

# Eight Years of ESPP Director Report



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May 1, 2018

# ESPP's Mission

- ④ Umbrella organization to promote MSU's interdisciplinary environmental scholarship
- ④ Specific goals
  - Build graduate **environmental education** programs that are innovative, interdisciplinary and campus wide;
  - Facilitate **interdisciplinary environmental research** at MSU, and
  - Make MSU's areas of excellence better **connected** with and more **visible** in national and global efforts.

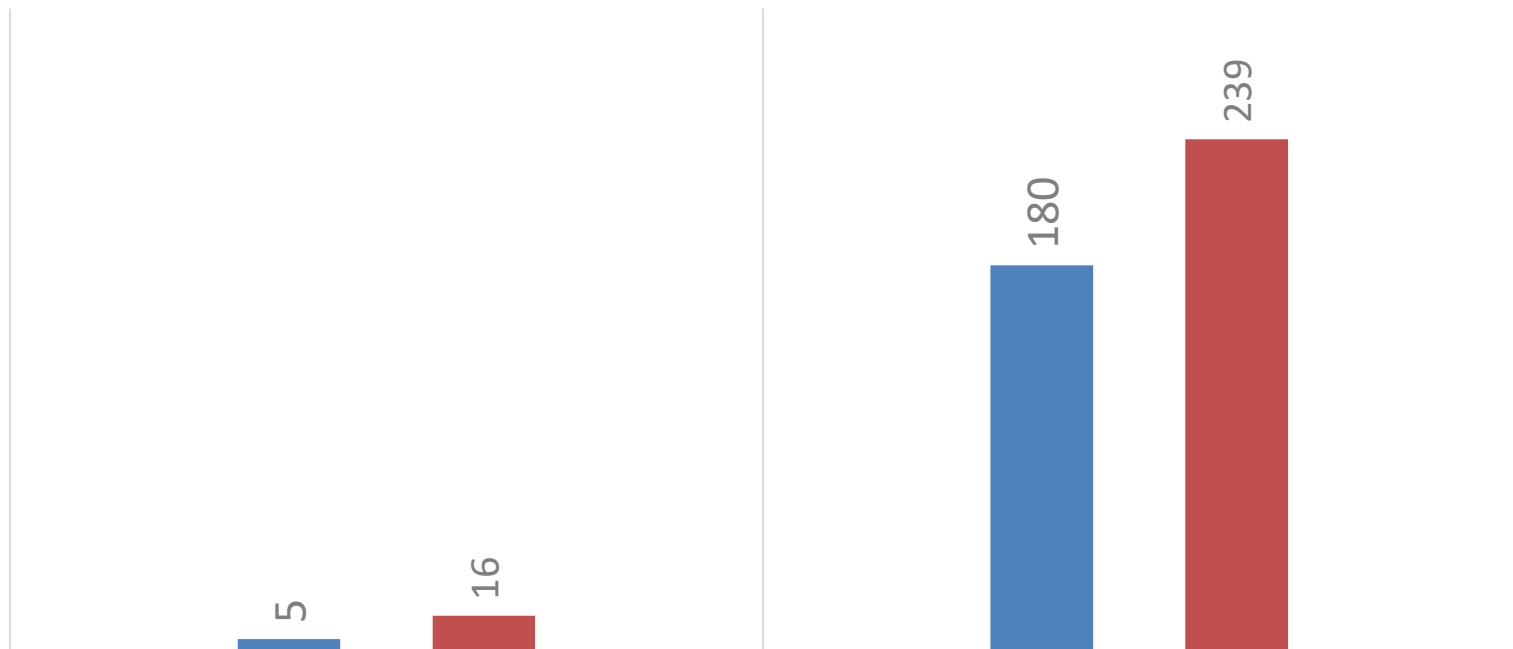


# Broader participation



## ESPP FACULTY AFFILIATION

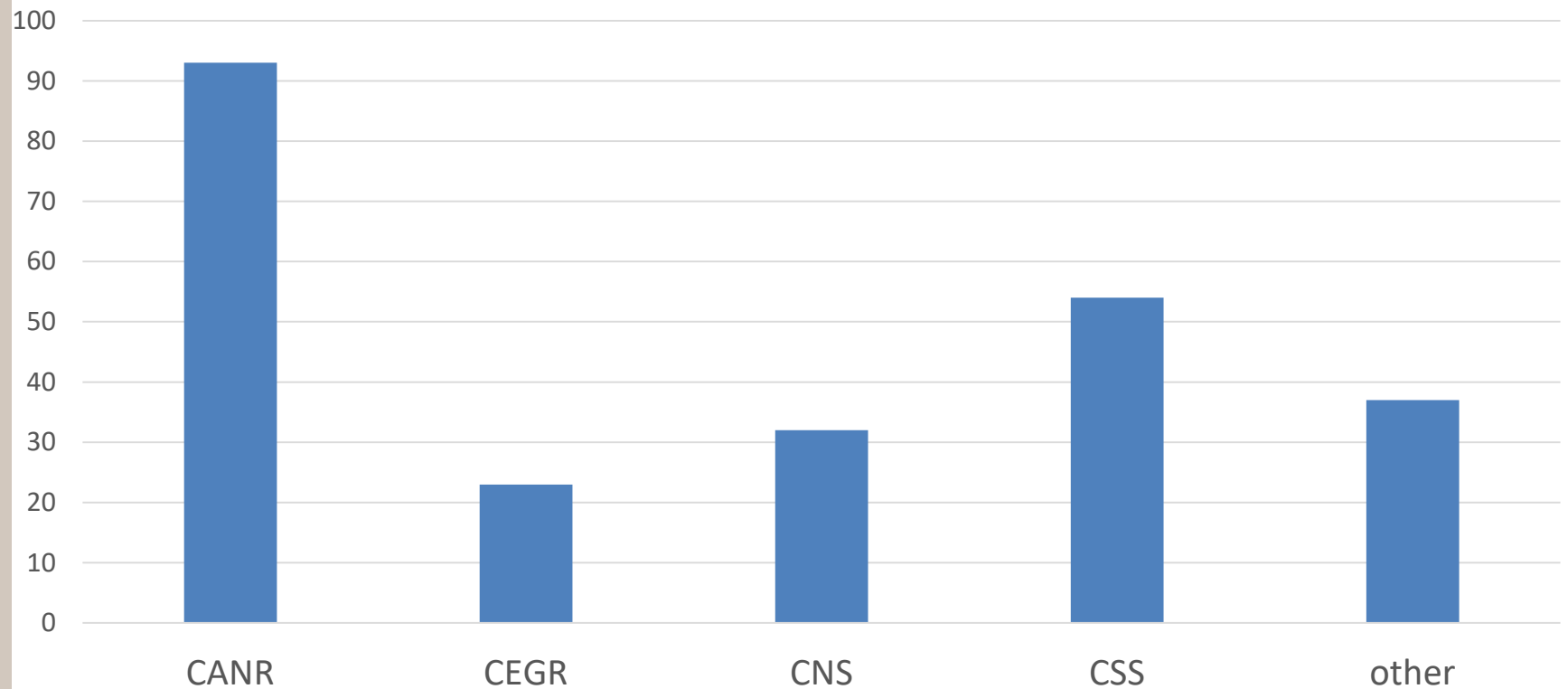
■ 2010 ■ 2018



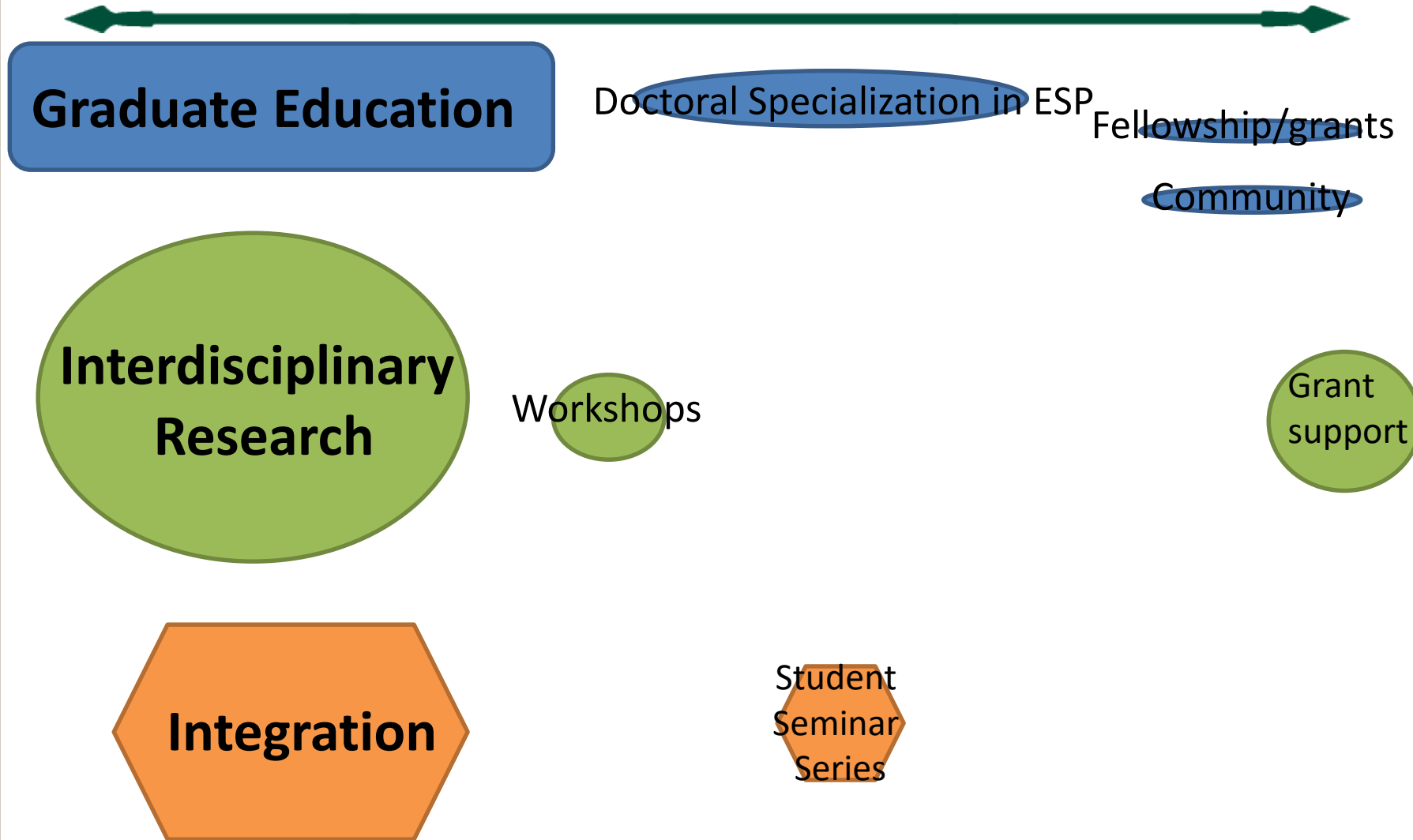
APPOINTED FACULTY

AFFILIATED FACULTY

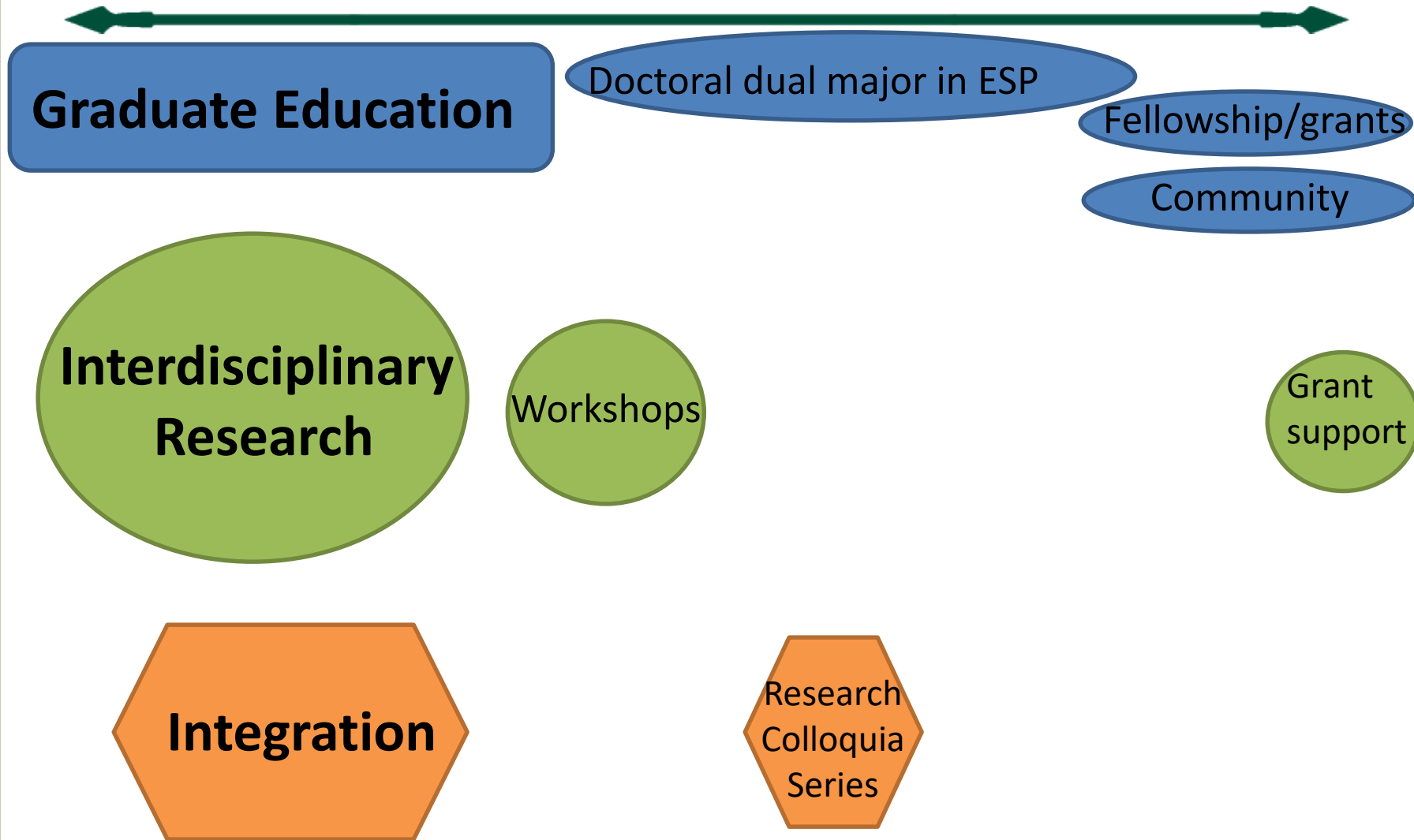
# Faculty affiliation: 63 departments, 13 colleges



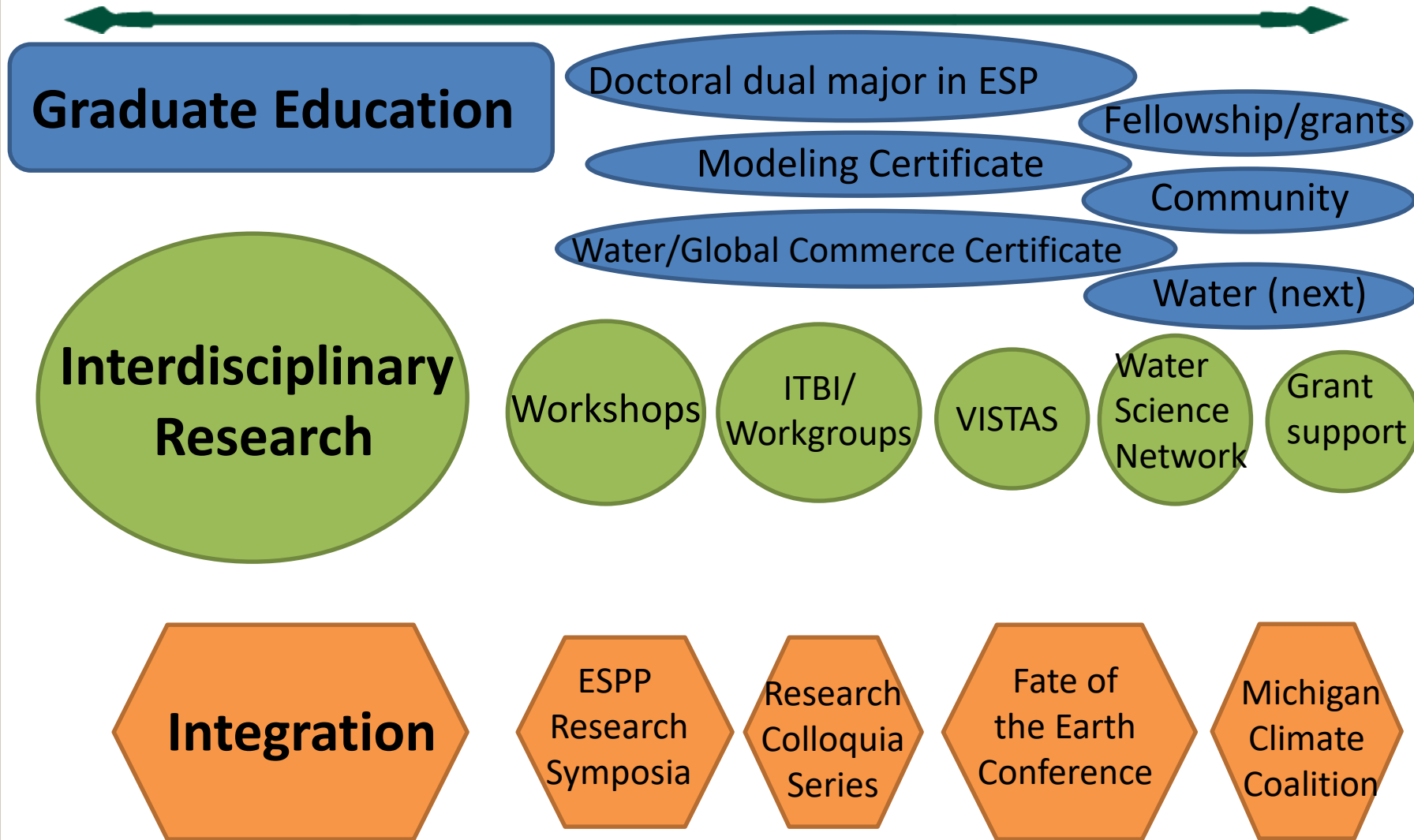
# ESPP portfolio: 2010 snapshot



# Improvements of existing programs



# ESPP's Portfolio: current snapshot



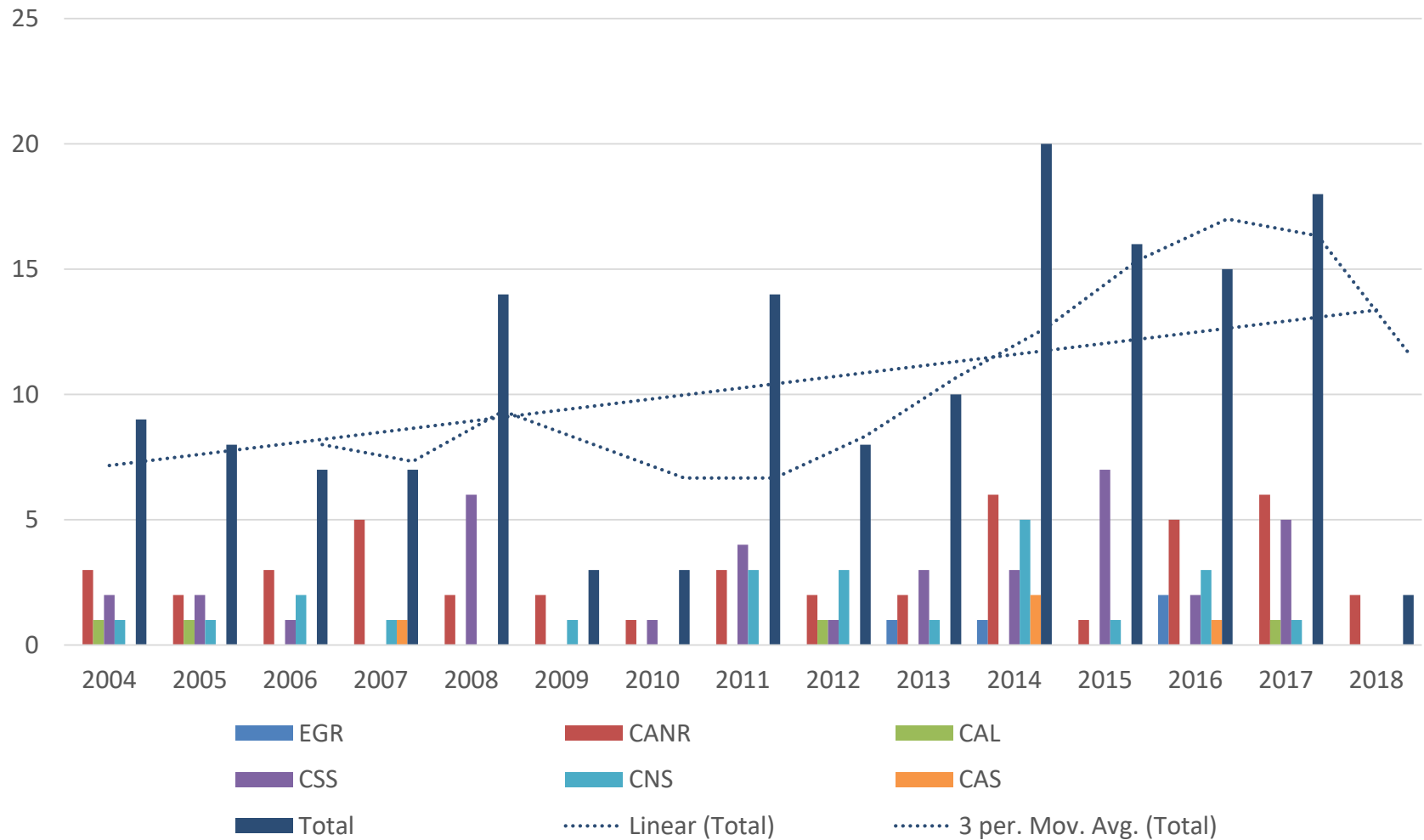
# ESP Doctoral Specialization



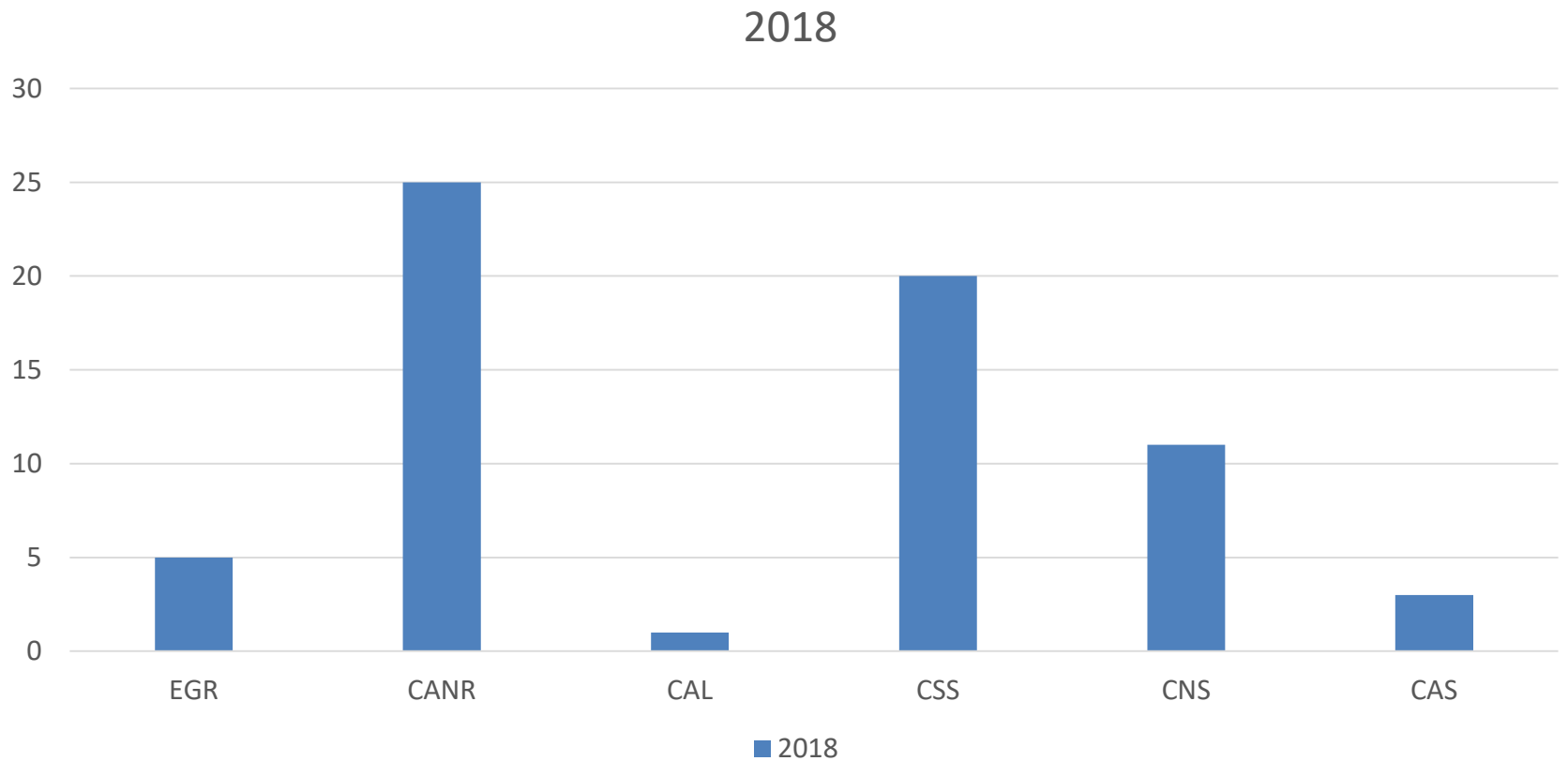
- ⬆ Completely revamped core courses, ESP 800, 801, 802
  - Modular based
  - New instructors
  - ESP 800 routinely attract a large number of non-specialization students (almost 30 students this spring)
- ⬆ Dual major officially approved:  
overwhelming response from students



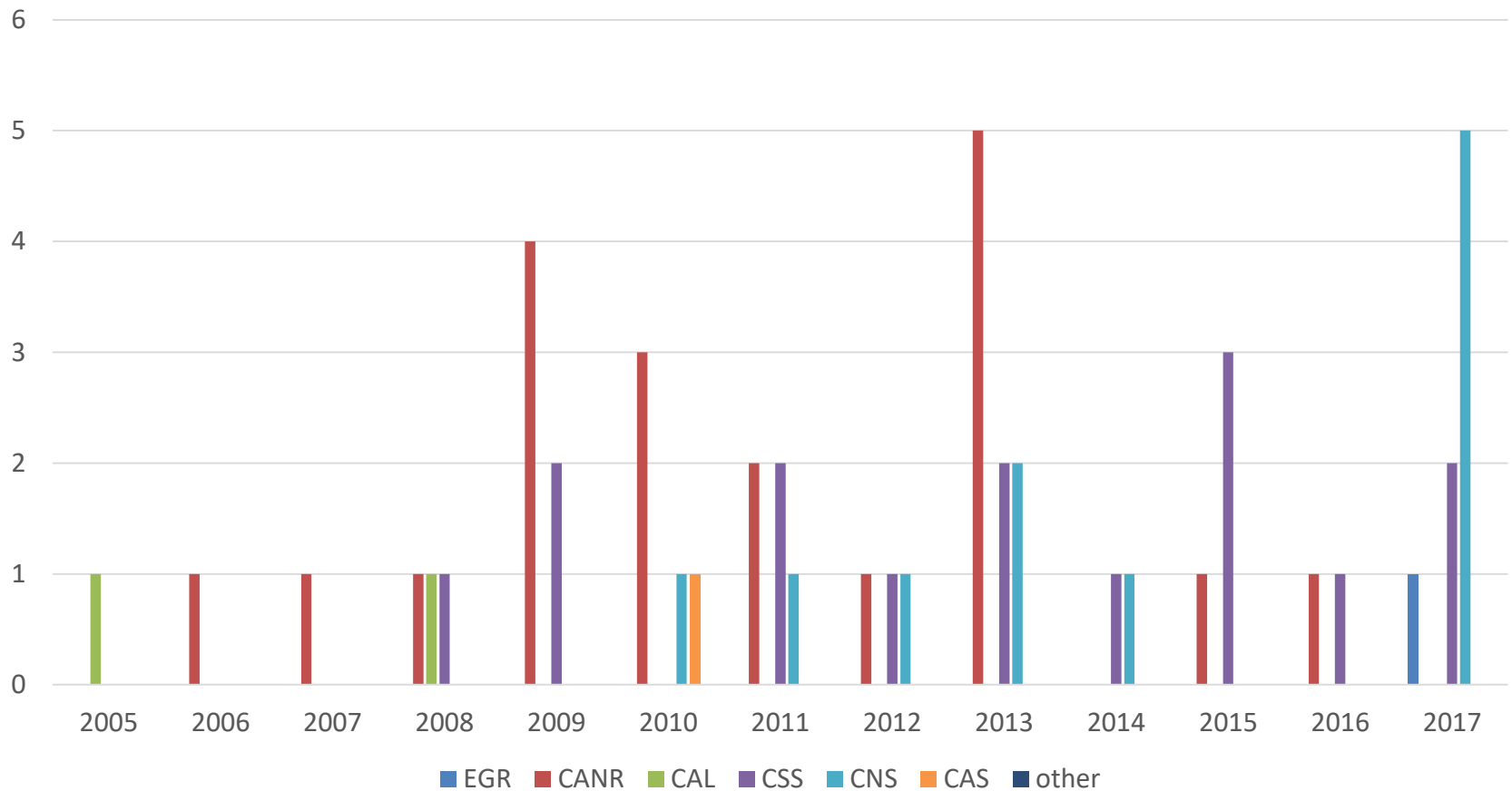
# New enrollment in specialization/dual major



# Current enrollment in dual major



# Specialization graduates: 39 out of 51 in academic positions



# ESPP Recruiting fellowship



## 2010 snapshot

- 5 fellowships (3 from Graduate School, 1 from CSS, 1 from CANR), \$30K each

## 2018 snapshot

- 5 fellowships (3 from Graduate School, 1 from CSS, 1 from CANR), \$50K each (thank you!)
- CNS and COE: designed 1 – 3 college fellowships to ESPP.
- Restructured: early immersion into research

# Student community building



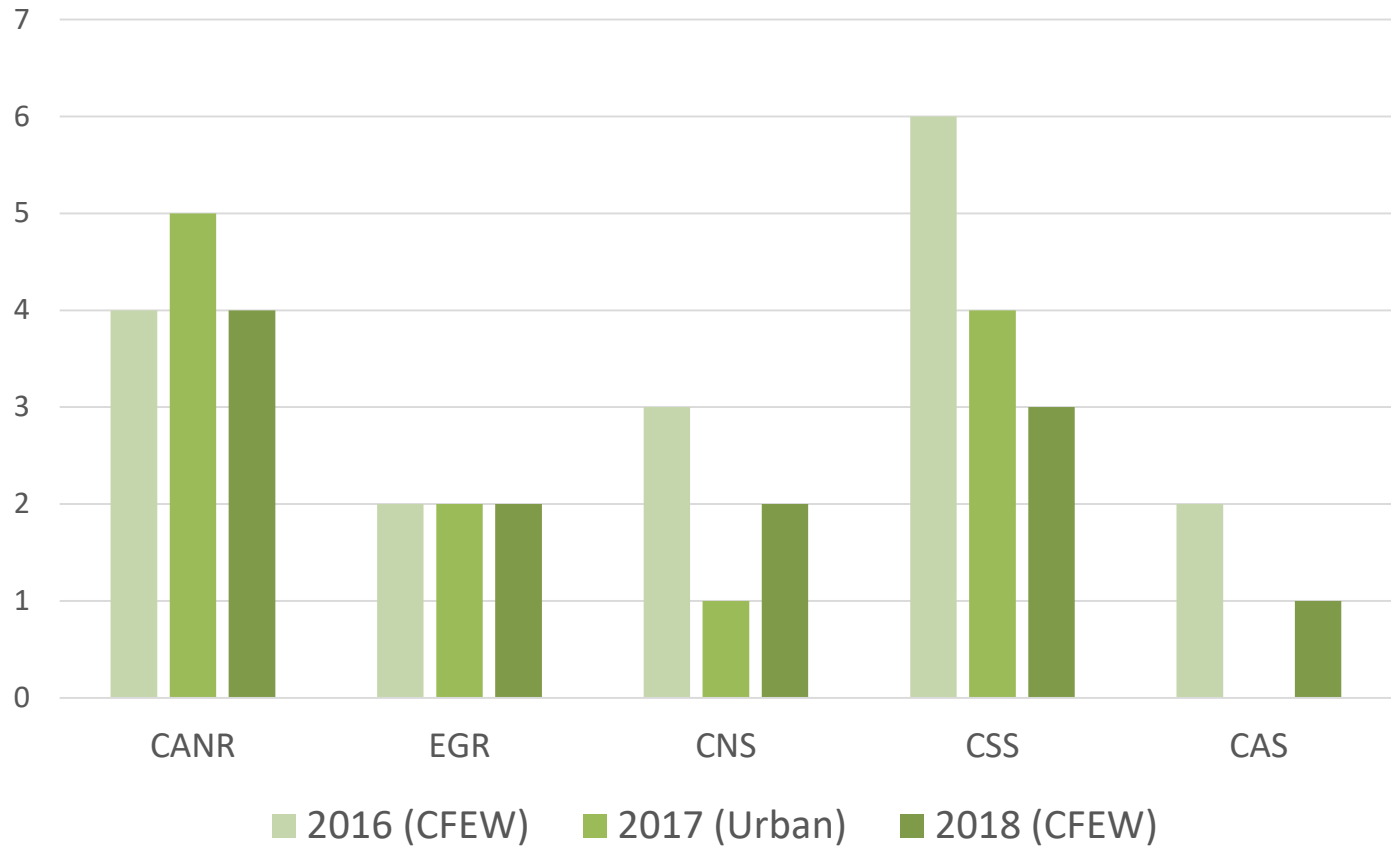
- ⊕ Essential experience in building interdisciplinary cohorts/communities
- ⊕ Designated student advisor
- ⊕ Enriched activities
  - Leadership opportunities: organize and participate in Research Symposium, Research Colloquia
  - Group meetings with DLS speakers
  - Active participation in Fate of the Earth conference
  - Annual student town hall meeting

# ESPP Summer Research Fellowships



- ⬆️ Emphasize research teams as well as student scholarship
- ⬆️ Recipients present at fall research symposium
- ⬆️ Themes
  - 2018: CFEW (12)
  - 2017: Urban environment (12)
  - 2016: CFEW (17)

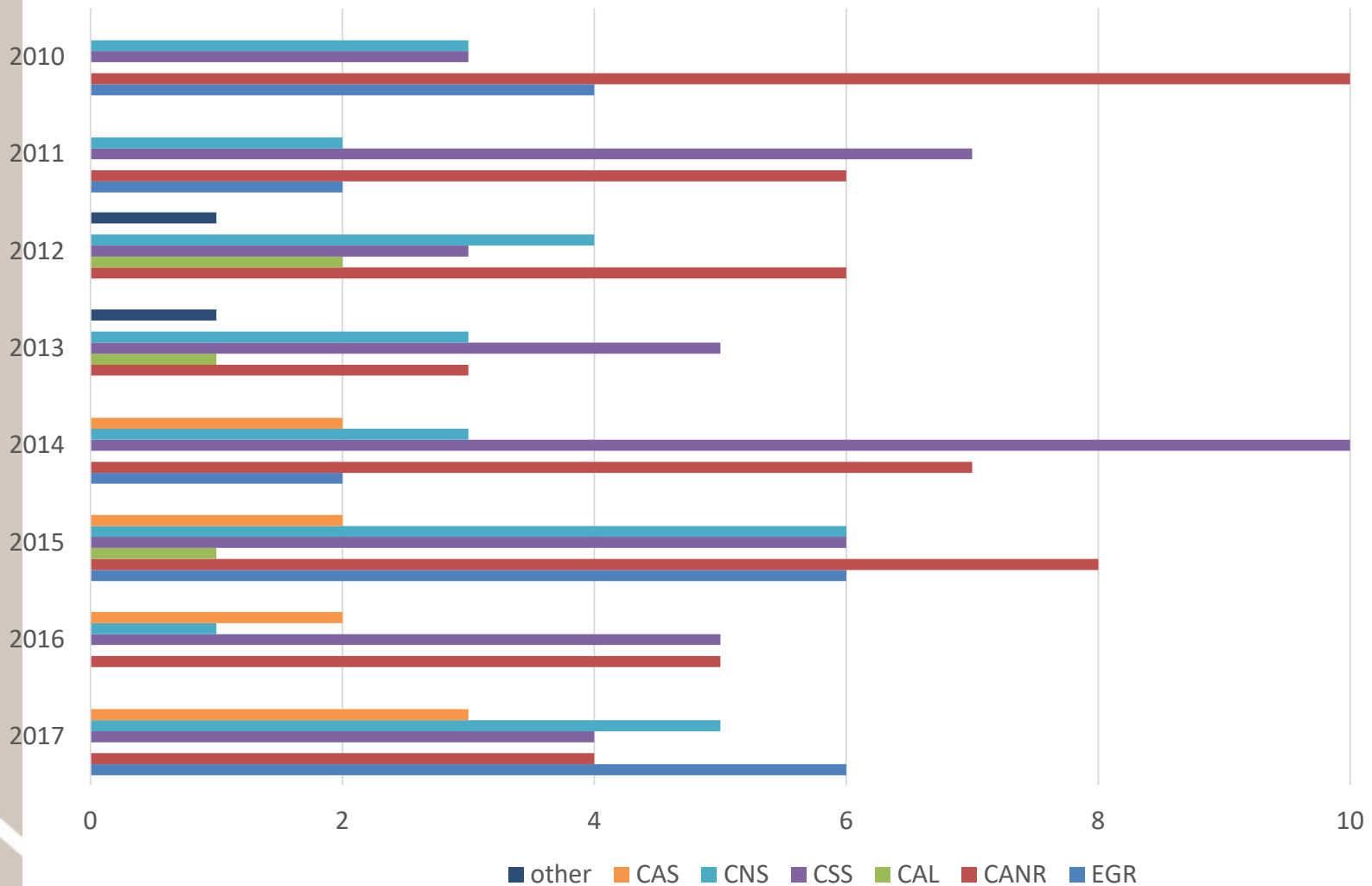
# Fellowship supports



# Student travel grants: open to all students



Travel grants awarded (by college)

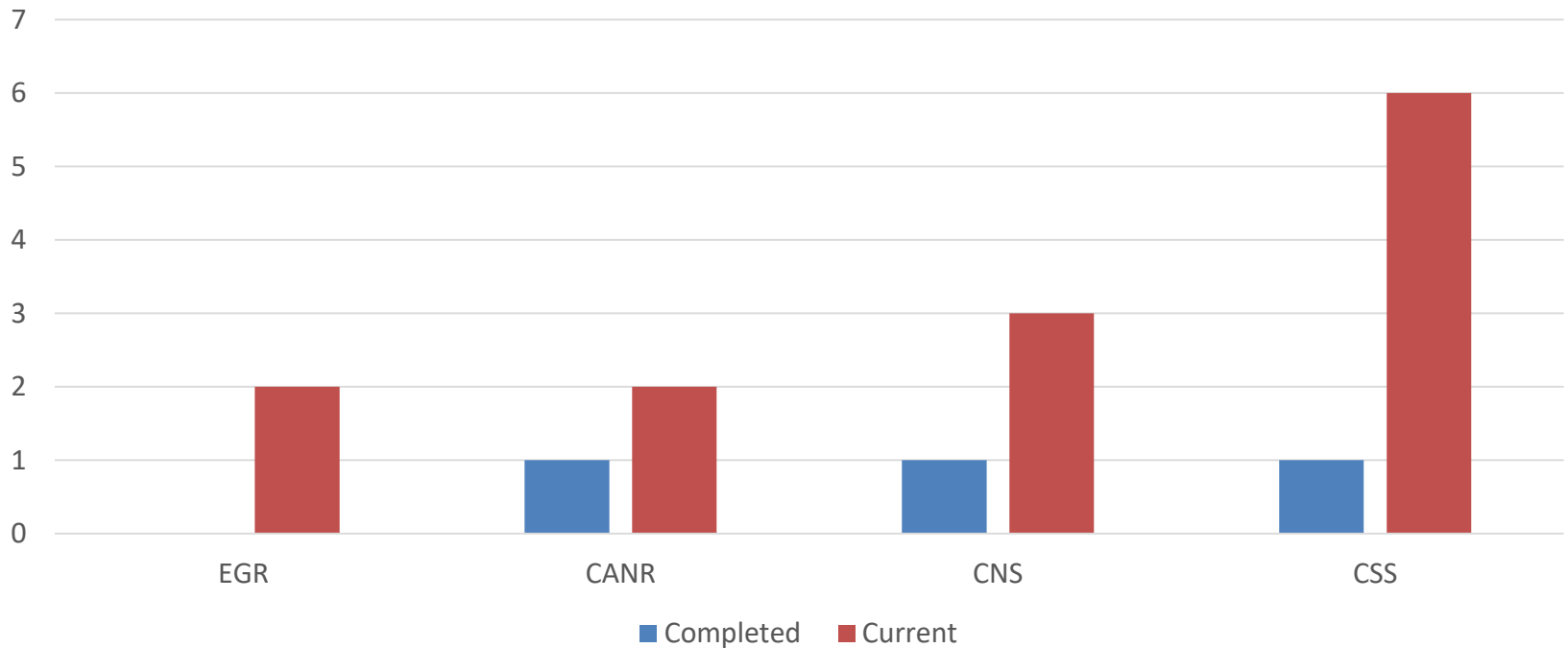




# Graduate modeling certificate



Completed and Current Certificate Students by College



# Next: graduate water curriculum



- Goal: create a dual major in water
  - Models: EEBB, ESPP
- Water Committee working with Drs. Kelly Millenbah (CANR Associate Dean and Director for Academic and Student Affairs) and James Lucas (Assistant Dean of Global Education and Curriculum)

# Potential Cross- and Sub-Themes



# Timeline



Spring-  
Summer

- Develop curriculum
- Engage faculty for feedback

2018

Fall  
2018

- Start approval process

Fall  
2019

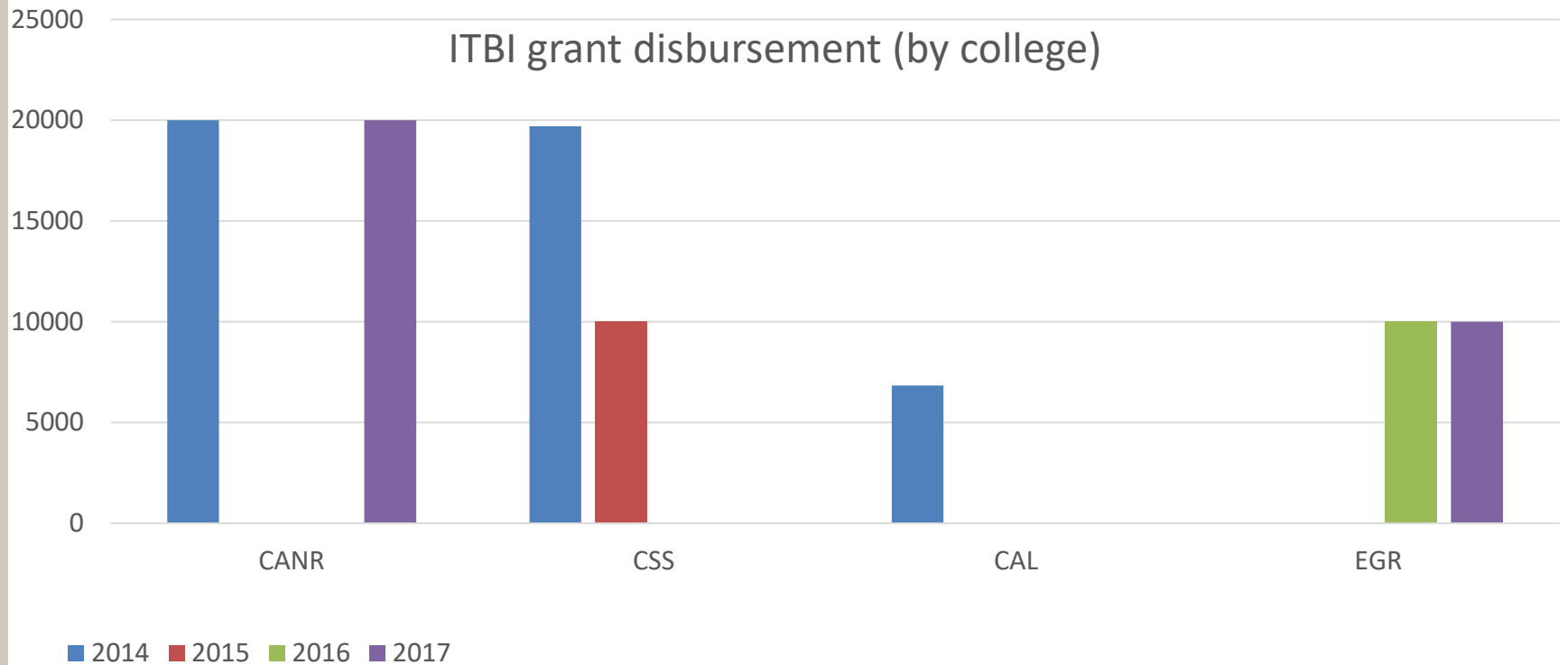
- First cohort starts

# Research support



- Launched workgroups: small core group of researchers for collaboration
- Experimented with top down, bottom up, mixed approaches
- Eventually: two signature programs
  - ITBI with AgBio: to help build up new teams and enhance existing teams
  - VISTAS: to help collaboration with non-MSU researchers in grant proposals

# Interdisciplinary Team Building Initiative: partnership between ESPP and AgBio



# ITBI teams supported



DATE OF FUNDING	PIS	College	AMOUNT
SP 2014	McCright et al.	CSS	\$9,700
SP 2014	Miesel et al.	CANR	\$10,000
SP 2014	Teppen et al.	CANR	\$10,000
F 2014	Chen et al.	CSS	\$10,000
F 2014	Valles et al.	CAL	\$6,830
F 2015	Hamm et al.	CSS	\$10,000
SP 2016	Cupples et al.	CEGR	\$10,000
SP 2017	Nejad et al.	CANR	\$10,000
SP 2017	Nanzer et al.	CEGR	\$10,000
SP 2017	Shade et al.	CANR	\$10,000
<b>TOTAL</b>			<b>\$96,530</b>

# ITBI teams: grants received



Date	PI	Agency	Amount
2017	Shade	Project GREEN	\$59,900
2017	Miesel	Project GREEN	\$39,952
2017	Hodge	USDA-NIFA AFRI	\$500,000
2016	Bonito	Project GREEN	\$79,961
2015	Evans	DOE	\$5,771,832
2015	Saffron	Michigan Soybean Promotion Committee	\$6,000
2015	Saffron	MTRAC	\$25,000
2015	Saffron	The Ford Motor Co.	\$40,000
2015	Saffron	DOE	\$163,000
2015	Saffron	The Coca-Cola Co.	\$200,000
2015	Schock	EPA	\$1,000,000
2015	Sturtevant	Joint Fire Science Program	\$380,022
2015	Tiemann	Michigan Potato Industry Commission	\$8,800



# ITBI teams: grants submitted

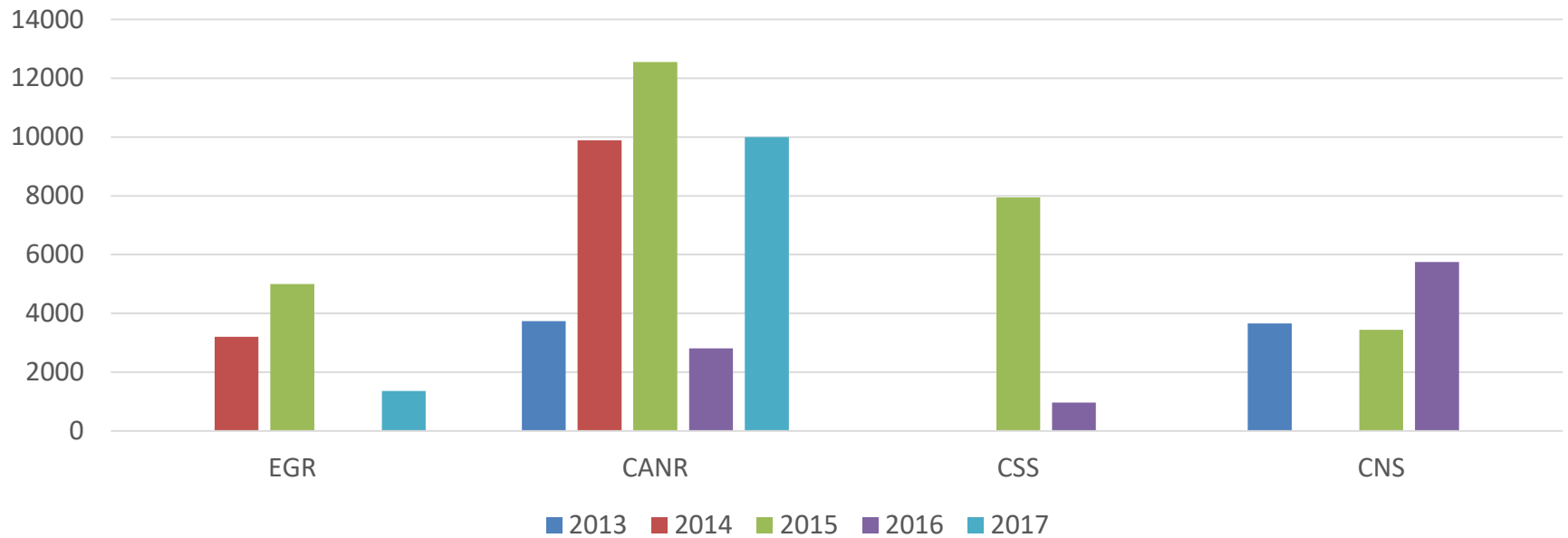


Date	PI	Agency	Amount	Status
2018	Shade	Project GREEN	\$37,884	pending
2017	Shade	DOE	n/a	declined
2017	Zhang	USDA NIFA	n/a	pending
2017	Miesel	Michigan Dept. Ag	\$72,173	pending
2016	Zhang	NASA	\$1,507,990	declined
2015	Chen	NSF	n/a	declined
2015	Hamm	NSF	\$990,961	declined

# Visiting Scholars to Advance Science



VISTAS dollars (by college)



# VISTAS: grants received



Date	Pis	Agency	Award
2017	Rose	Gates Foundation	\$300,000
2015	Li	USDA-NIFA-AFRI	\$474,948
2015	Zhang	USDA-NIFA-AFRI	\$72,778
2014	Tarabara	CRDF Global	\$7,500
2014	Wagner	Great Lakes Fishery Commission	\$147,441

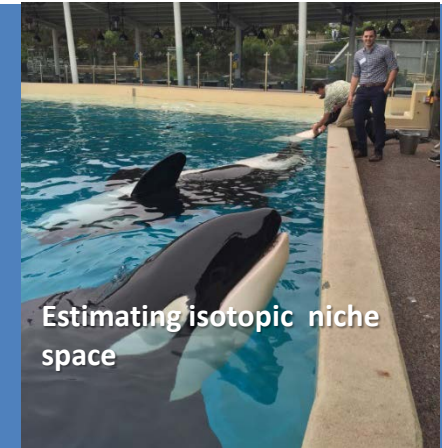
# VISTAS: grants submitted



Date	PI	Agency	Status
Feb. 2018	Zarnetske	NSF	pending
2017	Medina	NSF	pending
2017	Benbow	NSF	resubmitted
2016	Novak	Rufford Foundation	resubmitted
2016	Salim	Agropolis Foundation	declined
2016	Salim	National Center for Ecological Analysis and Synthesis	declined
2016	Benbow	NSF	Preliminary proposal

# WaterCube Highlights

- Over \$6.6 million in external funding
  - Up to 2017: \$2.5m
  - Up to 2016: \$0.8m
- 38 peer-reviewed publications
- 33 students and post-docs supported
- New advancements in water science



Estimating isotopic niche space

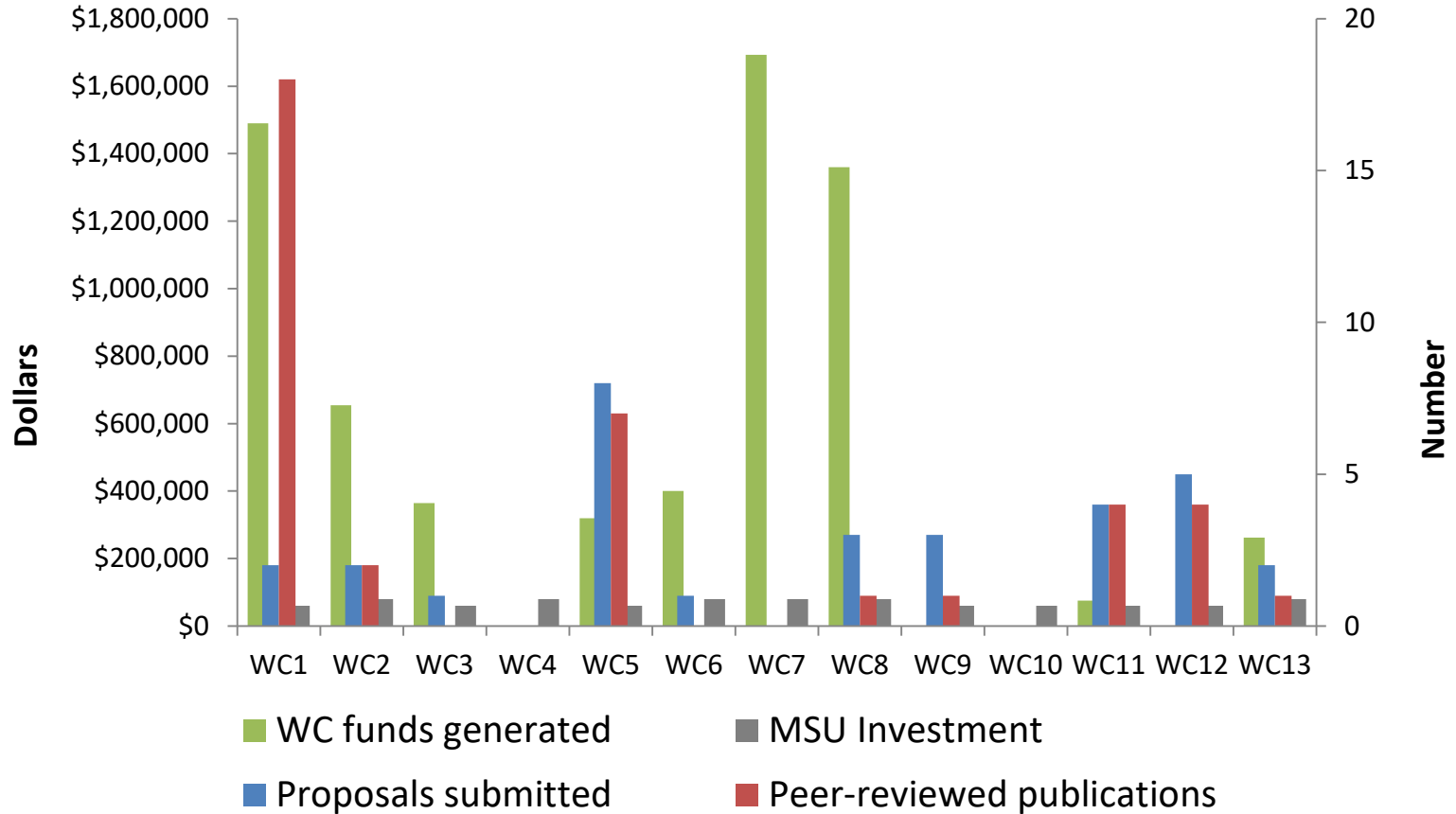


Creating pollutant-degrading microbots



Understanding harmful algal blooms

# WaterCube Products



# Excerpts from program feedback



“The WaterCube program clearly afforded an opportunity for the three PI’s to collaborate that would not likely have happened otherwise.”

“The WaterCube funding has been instrumental in the fruition of this exploratory research. It is likely that [our] research would have never happened without it.”

“The WaterCube funding provided a valuable resource for our team in that it served to create an environment where geomicrobiologists, public health microbiologists, hydrogeologists, and bioinformaticists could bring to bear their unique expertise on a focused research problem.”

“We feel that the WaterCube made it possible to obtain data for successful proposals that our team members have received, and will continue to help with future funding and successful research programs of the project participants. In addition, the WaterCube helped join 5 PIs that had not worked together as a group before - a group spanning terrestrial and aquatic science across scales.”

# ESPP Research Symposium



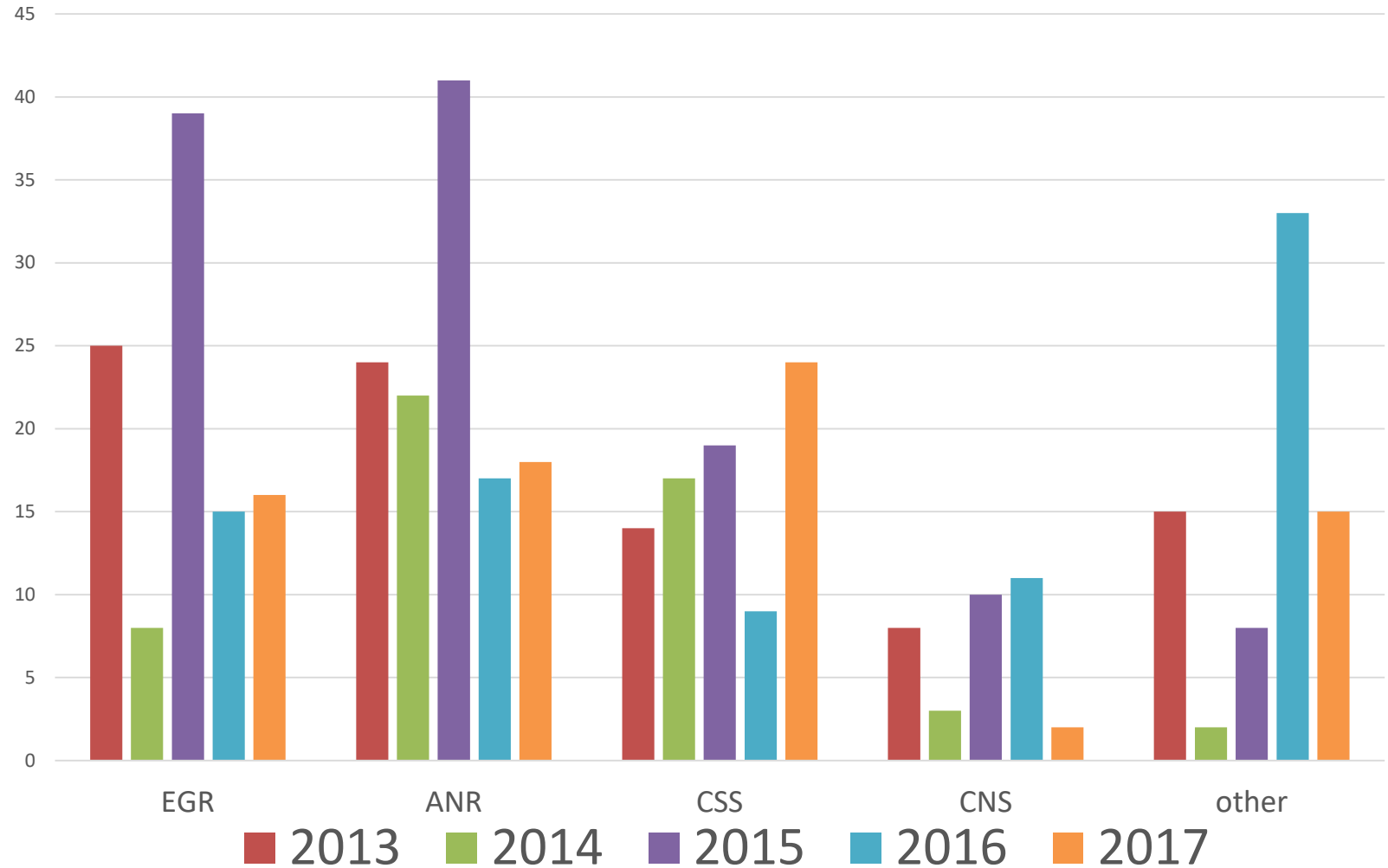
- ⬆ 2017 theme: urban environment
- ⬆ Participation: 121 students, faculty and researchers.
  - Oral presentation and posters
- ⬆ Previous themes:
  - 2016: Environmental health
  - 2015: International environmental research
  - 2014: Environmental risk and decision making
  - 2013: Water for a Sustainable World
- ⬆ 2018 theme: CFEW (climate-food-energy-water)



# ESPP Research Symposium participation



Student Research Symposium Attendees by College



# ESPP Research Colloquia Series

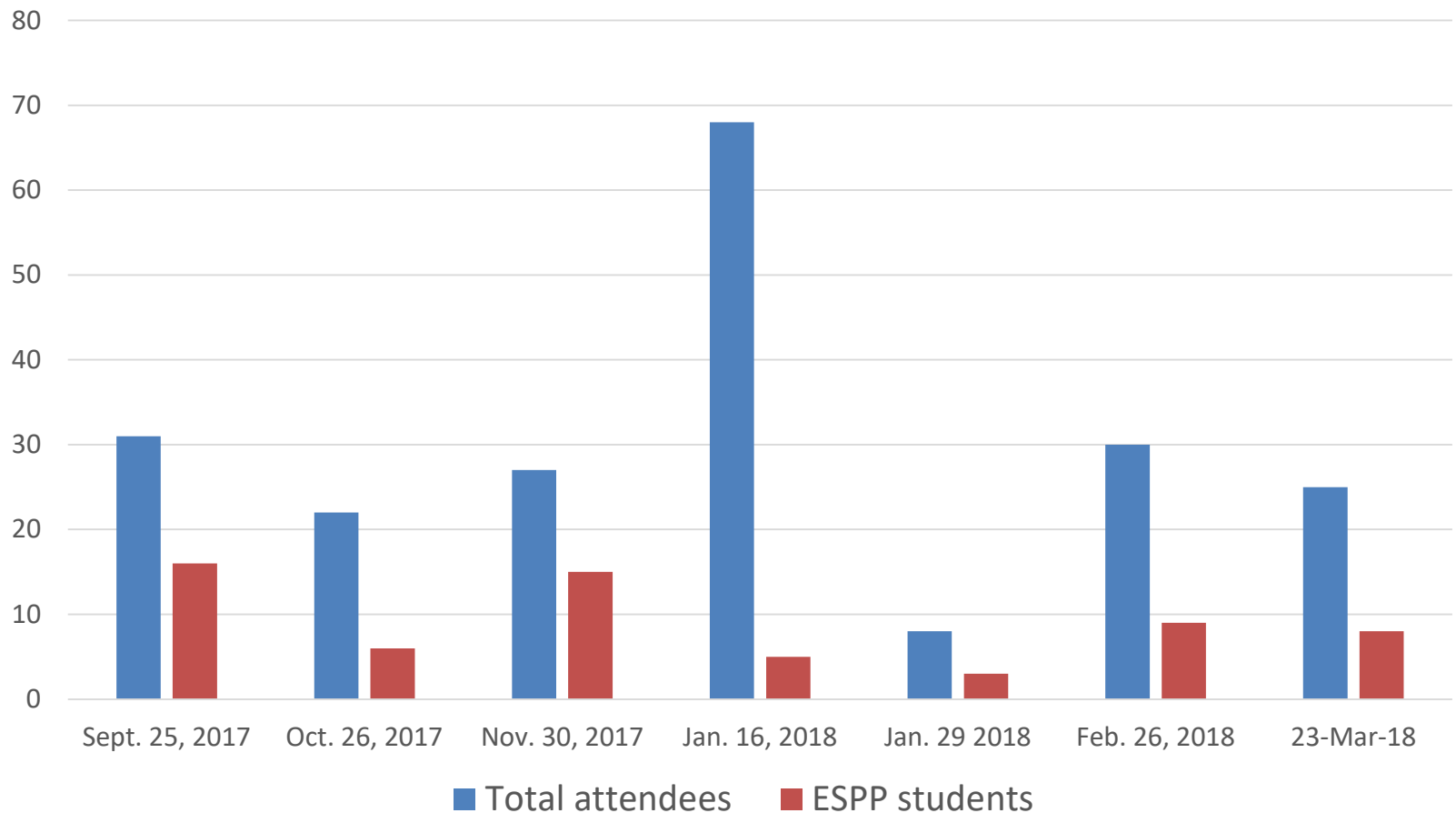
- ESPP hosts a Research Colloquia Series that includes student and expert panel discussions, faculty roundtables, guest lectures and debates. The 2017-2018 Colloquia series include presentations on:
  - Urbanization and Sustainability
  - The Battle for Michigan’s Fish: Using a Novel Interview Technique to Quantify Risk Perception and Inform Outreach
  - Social Inequality and Environmental Justice
  - Sustainable Food Systems in Developing Countries
  - Perceptions of Emerging Biotechnologies
  - Freshwater Security in the Great Lakes Region
  - Local and Global Interfaces-Why the Environment Matters



# Broad spectrum of participants in colloquia



ESPP Research Colloquia attendance



# ESPP Distinguished Lecture Series



- ④ Partnership with departments
  - Additional department seminars and meetings
- ④ Transition to **Donald Koch Fate of the Earth Distinguished Lecture Series**
- ④ 2017 DLS speakers
  - Dr. Soroosh Sorooshian, Distinguished Professor of Civil and Environmental Engineering and Earth System Science, University of California-Irvine
    - ④ “Climate Change and The Global Hydrologic Cycle: Efforts in Monitoring, Modeling and Ability to Forecast Changes” Feb. 27, 2017
  - Carl Bruch, Director of International Programs and Senior Attorney at the Environmental Law Institute, Washington, D.C.
    - ④ “From Agent Orange to Climate Security: The Emerging Field of Environmental Peacebuilding” March 21, 2017
  - Dr. Menachem Elimelech, Professor of Chemical and Environmental Engineering, Yale University
    - ④ “High Performance Membranes for Energy Efficient Desalination and Wastewater Reuse” March 22, 2017
  - Henry Cisneros, former U.S. Secretary of Housing and Development
    - ④ “Cities and the Economy, Smart Growth and Sustainability and American Latinos and the Nation’s Future” Oct. 11, 2017
  - Dr. Harsha Ratnaweera, Norwegian University of Life Sciences
    - ④ “The Evolution of Wastewater Treatment in Norway” Oct. 26, 2017

# Fate of the Earth Symposium

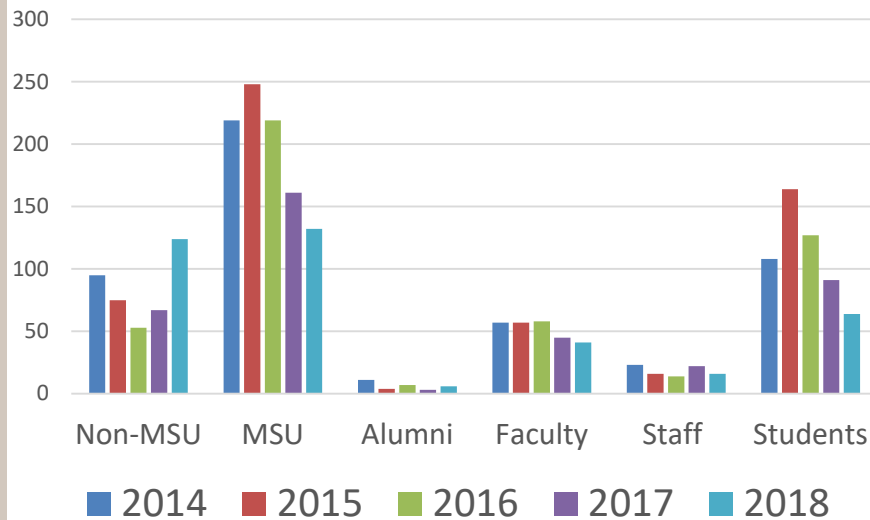


- ⦿ FoE endowment: student and community participation
- ⦿ Experimented with different formats
  - 1 + 1: community + academic
  - 1 + 1.5: community + academic + workshop/products
  - 2018: 1 (community) + DLS
- ⦿ Themes:
  - 2018: Community (and hope)
  - 2017: CFEW (Water)
  - 2016: CFEW
  - 2015: tipping points and nonlinearities
  - 2014: frontier of env research
- ⦿ Drawing participants from beyond MSU. E.g., 2018:
  - Michigan Department of Environmental Quality, The Nature Conservancy, Flint Center for Health Equity Solutions, University of Michigan, The Moyer Group, Red Cedar Fly Fishers, and a wide range of private citizens and MSU alumni.

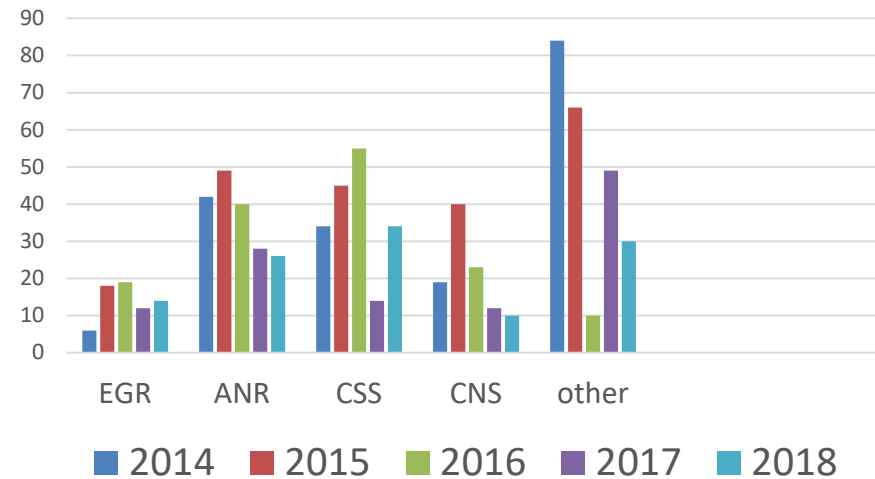
# FoE Symposium Attendance

2018: 256 (132 from MSU, 64 students)

Attendance by affiliation




Attendance by college




# Administration



- ⬆ By-law: revised and voted
  - ⬆ Standing committees: Faculty Advisory Council, Graduate Program Council
  - ⬆ Equity: across disciplines, colleges, ranks, gender
  - ⬆ Communication: new webpage, new logo, ESPPulse
  - ⬆ Alumni relation: contacts with all.
- 

# So what did I learn?



- ⬆ Bottom up works better, but from whom?
    - Incentivize *productive* faculty: somehow they need to see the value of our activities
    - Mechanisms to draw them in: direct contacts, actively seeking feedback/input
  - ⬆ The power of aggregation: tipping point for “attention” and “interest”
  - ⬆ Collaboration with other campus units
  - ⬆ Value of “intangible assets”
- 



Thank you!