



2022 ANNUAL MEETING CSUN: SCHEDULE AT A GLANCE

Main Events: CSU Fullerton, Titan Student Union

FRIDAY May 6, 2022			
Time	Symposium Alvarado Room	Symposium Heterbrink Room	Symposium Tuffree Room
8:30-9:45	Urban Biodiversity	Microplastics	Drought and Water
9:45-10:05	Break		
10:05-11:05	Urban Biodiversity	Microplastics	Drought and Water
11:05-11:25	Break		
11:30-12:00	SCAS President's Address & Awards Presentation Location: Portola Pavilion B		
12:00-1:00	Plenary Speaker: Dr. Jason John <i>30x30 California: Accelerating Conservation of our Lands and Coastal Waters to Protect Biodiversity, Increase Access to Nature, and Combat Climate Change</i> Location: Portola Pavilion B		
1:00-2:00	Lunch		
Time	Symposium Alvarado Room	Symposium Heterbrink Room	Symposium Tuffree Room
2:30-3:45	Urban Biodiversity	Parasitology	Marine Contributed
3:45-4:05	Break		
4:05-4:55	Urban Biodiversity	Terrestrial Contributed	Marine Contributed
5:00-7:00	Poster Session Location: Portola Pavilion C		

Friday, May 6, 2022 Plenary Speaker

30X30 CALIFORNIA: ACCELERATING CONSERVATION OF OUR LANDS AND COASTAL WATERS TO PROTECT BIODIVERSITY, INCREASE ACCESS TO NATURE, AND COMBAT CLIMATE CHANGE

Jason John, Ph.D.*

California's lands and coastal waters sustain a breadth of habitats and species found nowhere else on Earth. These ecosystems sustain our communities, support our economy, provide for our recreation, and anchor our history, culture, and traditions. Our rich, diverse natural environment forms our identity as Californians. In October 2020, Governor Newsom issued the Nature-Based Solutions Executive Order N-82-20, advancing biodiversity conservation as an administration priority and elevating the role of nature in the fight against climate change. As part of this Executive Order, California committed to the goal of conserving 30 percent of our lands and coastal waters by 2030 (30x30). 30x30 California is part of an international movement to conserve natural areas to protect biodiversity, expand equitable access to nature and its benefits, combat climate change, and build our resilience to climate impacts. The 30x30 Initiative is ambitious and achievable and will require a diverse constituency to help it become a reality. Come hear about progress toward 30x30 and how you can join the movement.

*Dr. Jason John joined the California Natural Resources Agency in November of 2021 as an Environmental Scientist for Biodiversity and Habitat. Jason has previously worked at Agency on the Pathways to 30x30 team and Monitoring and Stewardship Unit as a Science Fellow with the California Council on Science and Technology (CCST). Over the previous 7 years, Jason worked with marine mammals on both the West and East coasts of the United States as well as in Antarctica. His work with endangered and threatened species, including manatees and beluga whales, focused on informing conservation and management policy through understanding the interactions between these animals and their environment. Jason received his PhD in Physiological Ecology from UC Santa Cruz and, prior to this, worked for 6 years in biotech, medical technology, and physical therapy. When not at work, Jason enjoys trying out new recipes (occasionally successfully), reading, and hiking with his wife.

SYMPOSIA SESSIONS 8:30 – 9:30 AM			
Time	Alvarado Room	Heterbrink Room	Tuffree Room
	<i>Urban Biodiversity</i> Chair: G. Pauly Los Angeles Natural History Museum	<i>Microplastics</i> Chair: W. Cowger. Moore Institute for Plastic Pollution	<i>Drought and Water</i> Chair: T. Pereira Desert Research Institute
8:30	1. Rachman, R. CSU Northridge. Blockbuster year for monarchs; community science in Los Angeles County, California, captures record overwintering numbers of <i>Danaus plexippus</i> .	10. S. Coffin, California State Water Resources Control Board. Risk characterization of microplastics in San Francisco Bay, California.	17. T. Pereira. Desert Research Institute. The zero year: Defining drought through science and art.
8:45	2. M. Romolini. Loyola Marymount University. LA River stew-map: a research method and application for understanding and facilitating collaborative environmental stewardship	11. L. Thornton Hampton. Southern California Coastal Water Research Project Authority. California microplastics health effects workshop: informing management strategies for the aquatic environment.	18. M. Kirby, CSU, Fullerton. Using lake sediments for a deeper time (Holocene) understanding of California's drought, flood, and pluvial history.
9:00	3. D. Cooper. Resource Conservation District, Santa Monica Mountains. Mapping the vegetation of the Los Angeles River channel	12. S. Belontz. CSU San Marcos. Using AFM-IR technology to understand micro- and nanoplastic abundances in single-use bottled water.	
9:15	4. § G. Gonzalez, § T.W. Delaney. UC, Los Angeles. Habitat suitability across taxonomic groups informs decision-making for conservation in a megacity.	13. L. Darjany. Moore Institute for Plastic Pollution. Research. Characterization of microplastics in drinking water for accreditation.	19. L. Cunningham. Western Watersheds Project. Mojave Desert grasslands: 40 years of collecting historical ecological evidence of native plant community diversity during droughts.
9:30	5. A. Zellmer. Occidental College. Urban wildlife corridors: building bridges for wildlife and people.	14. § K. Wiggin. Scripps Institution of Oceanography. Microplastics as vectors of human pathogens to shellfish bound for human consumption.	

Symbols denote student award categories: § for SCAS and £ for AIFRB

SYMPOSIA SESSIONS			
10:05 – 10:50 AM			
Time	Alvarado Room	Heterbrink Room	Tuffree Room
	<i>Urban Biodiversity</i> Chair: G. Pauly Los Angeles Natural History Museum	<i>Microplastics</i> Chair: W. Cowger. Moore Institute for Plastic Pollution	<i>Drought and Water</i> Chair: T. Pereira Desert Research Institute
10:05	6. § N. Castillo. CSU, Northridge. Comparative life-history strategies of invasive brown widows and native western black widows in urban southern California.	15. A. Gray. UC, Riverside. Microplastic fate and transport in watersheds.	20. P. Allen, N. Filannino. Resource Conservation District of Santa Monica Mountains. Native plants on working landscapes: trends in water-wise agriculture and fire prevention strategies.
10:20	7. J. Vendetti. Natural History Museum of Los Angeles County. Multiple introductions of the Spanish milk snail, <i>Otala lactea</i> (Müller, 1774) in southern California and Texas, USA.	16. § A. Karapetrova. UC, Riverside. Aeolian transport of microplastics in the alpine environments of North American West Coast ranges.	
10:35	8. § S. Fisher. La Sierra University. A plague of lizards: parthenogenic whiptails are spreading throughout urban southern California.		21. A. Heggli. Desert Research Institute. Managing resource and hazard: towards improved decision support tools.
10:50	9. G. Pauly. Natural History Museum of Los Angeles County. Eradication of an invasive lizard species in a southern California neighborhood through community engagement.		

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SYMPOSIA & CONTRIBUTED

2:30 – 3:30 PM

Time	Alvarado Room <i>Urban Biodiversity</i> Chair: G. Pauly Los Angeles Natural History Museum	Heterbrink Room <i>Parasitology</i> Chair: J. Passarelli Cabrillo Marine Aquarium	Tuffree Room <i>Marine Contributed</i> Chair: R. Tanner Chapman University
2:30	22. § C. Kays. UC, Los Angeles. Enhancing biodiversity and water quality in Los Angeles: expanding application of the greenway concept.	29. D. Buth. UC, Los Angeles. Inferred interspecific interaction between marine copepods <i>Pseudomyicola spinosus</i> (Mycolidae) and <i>Modiolicola gracilis</i> (Lichomolgidae) when parasitizing the bay mussel, <i>Mytilus galloprovincialis</i> .	35. § P. Nilsson. CSU Long Beach. Echinoid larvae express food-conditioned morphological plasticity at ecologically relevant culture densities.
2:45	23. A. Clause. Natural History Museum of Los Angeles County. Plastic pollution, freshwater turtles, and you.	30. J. Passarelli. Cabrillo Marine Aquarium. A redescription of <i>Lepeophtheirus longipes</i> Wilson, 1905 (Copepoda; Caligidae) parasitic on giant sea bass, <i>Stereolepis gigas</i> ayres, 1859 (Polyprionidae), off California.	36. § B. Steiner. CSU Long Beach Variable expression of food-conditioned phenotypic plasticity in feeding larvae of diverse echinoderms.
3:00	24. K. Delaney. Santa Monica Mountains National Recreation Area. Wildfire and drought: the challenges of reintroducing a threatened amphibian to the largest urban national park in the United States.	31. R. Appy. Cabrillo Marine Aquarium. transmission of the tapeworm, <i>Acanthobothrium parvinuncinatum</i> (Onchoproteocephalidea) from the round stingray, <i>Urobatis helleri</i> . (Myliobatiformes: urotrygonidae).	37. S. Kahane-Rapport. CSU, Fullerton. Comparative morphology of roqual whale baleen.
3:15	25. § S. Wenner. UC, Berkeley, National Park Service. Lizard tales on a landscape scale: how historical and contemporary variables shape functional connectivity in Blainville's horned lizards (<i>Phrynosoma blainvillii</i>).	32. †, §D. Metz. Scripps Institution of Oceanography. The first reported freshwater trematode with a soldier caste also has the most morphologically extreme soldiers.	38. § J. Teeple. CSU Fullerton. Analyzing flow using accurate Manta anatomy.
3:30	26. E. Urquidi. CSU, San Bernardino. Effect of urbanization on western fence lizards (<i>Sceloporus occidentalis</i>).		39. §, £ K. Rutledge. UC, Los Angeles. Fluid dynamics of chemical scent detection in Stingrays

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SYMPOSIA & CONTRIBUTED

4:05 – 4:35 PM

Time	<p>Alvarado Room</p> <p><i>Urban Biodiversity</i></p> <p>Chair: G. Pauly Los Angeles Natural History Museum</p>	<p>Heterbrink Room</p> <p><i>Terrestrial</i></p> <p>Chair: J. Passarelli Cabrillo Marine Aquarium</p>	<p>Tuffree Room</p> <p><i>Marine Contributed</i></p> <p>Chair: R. Tanner Chapman University</p>
4:05	<p>27. J. Yoder. CSU, Northridge. Diversity and distribution of urban lawn weeds in Los Angeles city parks.</p>	<p>33. K. Biardi. CSU, Fullerton. Effects of herbivore-induced vegetation change on interactions between rodents and songbirds in shortgrass steppe.</p>	<p>40. §, £ K.C. Reed¹ CSU, Northridge. Model apex predator (giant sea bass) impacts behavior of mesopredatory fish around Santa Catalina Island, CA.</p>
4:20	<p>28. N.L. Smallwood. CSU, Los Angeles. The ecological role of native plant landscaping in residential yards to urban wildlife.</p>	<p>34. W. Meyer III. Pomona College. Describing pollinator assemblages on fall-blooming native California sage scrub shrubs.</p>	<p>41. §, £ J. Peria, CSU, Northridge. Seasonal movement of giant sea bass (<i>Stereolepis gigas</i>) within the Southern California Bight.</p>
4:35	<p><i>Brainstorm session</i></p>		<p>42. §, £ B. Chubak. CSU, Northridge. Evaluating the impact of a marine heatwave on the diet, growth, reproduction, and condition of a temperate reef fish.</p>

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POSTER SESSION: 5:00 – 7:00 PM

43. COMPARING COMMUNITY SCIENCE AND CAMERA TRAP OBSERVATIONS TO STUDY THE IMPACT OF THE COVID-19 SHUTDOWN ON URBAN WILDLIFE

§ **S.M. Wong**^{1,2,3}, E. Schissler^{1,2}, E. Rosen^{2,3}, M. Swomley^{1,2}, A.J. Zellmer^{1,2}. ¹Department of Biology, Occidental College, 1600 Campus Rd. Los Angeles, CA 90041 USA; ²Arroyos & Foothills Conservancy, Pasadena, CA, 91102, USA.; ³Westridge School, 324 Madeline Dr. Pasadena, CA 91105 USA.

44. BURGLING BOBCATS. ON THE POTENTIAL FOR LEVERAGING A GLOBAL NETWORK OF SECURITY CAMERAS FOR SCIENTIFIC WILDLIFE OBSERVATIONS & CONSERVATION

§ **R.-A. Arias**^{1,2,3}, A.G. Privett-Mendoza^{2,3}, A.J. Zellmer^{2,3}. ¹Crescenta Valley High School, La Crescenta-Montrose, CA 91214; ²Department of Biology, Occidental College, 1600 Campus Rd. Los Angeles CA 90041, ³Arroyos & Foothills Conservancy P.O. Box 1, Pasadena, CA 91102.

45. THOSE DAM WILDLIFE: A BIOLOGICAL SURVEY OF TERRESTRIAL MAMMAL SPECIES AT HANSEN DAM

A.G. Privett-Mendoza^{1,2}, S. Oganseyan¹, A.J. Zellmer^{1,2}, R.N. Fisher³, C.J. Hitchcock³. ¹Arroyos & Foothills Conservancy P.O. Box 1, Pasadena, CA 91102; ²Department of Biology, Occidental College, 1600 Campus Rd. Los Angeles CA 90041; ³San Diego Field Station, U.S. Geological Survey 4165 Spruance Road Suite 200, San Diego, CA 92101.

46. UNDISCOVERED HIGHWAYS: URBAN STREAM BEDS AS A POTENTIAL SOURCE OF CONNECTIVITY FOR URBAN WILDLIFE

§ **E.Woods**, R.-A. Arias, M. Swomley, A. Grace Privett-Mendoza, A. Zellmer. Arroyos & Foothills Conservancy P.O. Box 1, Pasadena, CA 91102; Department of Biology, Occidental College, 1600 Campus Rd. Los Angeles CA 90041.

47. URBAN DARK-EYED JUNCOS DEFENDED TERRITORIES LESS AGGRESSIVELY DURING THE COVID-19 LOCKDOWN

§ **M. Walters**¹, E.S. Diamant¹, F.Wong¹, C. Cen¹ and P.J. Yeh^{1,2}. ¹Department of Ecology and Evolutionary Biology, University of California, Los Angeles, CA 90095. ²Santa Fe Institute, Santa Fe, NM 87501.

48. HOW MUCH SEED DO WE NEED? SUCCESS OF VARIED SEEDLING DENSITIES AND WATERING EFFORTS ON SOUTHERN CALIFORNIA SHRUBLAND RESTORATION IN PLASTIC TREE SHELTERS

§ **M.A. Jeffus**¹, E.J. Questad¹. ¹California State Polytechnic University, Pomona.

49. SEED PREFERENCE OF SMALL MAMMALS AND BIRDS AND ITS IMPACTS ON COASTAL SAGE SCRUB RESTORATION EFFORTS

§ **A.L. Bartling**¹, § **S.C. Dansereau**¹, § **M.R. Mejia**¹, § **A.W. Rondon**¹, T.N. Edwards¹, E.J. Questad¹. ¹California State Polytechnic University, Pomona, CA 91768.

50. HERBIVORE INFLUENCE ON POST-FIRE SAGE SCRUB SUCCESSION

§ W.M. Meyer III^{1,2}, K. Madunich¹, L. Thomey¹, C. Halligan¹, E. Halligan¹, C. Parry¹, R. Scaff³, I. Jones³, A. Jaramillo¹, A.N.T. Phan³. ¹ Pomona College, Biology Department, Claremont, CA 91711. ² Robert J, Bernard Field Station, Claremont, CA 91711. ³ W.M. Keck Science Department, Claremont CA 91711.

51. THE EFFECT OF FIRE ON RODENT POPULATION RECOVERY IN CALIFORNIA SHRUBLANDS

§ R.M. Jensen¹, T. Karels¹, J.G. Moriarty², and S.P.D. Riley². ¹Karels Research Group, Department of Biology, California State University, Northridge, Los Angeles, CA 91330. ²Santa Monica Mountains National Recreation Area, 401 West Hillcrest Drive, Thousand Oaks, CA 91360.

52. IMPACTS OF SEDIMENT AUGMENTATION ON PLANTS, INVERTEBRATES, AND BIRDS IN A SOUTHERN CALIFORNIA SALT MARSH

§ E.R. Esparza, California State University Long Beach, Long Beach, CA 90840.

53. HUMBOT: BIO-INSPIRED HUMMINGBIRD AIRCRAFT

§ A.Liu, University High School, Irvine, CA, 92612.

54. ASSESSING THE EFFICACY OF PATTERN RECOGNITION SOFTWARE TO IDENTIFY INDIVIDUAL SOUTHERN PACIFIC RATTLESNAKES

§ C.R. Percival¹, W.M. Meyer III^{1,2}, W.K. Hayes³. ¹ Pomona College, Biology Department, Claremont, CA 91711. ² Robert J, Bernard Field Station, Claremont, CA 91711. ³ Loma Linda University, Department of Earth and Biological Sciences, Loma Linda CA 92350.

55. TRAPPING DATA: A MACHINE LEARNING PIPELINE FOR PROCESSING ANIMAL TRAP IMAGES

§ M. Gonzalez¹, M. Ogden², H. Baez¹ and A. Zellmer². ¹Department of Computer Science, Occidental College, Los Angeles, CA, 90041. ²Department of Biology, Occidental College, Los Angeles, CA, 90041.

56. DEEP TRANSFER LEARNING FOR AUTOMATED DIAGNOSIS OF SKIN LESIONS FROM PHOTOGRAPHS

§ D. Kim¹, E.C. Rocheteau². ¹Grover Cleveland High School, Reseda, CA 91335. ²Department of Computer Science and Technology, University of Cambridge, Cambridge, CB3 0FD, UK.

57. EYE-NET: A HOLISTIC MACHINE LEARNING ENSEMBLE FOR THE EFFICIENT AND INTERPRETABLE DIAGNOSIS, LESION LOCALIZATION, SEVERITY ASSESSMENT, AND CLINICAL EVENT PREDICTION OF DIABETIC RETINOPATHY

§ J. Liu¹ and J. Cuadros^{2,3}. ¹Palos Verdes Peninsula High School, Los Angeles, CA 90274. ²Clinical Informatics Research, Center for Information Technology Research in the Interest of Society, School of Optometry, University of California, Berkeley, CA, 94720. ³EyePACS, Inc., San Jose, CA, 95112.

- 58. ARGUS III: A NOVEL IMAGE OPTIMIZATION AND AUGMENTATION FRAMEWORK TO ENABLE AN IMPROVED PATIENT EXPERIENCE FOR THE NEXT GENERATION EPIRETINAL PROSTHESIS**
W. Huang¹. ¹Palos Verdes Peninsula High School, Rolling Hills Estates, CA 90274.
- 59. THE IMPACT OF TIO₂ ON THE NETWORK MECHANICS OF HUVEC**
S. Alam¹, S. Fu². ¹Portola High School, Irvine, CA 92618. ²Department of Materials Science and Chemical Engineering, Stony Brook University, Stony Brook, NY 11790.
- 60. A NOVEL METHOD TO PREDICT THE RISK OF HEART FAILURE IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY**
A. Sriram¹, S. Smith². ¹The Harker School, San Jose, CA, 95129. ²Department of Mathematics and Statistics, University of Ottawa, Ottawa, Ontario, Canada, K1N 6N5.
- 61. ENERGY EFFICICNECY BETWEEN DIFFERENT SYNAPTIC VESICLE RELEASE LOCATIONS**
K. Gupta¹, C. Lee², P. Rangamani². ¹Westview High School, San Diego, 1300 Camino Del Sur, San Diego CA 92129; ²Rangamani Lab, Department of Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, CA.
- 62. MICROPLASTICS IN SURFACE SUBTIDAL SEDIMENTS OF NEWPORT BAY**
§ **C. Murphy-Hagan**¹, H. Chin¹, T. Cho¹, B. Huynh¹, S. Singh¹, and A.B. Gray¹. ¹Department of Environmental Sciences, University of California Riverside, Riverside, CA, 92501.
- 63. CHARACTERIZATION AND QUANTIFICATION OF MICROPLASTIC CONCENTRATIONS IN THE BENTHIC AND PELAGIC HABITATS OF THE SAN PEDRO SHELF.**
§ **S. Singh**¹, H. Hapich¹, T. Le¹, H. Nogi¹, B. Badwal¹, C. Murphy-Hagan¹, and A.B. Gray¹
¹Department of Environmental Sciences, University of California Riverside, Riverside, CA, 92501.
- 64. MICROPLASTICS CONTAMINATE SURFACE WATERS AND ZOOPLANKTON IN SOUTHERN CALIFORNIA**
S.C. Leigh¹, C. Bowers², § **K. Kaufman**¹, § **K. Mosqueda**¹, R. Nolasco¹, J. Teeple², E.W. M. Paig-Tran². ¹Department of Biology, California State University Dominguez Hills, Carson, CA, 90747, USA ²Department of Biological Sciences, California State University Fullerton, CA, 92831, USA.
- 65. ASSESSING THE RELATIONSHIP OF MICROPLASTICS IN *M. CALIFORNIANUS* AND THE MARINE ENVIRONMENT**
R. Sepahi and J. Landry. Department of Environmental Science, Loyola Marymount University, Los Angeles, CA, 90045

66. THE MULTIGENERATIONAL EFFECTS OF PAH EXPOSURE ON THE PHENOTYPIC EXPRESSION OF *D. MELANOGASTER*

A.R. Bharathwaj¹, L. Griffin², G. Bozinovic². ¹Westview High School, San Diego, CA, 92129. ²Boz Life Science Research and Teaching Institute, San Diego, CA 92109.

67. SPATIAL AND TEMPORAL VARIATION IN THE FISH AND INVERTEBRATE ASSEMBLAGES AT INNER CABRILLO BEACH, SAN PEDRO, CALIFORNIA

B.J. Allen¹, S.R. Contreras¹, A.I. Guerrero¹, G. Fernandez¹, Y. Leon¹, A. Loera¹, S. Terry¹ and J.K. Passarelli². ¹Department of Biological Sciences, California State University, Long Beach, CA, 90840. ²Cabrillo Marine Aquarium, San Pedro, CA, 92866.

68. SPATIAL AND HABITAT VARIATION IN DIET COMPOSITION AND ASSOCIATED LIFE HISTORY PATTERNS OF (*HYPHYPOPS RUBICUNDUS*) IN THE SOUTHERN CALIFORNIA BIGHT

B. E. Calderon¹, C. M. Williams^{1,2}, J. L. Eagleton^{1,2} and J. T. Claisse^{1,2}. ¹Department of Biology, Cal Poly Pomona, Pomona, CA 91768. ²Vantuna Research Group, Department of Biology, Occidental College, Los Angeles, CA 90041.

69. COMPARATIVE GENOMICS TO HIGHLIGHT THE EVOLUTION OF HEMOGLOBIN SUBUNIT ALPHA IN PACIFIC ROCKFISHES (*SEBASTES* SPP.)

§, £ **A. Huang**, S. Kelley and J. Heras. Department of Biology, California State University San Bernardino, San Bernardino, CA 92407.

70. HUNGRY FOR ORTHOLOGS: A MOLECULAR EVOLUTIONARY ANALYSIS OF THE GUT IN FOUR PRICKLEBACK SPECIES (FAMILY STICHAEIDAE)

§, £ **S. Kelley**¹, A. Huang¹, M. Herrera², D. German², and J. Heras². ¹Department of Biology, California State University, San Bernardino. ²Department of Ecology and Evolutionary Biology, University of California, Irvine.

71. MULTIPLE FACTORS IMPACT CONDITION INDEX OF *Ostrea lurida*, *Mytilus galloprovincialis*, AND *Magallana gigas*

B. Herrera, B.A. Quintana, L. Rodriguez, J. Demoranville, T. Miller, D.C. Zacherl. Department of Biological Science, California State University, Fullerton, CA, 92831.

72. IS METABOLIC RATE SEX-SPECIFIC IN *TIGRIOPUS CALIFORNICUS*?

§ **M. Jah**¹, S. Edmands² and S.L. Applebaum¹. ¹Environmental Studies Program, Wrigley Institute for Environmental Studies, University of Southern California, Los Angeles, CA 90089. ²Department of Biological Sciences, University of Southern California, Los Angeles, CA 90089.

73. COMPARATIVE GENOMIC ANALYSES OF THE ACE2 GENE IN TUNA TO BETTER UNDERSTAND CARDIOVASCULAR ADAPTATIONS

§, £ **N. Erickson**, J. Heras. California State University, San Bernardino, CA 92407.

74. YOU HEARD IT EAR FIRST-THE ROLE OF THE MANDIBLE IN MYSTICETE AUDITORY RECEPTION

M.N. Wilson¹, P. Krys², T. W. Cranford³, E.M. Paig-Tran¹.

¹FABB Lab, Department of Biology, California State University Fullerton 90032. ²Department of Structural Engineering, University of California San Diego 92093. ³Department of Biology, San Diego State University 92182.

75. MOMMA CAN YOU SEE ME: DOES WATER CLARITY DETERMINE LOCATION CHOICE FOR MOTHER AND CALF HUMPBACK WHALES?

§ **M. Najera**¹, I. Mandon¹, J. Wotawa¹, C. Steele¹, C. Wyels¹ and R. Cartwright². ¹ California State University Channel Islands, Camarillo, CA 93012; ²The Keiki Kohola Project, Lahaina, Hawaii 96767.

76. CALVES AT PLAY: NEONATE HUMPBACK WHALE BEHAVIOR WHEN ESCORTS ARE PRESENT VS ABSENT

A. Arias¹, C. Henry¹, C. Camarillo¹, C. Steele¹, C. Wyels¹ and R. Cartwright². ¹California State University Channel Islands, Camarillo, CA 93012; ²The Keiki Kohola Project, Lahaina, Hawaii 96767.

77. IDENTIFYING WHALES THROUGH FLUKEPRINTS FOR UNDERSTANDING MIGRATION PATTERNS AND CALF MORTALITY

§ **R. Torres**¹, B.L. Acevedo¹, J. Gaines¹, C. Steele¹, C. Wyels¹ and R. Cartwright², Department of Environmental Science and Resource Management, ¹California State University Channel Islands, Camarillo, CA 93012, ²The Keiki Kohola Project, Lahaina, Hawaii 96767.

78. MEASURING CALF AGE STRUCTURE IN A POPULATION OF HUMPBACK WHALES IN MAUI, HI BASED ON CALF DORSAL FIN CURVATURE

§ **N. Perez**¹, I. Mandon¹, § **V. Celava**¹, M. Daniels¹, C. Steele¹, C. Wyels¹ and R. Cartwright². ¹California State University Channel Islands, Camarillo, CA 93012. ²The Keiki Kohola Project, Lahaina, Hawaii 96767.