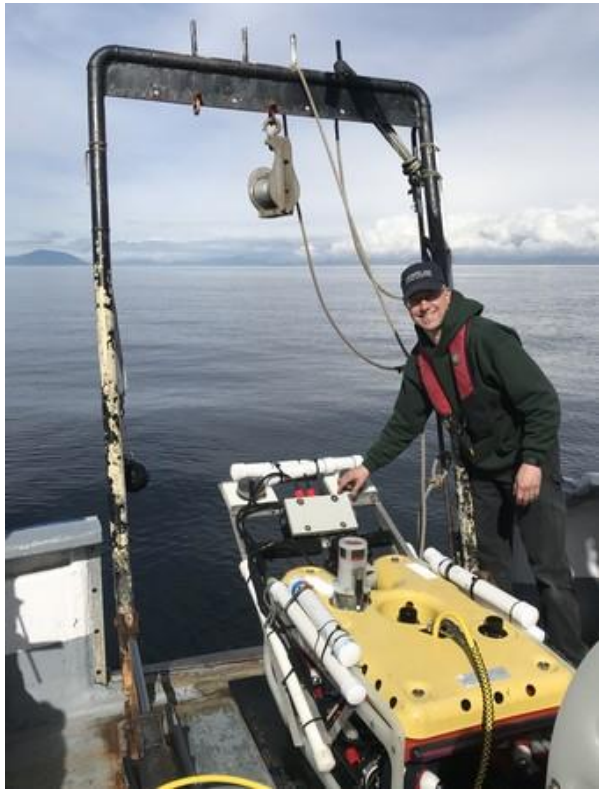


- Be the headlights for managers/policy makers
- Inform existing resource management questions and policy options
- Develop standards for designing and collecting data
- Characterize risk and uncertainty
- Provide adaptive management tools, expertise, and programs

Leveraging Technology Across Science Programs

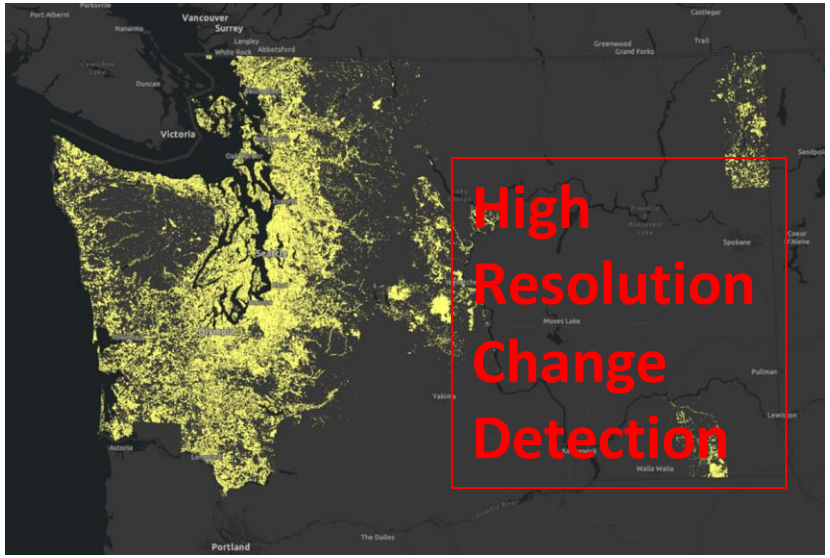


Genetics Lab technician, Morgan Mager, prepares DNA libraries for genotyping.



Seaeye Falcon, a Remotely Operated Vehicle in Marine Fish Science Unit.

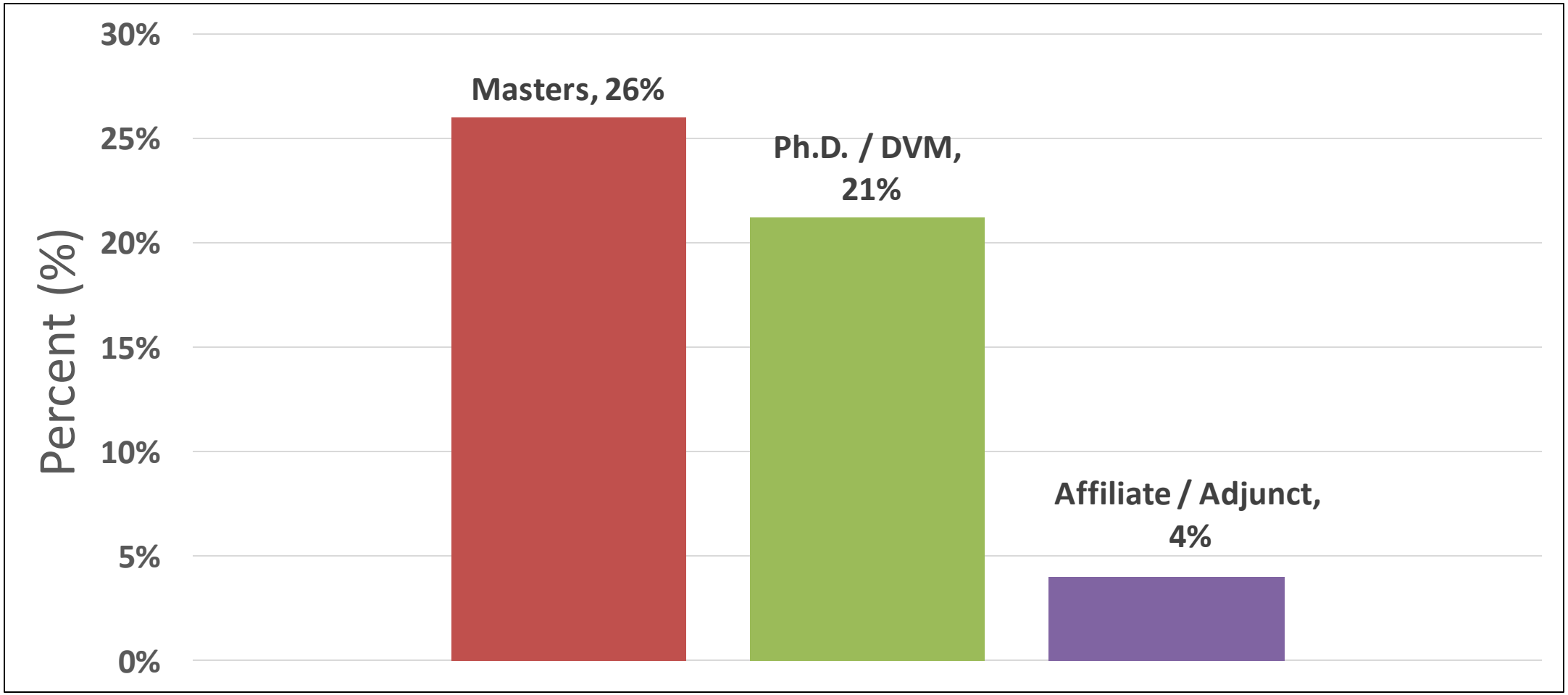
Habitat biologist George Fornes flies a drone near the North Fork of the Toutle River.




Population Ecologists
Climate Scientist
Listed Species Scientists
Restoration Scientists
Hatchery Evaluators
Terrestrial Scientists
Data/GIS Scientists
Landscape Scientists
Geneticists
Marine Scientists
Social Scientists
Fish & Wildlife Health

Advanced Natural Science Degrees and University Appointments

(In Fish, Wildlife, Habitat, Social Science Divisions n = 250)



HOW WE STRIVE FOR SCIENCE INTEGRITY – STARTS WITH A DEFINITION OF SCIENCE INTEGRITY

The adherence to professional practices, ethical behavior, and the principles of honesty and objectivity when conducting, managing, using the results of and communicating about science. Inclusivity, transparency, and protection from inappropriate influence are hallmarks of scientific integrity (*National Science and Technology Council, 2023*)

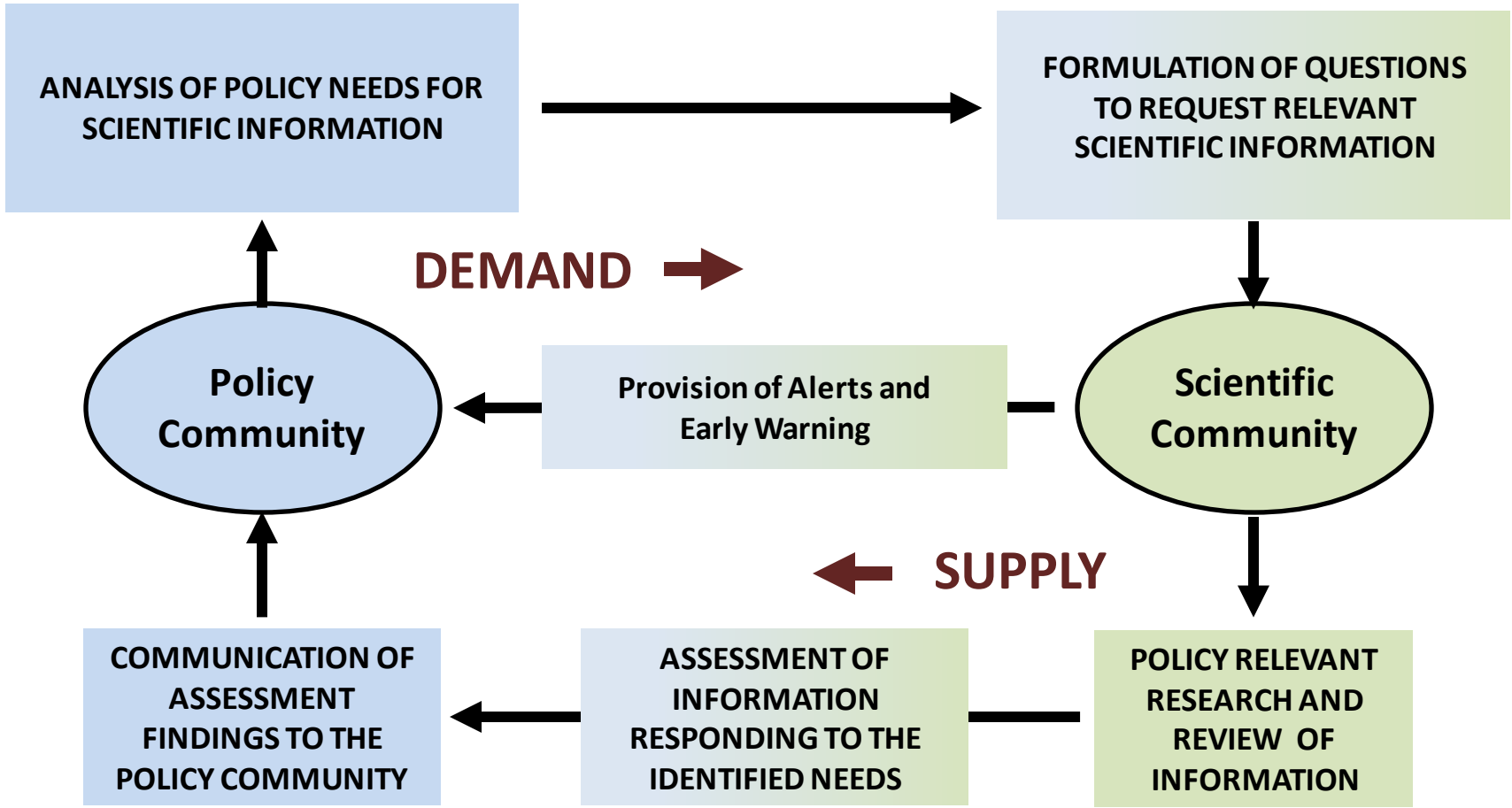
Scientific Integrity is Important at WDFW

"Nevertheless, adherence to a methodology that minimizes subjectivity … is perhaps the greatest distinction between the scientific and nonscientific …arguments in policy decisions. This claim to objectivity is the basis for the public authority entrusted to science and for the privileged role science plays in informing policy." (Tauber 1999)

How We Strive for Scientific Integrity

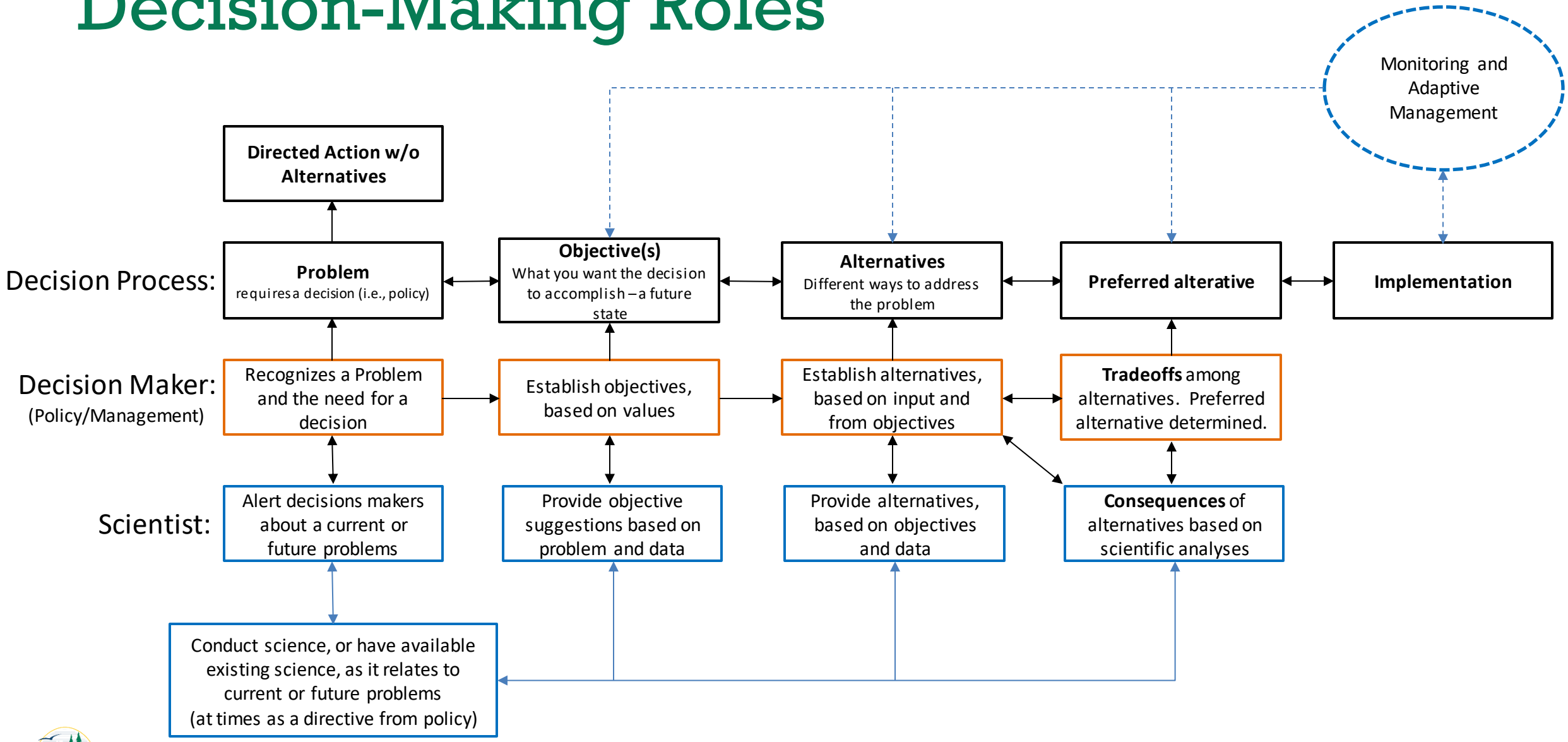
- Chief Scientists are largely responsible for ensuring scientific integrity
- Follow the Code of Ethics for the Ecological Society of America as amended in 2021
- Strong internal checks and balances throughout the development of scientific studies and reviews
- Peer Review process – internal, WSAS, publication
- Use SPI to highlight role of science in decision making as distinct from values
- Collaborate with university, college, state, and federal scientists
- Encourage publishing of scientific findings
- Hire highly qualified scientists

Science – Policy in Conversation



From: IUCN Information Paper on IPBES – March 2010

Decision-Making Roles



Gee Whiz, I didn't know we did that!

- **WDFW is a leader** in conservation social sciences compared to other natural resources agencies.
- **C*limate Adaptation Leadership Award for Natural* Resources** for the development and implementation of the climate-adaptive culvert permitting program.
- **Molecular Genetics Lab**: Serve as world-wide genetic experts for providing interpretation of genetic data and genetic studies.
- **Toxics Biological Observation System (TBiOS)**: Assessing effects of toxic contaminants in Puget Sound to protect fish and shellfish, ensure seafood safety, and promote ecosystem recovery.
- **Structure for motion**: Using drones to map high-resolution landscape topography, conduct stream surveys, and access other remote areas not readily accessible by foot.
- **High Resolution Land Cover and Change Detection (HRCD)**: Tracking state-wide changes in critical F&W habitat at 2-year intervals.
- **Machine learning** in massive image and acoustic datasets
- **Endangered Species Management**: CT scans of western pond turtles to detect shell disease
- **Sophisticated modeling** on seals and salmon

Questions?