

**ARCHAEOLOGY IN ISRAEL – LAND AND SEA LIGHTNING SESSIONS**

Wednesday November 20, 2019

Seaside Forum Auditorium

SCRIPPS INSTITUTION OF OCEANOGRAPHY—UNIVERSITY OF CALIFORNIA SAN DIEGO

**PROGRAM**

**8:00 Gathering**

**8:30 Greetings:** *Tom Levy, Co-Director Scripps Center for Marine Archaeology*  
*Margaret Leinen Vice Chancellor Marine Science and Director Scripps*

**9:00-9:30: Opening Lecture:** *Gideon Avni – The Archaeology of Israel 2020 – What has been Achieved and Future Challenges*

**9:30-10:30: Archaeology in Jerusalem: A Macro- and Micro-Archaeological Approach**

Chair: Lisa Tauxe

*Yuval Gadot:* Old News from Jerusalem: Current research into the Archaeology of Ancient Jerusalem

*Yoav Vaknin, Erez Ben-Yosef, Oded Lipschits and Ron Shaar:* Archaeomagnetic Synchronization of Destruction Layers: The Southern Levantine Iron Age as a Case Study

*Elisabetta Boaretto:* Setting the clock: The application of widescale 14C dating in archaeological investigations in ancient Jerusalem

*Dafna Langgut:* Herod's Royal Gardens Come Alive

*Alex Wiegmann:* The Application of Photogrammetry for the documentation and analysis of Remains in Jerusalem

Discussion

10:30-11:10 Coffee Break

**11:10-12:00: The Judean Lowlands**

Chair: Richard Norris

*Oren Gutfeld:* Looters or monks? The disappearance of the scrolls of Qumran's Cave 53

*Pablo Betzer:* The Beit Lehi Regional Project: Landscape Archaeology in the Southern Judean Lowland.

*Debi Sandhaus-Re'em:* Decoding Behavioral Patterns through Material Culture in Border Zones: The Case of Judea and Idumea from the 4<sup>th</sup> century to the 1<sup>st</sup> century BCE

*Avraham Tendler:* Typical and Atypical Burial from the Late Hellenistic-Early Roman Period at Horvat Ashun in the Judean Hills

Discussion

**12:00-13:00 Islamic Archaeology**

Chair: Katrina Contu

*Oren Gutfeld:* Who gets the credit? New evidence behind the dating of Ramla's urban layout

*Dafna Langgut:* Tracing ancient disease by the identification of parasite remains: a case study from

the ancient core of Jerusalem during the Abbasid Caliphate

*Gideon Avni*: The Land of Milk and Honey? Early Islamic Agricultural Landscapes

*Yuval Gadot*: Why build terraces? Dry-Farming Terracing and Rural Revival in Late Antique Palestine

*Gilad Shtienberg*: Early Islamic anthropogenic influences on natural aeolian sediment: a study from the periphery of ancient Caesarea Israel

Discussion

13:00-14:30 Lunch

## 14:30-15:30: Trade, Production and Coastal Archaeology in the southern Levant

Chair: Jeff Gee

*Koby Sharvit*: High-Tech in Underwater Archaeology: Test cases from the coast of Israel

*Ruth Shahack-Gross*: Coastal and Underwater Geoarchaeology: New Perspectives on Neolithic-EBI Resource Utilization in the Carmel Coast

*Erez Ben-Yosef, Dana Akerfeld, Yehudith Harlavan, Yael Abadi-Reiss, Talia Abulafia and Dmitry Yegorov*: The metallurgical revolution in the Old World: Insights from the recently-discovered copper production workshop at Horvat Beter (late 5th millennium BCE, Beer Sheva, Israel)

*Ehud Galili*: Submerged settlements off the Israeli coast and the emergence of the Mediterranean subsistence

*Yiftah Shalev*: Trade in the Persian Mediterranean

Discussion

15:30-16:00 Coffee Break

## 16:00-16:50: Bronze and Iron Age

Chair: John Hildebrand

*Assaf Yassar-Landau*: Destruction of a Palace: New Understandings on the Destruction of the Kabri Palace in Light of new Research Methods

*Nava Panitz-Cohen, Na'ama Yahalom and Bob Mullins*: A Wise Woman and a Bearded Man from Tel Abel Beth Maacah

*Oded Lipschits*: The Tel Azekah Archaeological Project

*Joe Uziel*: Gath and Jerusalem: Interconnections between a Philistine City and its Judahite neighbors

Discussion

## 16:50-17:10 Closing Discussions

Moderator: Tom Levy

## SPEAKERS

**Gideon Avni** (PhD – 1997) is the Head of the Archaeology Division in the Israel Antiquities Authority (IAA) and a Professor of Archaeology at the Hebrew University in Jerusalem. In 1989 – 2000 he was the IAA Jerusalem District Archaeologist, and in 2000 - 2011 he headed the IAA Excavations and Surveys department. Avni's academic interests focus on various aspects of Classical, Late Antique, Early Islamic and Medieval archaeology, including the cultural and religious transformation of the Near East from Byzantine to Islamic rule, the archaeology of desert societies in the Levant, the diffusion of technologies and movement of people in Late Antiquity and medieval Eurasia, and the environmental impacts on cultural and societal changes. During the last 40 years he conducted extensive fieldwork in the Negev Desert (1979-1988; 2005-2011), Beth Govrin (1983-1992), Jerusalem and the Jerusalem hinterland (1984- 2003, 2012-2018) and Ramla (2002-2004). In 1996-2002 he headed a comprehensive survey and excavations project at the Church of the Holy Sepulcher. In 2004-2007 he co-directed a research team supported by the Israel Science foundation on the urban centers of Palestine in the Early Islamic period. In 2018- 2013 he was a member of a research group of the Hebrew University and the Israel Academy of Sciences on the formation of Islamic society in Palestine. Gideon was a fellow at the Institute of Advanced Studies of the Hebrew University in Jerusalem (2008-2009), and of Dumbarton Oaks Research Library and Collection in Washington DC (2017-2018) . He co-directed an interdisciplinary study on the ancient agriculture of the Negev during Byzantine and Early Islamic times (2006-2012), and on the Medieval Hinterlands of Jerusalem (2016—2019). Prof. Avni is the author of eight books and over one hundred scholarly articles. His recent books are *The Byzantine – Islamic Transition in Palestine, an Archaeological Approach*. Oxford: Oxford University Press (2014), and *A New Old City – Jerusalem in the Late Roman Period* (JRA Supplement 105). Rhode Island: Journal of Roman Archaeology (2017).

**Erez Ben-Yosef** is Associate Professor in the Department of Archaeology and Ancient Near Eastern Cultures at Tel Aviv University. His main research interests include Bronze and Iron Age archaeology of the southern Levant, the application of analytic methods in archaeological research (“archaeological sciences”), and archaeometallurgy. In 2012 he initiated the Central Timna Valley (CTV) Project, a multidisciplinary research project into ancient copper production in the southwestern Arava (Israel).

**Pablo Betzer** is the Israel Antiquities Authority's Southern District Archaeologist. Pablo has worked at the IAA since 2006 where he participated in major excavations in the Old City of Jerusalem and conducted important excavations and surveys in the Judean Lowlands. Pablo is also the associate director of the Beit Lehi Regional Project, a long-term, multi-disciplinary endeavor that uses state of the art technology for mapping, surveying, and ultimately conducting trial excavations in a 36 km<sup>2</sup> area in the southern Judean Lowlands. In addition, Pablo is writing his PhD dissertation on Burial Practices in the Negev during the Classical Periods.

**Elisabetta Boaretto** is Prof of Archaeological Science at the Weizmann Institute. She is the Director of the Kimmel Center for Archaeological Science and Head of the Radiocarbon Laboratory D-REAMS. Her research aims at resolving chronological questions and synchronizing events in the archaeological record. Her unique approach is to start the research at the site by excavating in order to find the best archaeological contexts for radiocarbon dating. The next step is tailoring the sample chemical preparation and finally the measurement with the accelerator. Her research is based on the integration of the microarchaeological approach and materials analysis. She has developed new methods for radiocarbon dating various materials, such as reassembled collagen, phytolith dating and charcoal. She applies stable isotopes in tree ring to reconstruct climate and synchronize with cultural changes Her studies have contributed to chronological frameworks for the Middle to Upper Paleolithic transition, the Natufian synchronization with the climate change, the Early Bronze Age and the Iron Age. She is now co-investigator of a large Israel Science Foundation funded project aimed at building the absolute chronology of Jerusalem from the Early Bronze Age to the Crusader period.

**Yuval Gadot** is the Head of the Department of archaeology and ancient near eastern cultures, Tel-Aviv University. Prof. Gadot serves as the codirector of the TAU-IAA excavation project at the City of David and the Co-Director of the Lautenschläger Azekah Expedition. In the past he served as the field director of the Ramat Rahel excavations and as the director of the Kh. er-Ras excavations. Gadot is the author of many peer-reviewed articles and books, among them *Ramat Rahel, The final report of Yohanan Aharoni's excavations 1954, 1959-1962* (Eisenbrauns 2017, together with Oded Lipschits and Liora Freud) and *Aphhek-Antipatris II, The finds on the Acropolis* (Tel-Aviv University, 2009).

**Ehud Galili** is a Marine Archaeologist, a researcher and a lecturer at the University of Haifa, a retired researcher at the Israel Antiquities Authorities and a member in the National Committee for the Protection of the Coastal Environment. His research interests include submerged prehistoric settlements, sea level changes, ancient seafaring, ancient and modern shipwrecks, fishing instruments and technologies and preservation and management of the underwater cultural heritage.

**Oren Gutfeld** (Ph.D. The Hebrew University of Jerusalem) is the owner of the Israel Archaeological Services company, excavation director on behalf the Hebrew University of Jerusalem in Horvat Beit Loya, Qumran Cave 53, Ramla, Tiberias, the Jewish Quarter Horvah and Tiferet Israel Synagogues (on behalf the IAA), and co-director of the Beit Lehi Regional Project. He is also the director of the HU salvage excavation program.

**Dafna Langgut** is a senior researcher at the Institute of Archaeology, at Tel Aviv University. Dr. Langgut is the Head of the Laboratory of Archaeobotany and Ancient Environments. Dafna's research engages with a range of fields, such as archaeobotany, which focuses on the identification of botanical remains in archaeological contexts i.e. agricultural practices, diet, plant usage, ancient gardens, seasonality of site occupation and wooden implements. Further to this, Dafna also focuses on paleoclimate and paleoenvironment reconstruction in the Levantine region during prehistorical and historical periods. Through these disciplines, Dafna considers the past relationship between humans and the environment, e.g. human migration out of Africa and the beginning of domestication.

**Oded Lipschits** is a professor of Jewish History in the Department of Archaeology and Ancient Near East Cultures at the Tel- Aviv University, where he also serves as the Director of the Sonia and Marco Nadler Institute of Archaeology and the head of the international MA and PhD program in Ancient Israel Studies. Professor Lipschits directed for many years the excavations at Ramat Rahel and currently he is the Co-Director of the Lautenschläger Azekah Expedition, digging at the site every summer since 2012. He supervised more than 50 MA students and about 20 PhD students, created an on-line coursera course ("The Fall and Rise of Jerusalem: The History of Judah under Babylonian Rule") after his 2005 book (published by Eisenbrauns). Among his numerous books and more than 100 scientific papers one can also mention "Yehud Stamp Impressions: A Corpus of Inscribed Stamp Impressions from the Persian and Hellenistic Periods in Judah" (together with David S. Vanderhooft, Eisenbrauns 2011), "What the Stones Are Whispering? 3000 Years of Forgotten History at Ramat Rahel" (together with Yuval Gadot, Manfred Oeming and Benjamin Arubas, Eisenbrauns 2017), and "The Age of Empires: History and Administration in Judah in Light of the Stamped Jar Handles (between the 8th and the 2nd Centuries BCE)" (in Hebrew: Yad Yitzhak ben Zvi, Jerusalem, forthcoming in English: Eisenbrauns and Penn-State University Press).

**Nava Panitz-Cohen** (Ph.D.) is a researcher at the Hebrew University of Jerusalem. She served as field supervisor at Tel Batash, Tel Beth-Shean and Tel Rehov, currently co-directing excavations at Tel Abel Beth Maacah (with Robert Mullins and Naama Yahalom-Mack). She is a research assistant to Prof. Amihai Mazar and editor of the Qedem Monograph Series of the Institute of Archaeology, The Hebrew University of Jerusalem. Her research interests include ceramics of the Bronze and Iron Ages, household and gender archaeology, archaeological publication

**Debi Sandhaus-Re'em** is an archaeologist and a pottery researcher working at the Israel Antiquities Authority. Deby is involved in publication projects from sites such as Hazor, Beth She'an, Khirbet Qeiyafa, Givati parking lot, Khirbet el-'Eika and smaller sites in the Jerusalem district. She was part of the field team of Hazor, Masada, Sepporis and other smaller sites. Deby completed her BA and MA studies at the Hebrew University of Jerusalem and is currently writing her PhD thesis at Tel Aviv University. The focus of her research is to trace in the material culture the different mechanisms of human behavior involved in the formation process of different social and cultural identities in a fringe zone on the background of the encounter with the Hellenistic culture through four centuries - from the fourth to the first century BCE. Her research interests include the social aspects of living and human behavior through different periods. Her early career, which focused on in Biblical archaeology provides her with a different approach and methodology to the study of the material culture in the Hellenistic and Roman periods. Her approach combines disciplines borrowed from the social sciences within the archaeological research of the later periods shifting the questions to the understanding of past human behavior in a more holistic frame.

**Ruth Shahack-Gross** is an associate professor at the University of Haifa. Her research experience includes excavation, sampling and analysis of numerous prehistoric, historic and modern (ethnoarchaeological) sites and settlements from Israel, Kenya, Cyprus, Greece and Uzbekistan. Between 2006 and 2015 she led a research group at the Kimmel Center for Archaeological Science (Weizmann Institute of Science). In 2015 she founded the Laboratory for Sedimentary Archaeology at the University of Haifa. The laboratory is a hub for a new generation of scholars conducting interdisciplinary archaeological research that involves the geosciences, anthropological archaeology and microarchaeology. Her major research directions include a longue durée study of subsistence practices in the arid southern Levant, the study of anthropogenic and natural site formation processes, and recently the study of resource utilization by Neolithic to Bronze Age coastal societies.

**Yiftah Shalev** received his Phd at the University of Haifa, writing his dissertation on Mediterranean Trade Networks at the Persian Period. He worked as research assistant of Prof. Ephraim Stern and Dr. Eilat Mazar and for 15 years took part at the Tel Dor excavation project, first as an area supervisor and later as the sites senior field archaeologist. For the past 4 years he works as a research archaeologist at the Israel Antiquities Authority, currently co-directing the ongoing excavations at the Giva'ti Parking lot at the City of David, Jerusalem.

**Gilad Shtienberg** is a postdoc researcher that has specialized over the past decade, in the theoretical and practical aspects of the geomorphological processes that occur in the ever-changing environment of the coastal zone. His interests are to investigate the complex human – environmental interactions while also gaining a unique prospective of social vulnerability to climate and environmental change in the dynamic coast of Israel. Gilad's research focuses on a multidisciplinary approach incorporating field surveys, sediment coring, OSL dating, and remote sensing technics all used for the means of integrating the coast and adjacent shallow offshore. Prior to joining the Scripps center for Marine Archaeology and the Department of Anthropology in UCSD Gilad has completed a B.Sc. in Marine Sciences from Ruppin collage, as well as M.A and a Ph.D. both from the University of Haifa. The general theme of his work conducted in The University of Haifa was on Coastal Geomorphology Quaternary coastal landform processes with an emphasis on anthropogenic impact. While waiting for his PhD thesis approval Gilad joined two separate projects one in the University of Haifa the other in the Hebrew University, Jerusalem. The two research projects focused on environmental research questions and landscape reconstructions relying on borehole coring, sedimentological analyses and stratigraphical/geoarchaeological methodologies with special emphasis on human environmental impact.

**Avraham Tendler** is a field and research archaeologist in the Israel Antiquities Authority central district and a doctoral student in the Department of Land of Israel Studies and Archaeology at Bar-Ilan University. His research focuses on the agricultural settlement systems of the Modi'in region from the Hellenistic period until the modern era. He is working on characterizing the archaeological features and material culture of each settlement system and analyzing their historical–geographical contexts.

**Joe Uziel** is an archaeologist at the Israel Antiquities Authority, Jerusalem District, where he excavates in the City of David, Davidson Center and Western Wall Tunnels. Joe completed his PhD at Bar Ilan University on the Middle Bronze Age in the southern Coastal Plain, and now focuses his research on the history and archaeology of Jerusalem, from its earliest urban establishment some 4000 years ago, and until late antiquity. Joe has advanced methods applied in the field, using new technologies in order to learn about Jerusalem's ancient population through the application of new tools. Recent discoveries made by Joe and his teams in the field include buildings dating from the First Temple Period, the main street of Second Temple Jerusalem and a Roman theater-like structure, the first such building to be discovered in Jerusalem.

**Yoav Vaknin** is a PhD student in the Department of Archaeology and Ancient Near Eastern Cultures at Tel Aviv University (supervisors: Prof. Erez Ben-Yosef, Prof. Oded Lipschits, and Dr. Ron Shaar). After studying Mathematics and Jewish Studies (BA) and Bible (MA) at the Hebrew University, Yoav is now engaged in archaeological science, focusing on archaeomagnetsim. The latter includes investigations in a growing number of sites (from Tell Dan in the north to Timna in the south) and collaborations with various scholars from the Israel Antiquities Authority and academic institutions. Yoav is also a staff member of the Central Timna Valley Project (headed by Ben-Yosef) and a research assistant at the Paleomagnetic Laboratory of the Hebrew University (headed by Shaar).

**Alex Wiegmann** was born in Moscow, USSR in 1983. His family moved to the United States in 1989, and he grew up in Chicago. In 2003 he left his studies at the University of California, Berkeley to immigrate to Israel. Following his service in the IDF, he completed his B.A. in archaeology, the civilizations of the ancient Near East and history at the Hebrew University of Jerusalem in 2009. In 2010 he began working at the Israel Antiquities Authority, where he worked as an inspector in Jerusalem, as the West Jerusalem district archaeologist and currently as the head of the field technologies branch. He completed his M.A. in archaeology at the Hebrew University in 2015 under the supervision of Prof. Yosef Garfinkel.

**Assaf Yassar-Landau** is a professor at Haifa University. Assaf graduated in archaeology at Tel Aviv University and conducted postdoctoral studies at Harvard University. Dr. Yasur-Landau's main research interests are the ties between the Aegean and the Levant, maritime trade, coastal survey and Canaanite and Phoenician culture. Current research projects include the Tel Kabri Excavations project (Co-director with E.H. Cline, GWU) and the Tel Achziv coastal exploration and publication project.

## WELCOME

**Thomas E. Levy** is Distinguished Professor of Anthropology and Director of the Center for Cyber-Archaeology and Sustainability (CCAS) in the Qualcomm Institute at the University of California San Diego. He holds the Norma Kershaw Chair in the Archaeology of Ancient Israel and Neighboring Lands and is a member of the Jewish Studies Program. Elected to the American Academy of Arts and Sciences, Professor Levy is a Levantine field archaeologist with interests in the role of technology, especially early mining and metallurgy, on social evolution. Professor Levy has been the principal investigator for many interdisciplinary archaeological field projects in Israel and Jordan that have been funded by the National Geographic Society, National Endowment for the Humanities, National Science Foundation, and other organizations. He also conducts ethnoarchaeological research in India. Professor Levy directs the University of California San Diego Levantine and Cyber-Archaeology Laboratory, and he was recently elected Chair of the Committee on Archaeological Policy (CAP) of the American Schools of Oriental Research (ASOR) and a member of the European Academy of Sciences and Arts. He was the Principal Investigator for the \$1 million University of California Office of the President's Research Catalyst grant for At-Risk Cultural Heritage and the Digital Humanities. Professor Levy is Co-Director of the Scripps Center for Marine Archaeology.  
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**Margaret Leinen**, a highly distinguished national leader and oceanographer, was appointed the eleventh director of Scripps Institution of Oceanography at UC San Diego in July 2013. She also serves as UC San Diego's vice chancellor for marine sciences and dean of the School of Marine Sciences. She joined UC San Diego in October 2013. Leinen is an award-winning oceanographer and an accomplished executive with extensive national and international experience in ocean science, global climate and environmental issues, federal research administration, and non-profit startups. She is a researcher in paleo-oceanography and paleo-climatology. Her work focuses on ocean sediments and their relationship to global biogeochemical cycles and the history of Earth's ocean and climate. Leinen leads UC San Diego's ocean, earth, and atmospheric sciences research and education programs at Scripps Oceanography, the foremost environmental research institution that addresses the most pressing environmental problems facing our planet, provides the knowledge necessary to address these challenges, and teaches the next generation of science leaders.

**Carol Padden** is the Sanford I. Berman Endowed Professor of Communication and Dean of Social Sciences at the University of California San Diego. She has published on language emergence, culture and genes, comparative sign language structure, and reading in deaf children. With Tom Humphries, Professor Padden is the co-author of four books on culture and community of deaf people in the United States. In recent years, she and her research team have been studying new sign languages in Israel and Turkey and documenting the spontaneous emergence of language in small communities. Her work has been supported by the U.S. Department of Education, the Spencer Foundation, the National Science Foundation and the National Institutes of Health. In 1992 she was awarded a John D. Simon Guggenheim Fellowship and, in 2010, a John D. and Catherine T. MacArthur Foundation Fellowship. She was elected Fellow of the Linguistic Society of America and the American Association for the Advancement of Science.  
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## MODERATORS

**Jeff Gee** is a professor of geophysics in Scripps' Geosciences Research Division. Gee's research focuses on the use of magnetic data, both remotely sensed magnetic anomaly data and the magnetization of rock samples, to understand a variety of geological problems. He uses the magnetic record in geological samples to study topics ranging from the formation of new crust at oceanic spreading centers to the processes of melt redistribution and cooling in large magma chambers. Gee is particularly interested in using marine magnetic anomaly data and complementary data from seafloor samples to document past fluctuations in geomagnetic intensity. Such records of variations of the geomagnetic field, both in direction and intensity, can potentially provide important constraints on the geodynamic and thermal history of the earth. Gee is also interested in characterizing geomagnetic field behavior in the more distant past through sampling older rocks from a variety of terrestrial settings. Gee received his undergraduate degrees from Washington and Lee University in Lexington, Va. and his Ph.D. from Scripps. He worked for three years as a postdoctoral fellow and researcher at Lamont Doherty Earth Observatory before returning to Scripps. Gee has served as Director of the Geosciences Research Division, Head of Scripps Earth Section and the Deputy Director for Research.

**Jade d'Alpoim Guedes** is an assistant professor in the department of Anthropology and at the Scripps Institution of Oceanography. Dr. d'Alpoim Guedes is an environmental archaeologist and ethnobiologist who employs an interdisciplinary research program to understand how humans adapted their foraging practices and agricultural strategies to new environments and have developed resilience in the face of climatic and social change. She employs a variety of different methodologies in her research including archaeobotany, paleoclimate reconstruction and computational modeling. Dr. d'Alpoim Guedes' primary region of focus is Asia, where she has worked extensively in China, but also has interests in Nepal, Thailand and Pakistan. Dr. d'Alpoim Guedes also works closely with crop scientists to examine the potential of landraces of traditional crops such as millet, wheat, barley and buckwheat for modern agricultural systems. Dr. d'Alpoim Guedes earned her Ph.D in Anthropological Archaeology at Harvard University and carried out a postdoctoral fellowship in the Department of Earth and Planetary Science at the same school. Dr. d'Alpoim Guedes was previously an assistant professor at Washington State University between 2014-2016. Dr. d'Alpoim Guedes is the lead PI on an Interdisciplinary project entitled "Human Response To High Altitude Environmental Change" (National Science Foundation #1632207, 213, 917\$ and National Geographic Foundation). Based in the Jiuzhaigou National Park, this project examines how early Tibetans adapted their subsistence regimes and settlement patterns to high altitude environments.

**John Hildebrand** is Distinguished Professor and Co-Director of the Scripps Center for Marine Archaeology. He is interested in how sound is used by marine mammals and how sound can be used as a tool for assessment of marine mammal populations. Recent advancements in acoustic recording technology have allowed long-term and broad-band records of underwater sound to be collected. These recordings open new windows into the behavior and distribution of marine mammals (as well as other marine organisms such as fish). Over the past decade, John has been studying how sound can be used to better understand mysticete whales, such as blue and fin whales. Some of the key results of this work are that sound may be an effective means for determining the population structure of these animals, since the songs produced by blue and fin whale have regional dialects, and these may be used by the animals as an aid for mate selection. Likewise, we have discovered that different characteristic sounds are associated with foraging and with mating behavior, and that these sounds are used with different intensity over a seasonal cycle. With the availability of expanded recording bandwidth, we have recently begun to make long-term recordings of odontocetes (toothed whales and dolphins). It has been possible to use echolocation click structure for species identification, and also to identify population structure using differences in echolocation clicks. A future challenge will be to use passive acoustic data for quantitative estimates of marine mammal abundance.

**Richard Norris** is Professor of Paleobiology at Scripps Institution of Oceanography, University of California San Diego. Professor Norris' research focuses on the evolution of life in the oceans, with particular emphasis on the mechanisms of extinction and speciation of plankton and the processes of assembly of marine ecosystems. He also works on the recent fossil record of reefs and coastal environments to evaluate the impact of human activities on marine and terrestrial ecosystems. In recent years, Professor Norris has been working on the paleoenvironmental record of the Mediterranean to the rise of civilizations around the basin and on African environmental history during the rise of humanity.

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**Lisa Tauxe** is a Distinguished Professor of Geophysics in the Geosciences Research Division and Department Chair/Deputy Director for Education at Scripps Institution of Oceanography, University of California, San Diego. Tauxe's studies concentrate on paleomagnetism, the study of remanent magnetism in geological and archaeological materials. She is working to extend the record of paleointensity of Earth's magnetic field behavior 200 million years back into history. Tauxe has received many awards and honors, including the George P. Woollard Award of the Geological Society of America, Outstanding Academic Title in Earth Science from the American Library Association for Essentials of Paleomagnetism, the Antarctic Service Medal, the Benjamin Franklin Medal, the Arthur L. Day Medal and was elected to the National Academy of Sciences. She has served as a Distinguished Lecturer of the Joint Oceanographic Institutions and as an Invited Speaker of the Science Lecture Series at the Radcliffe Institute for Advanced Study. Tauxe is an elected fellow of the American Association for the Advancement of Science, of the Geological Society of America, and of the American Geophysical Union. She has served as President of the Geomagnetism/Paleomagnetism Section and as the General Secretary/Treasurer of the American Geophysical Union. Tauxe has published more than 190 scientific papers.

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