



**University of Alaska Fairbanks  
Undergraduate Research and Scholarly Activity (URSA)  
Annual Report AY 2020-2021**



4. Student Tracking and Project Cataloging
  - a. The URSA database currently has 2,899 UAF undergraduates that have been involved in research and creative activity since its creation in 2012.
  - b. Since 2012, at least 41% of UAF undergraduate students participated in an academic research experience over the course of their baccalaureate studies. Further, the 2,899 students in the URSA database support that quantification of undergraduate student participation in research. Not included in the accreditation documents and not yet included in the URSA database are undergraduate students who are employed as research assistants. URSA has been working with UAF Human Resources and the UAF Office of Planning, Analysis, and Institutional Research (PAIR) to identify a means to include such students in the database.
5. Curriculum Development
  - a. URSA (Undergraduate Research and Scholarly Activity) courses offered in AY2020-21
    - i. URSA 388 Undergraduate Research and Creative Scholarship II (Instructor: Trent Sutton; Enrollment: 0 students).
    - ii. URSA 488 Undergraduate Research and Creative Scholarship I ((Instructor: Trent Sutton; Enrollment: 2 students).
  - b. There were no MRAP (Museum Research Apprentice Program) courses offered in AY2020-21.
6. Research and Creative Activity Day
  - a. The UAF Research and Creative Activity Day was held virtually

- b. Hannah Deuling (CNSM ó Biology) continued her research on the genome sequencing of positive COVID-19 specimens from across Alaska. The goal was to get enough data of SARS-CoV-2 full genomes to be able to trace virus spread and find possible variations of COVID-19 strains circulating in Alaska.
- c. Hanna Hellen (CFOS ó Marine Biology) aimed to determine if the polar bear populations in the Southern Beaufort Sea and the Chukchi Sea sub-population can be distinguished using bulk stable isotope signatures of muscle tissues.
- d. Lahra Weber (CNSM ó Chemistry) developed a method to quantify hydroxymethanesulfonate (HMS) in an anion ion chromatography (IC) system and planned to change the eluent composition and IC columns to establish the optimal conditions for measuring HMS in IC.
- e. Madeline Andriesen, Taylor Hendricks, Lindsay Moisan, Ariana Lopez, Jonathan Lange, Jenna Dreydopel, and Ellie Martinson (CLA ó Music) participated in opera workshop performances that were recorded and edited with Adobe Cloud and sent to high schools in and outside the state of Alaska for outreach and recruiting for the UAF Music Department.
- f. Aidan Hunter (CNSM ó Wildlife Biology) and Brian Zhang (CFOS ó Fisheries) determined if reindeer can hear low frequencies of sound.
- g. Mirin Morris-Ward, Gregory Reynolds, and Ethan Mahoney (CEM ó Mechanical Engineering) designed and built a device that will automatically collect flying insects and record the biomass data of the catch, with the goal of being able to leave a Malaise trap with the device out in the field for long periods of time without human intervention.
- h. Brayden Banhke, Millar Arnold, Matt Perry, and Logan Vanclifford (CEM ó Computer Sciences) designed and built a robot to compete in the 2021 NASA Robotic Mining Competition.
- i. Joshua MacEachern, Zion Alioto, and Louis Bastille (CEM ó Electrical Engineering) designed and manufactured an unmanned aircraft to compete in the American Institute of Aeronautics and Astronautics Design Build Fly (DBF) competition held in April 2021.
- j. William Samuel (CNSM ó Natural Resource Management) examined the efficacy of habitat restoration efforts in Cripple Creek by analyzing fish abundance and length data gathered in 2018-2020.
- k. Gerald Montuya (CEM ó Mechanical Engineering) experimentally quantified the cooling capacity of a radiative sky climate.
- l. Lucille Farrell (CLA ó Linguistics) studied how people used emojis and emoticons in virtual spaces, instead of using their voice or body language.

## 8. Mentor Highlights:

- a. Miho Aoki (CLA ó Art) engaged students Naomi Green and Sarah Griffen-Lotz in an international collaborative animation project as a practicum which was their capstone project to lead a team of students in lighting design and animation, gain leadership experience in international production, and create artwork for a professional demo reel.









**Table 2.** The number of URSA applications (Apps), awards, and total dollar amount awarded (Dollar Amt.) by award type for each college/school and department/unit within each college/school for AY2020-2021.

<b>College/ School</b>	<b>Department/ Unit</b>	<b>Apps</b>	<b>Awards</b>	<b>Dollar Amt.</b>	<b>Project</b>	<b>Travel</b>	<b>Mentor</b>	<b>ITE</b>	<b>Research &amp; Creative Activity Day</b>	<b>Community Engaged Learning</b>
CEM	Alaska Center for Energy and Power	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Civil, Geo. & Env.	8	5	\$15,910	\$7,448	\$0	\$0	\$8,312	\$150	\$0
	Comp. Sci.	1	1	\$4,774	\$4,774	\$0	\$0	\$0	\$0	\$0
	Electrical Eng.	5	2	\$10,000	\$5,000	\$0	\$0	\$5,000	\$0	\$0
	Mechanical	7	6	\$16,347	\$11,417	\$0	\$4,530	\$0	\$400	\$0
	Mining & Geo.	1	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Petroleum	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CFOS	Fisheries	6	6	\$15,440	\$2,500	\$0	\$9,195	\$		



Table 3. The number of URSA applications (AP), awards (AW), and dollar amount (DA) for each college/school by awards type for AY2020-2021.

College/ School	Student Project			Student Travel			Mentoring			ITE			Research and Creative Activity Day			Community Engaged Learning		
	AP	AW	DA	AP	AW	DA	AP	AW	DA	AP	AW	DA	AP	AW	DA	AP	AW	DA
CEM	15	17	\$28,639	0	0													

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