

Index to Volume 53

Articles

Aglen, A. Impact of fish distribution and species composition on the relationship between acoustic and swept-area estimates of fish density	501
Andreeva, I. B., and Belousov, A. V. Multiple sound scattering by densely packed shoals of marine animals.	323
Arrhenius, F. Diet composition and food selectivity of 0-group herring (<i>Clupea harengus</i> L.) and sprat (<i>Sprattus sprattus</i> (L.)) in the northern Baltic Sea	701
Arrhenius, F., and Hansson, S. Growth and seasonal changes in energy content of young Baltic Sea herring (<i>Clupea harengus</i> L.)	792
Aure, J., Danielssen, D., and Sætre, R. Assessment of eutrophication in Skagerrak coastal waters using oxygen consumption in fjordic basins	589
Baldursson, F. M., Danielsson, A., and Stefánsson, G. On the rational utilization of the Icelandic cod stock.	643
Barange, M., Hampton, I., and Soule, M. A. Empirical determination of <i>in situ</i> target strengths of three loosely aggregated pelagic fish species	225
Barrett, R. T., and Krasnov, Y. V. Recent responses to changes in stocks of prey species by seabirds breeding in the southern Barents Sea	713
Becker, G. A., and Pauly, M. Sea surface temperature changes in the North Sea and their causes	887
Bembo, D. G., Carvalho, G. R., Cingolani, N., and Pitcher, T. J. Electrophoretic analysis of stock structure in Northern Mediterranean anchovies, <i>Engraulis encrasicolus</i>	115
Beukema, J. J., Essink, K., and Michaelis, H. The geographic scale of synchronized fluctuation patterns in zoobenthos populations as a key to underlying factors: climatic or man-induced	964
Boddeke, R. Changes in the brown shrimp (<i>Crangon crangon</i> L.) population off the Dutch coast in relation to fisheries and phosphate discharge	995
Bot, P. V. M., and Colijn, F. A method for estimating primary production from chlorophyll concentrations with results showing trends in the Irish Sea and the Dutch coastal zone	945
Casas, J. M., and Paz, J. Recent changes in the feeding of cod (<i>Gadus morhua</i>) off the Flemish Cap, Newfoundland 1989–1993	750
Castillo, J., Barbieri, M. A., and Gonzalez, A. Relationship between sea surface temperature, salinity, and pelagic fish distribution off northern Chile	139
Corten, A., and van de Kamp, G. Variation in the abundance of southern fish species in the southern North Sea in relation to hydrography and wind	1113
Cowan, J. H. Jr, Houde, E. D., and Rose K. A. Size-dependent vulnerability of marine fish larvae to predation: an individual-based numerical experiment	23
Daan, R., and Mulder, M. On the short-term and long-term impact of drilling activities in the Dutch sector of the North Sea	1036
Danielssen, D. S., Svendsen, E., and Ostrowski, M. Long-term hydrographic variation in the Skagerrak based on the section Torungen–Hirtshals	917
de Groot, S. J. Quantitative assessment of the development of the offshore oil and gas industry in the North Sea.	1045
Dethlefsen, V., von Westernhagen, H., and Cameron, P. Malformations in North Sea pelagic fish embryos during the period 1984–1995	1024
Duncan, A., and Kubecka, J. Patchiness of longitudinal fish distributions in a river as revealed by a continuous hydroacoustic survey	161
Ehrenberg, J. E., and Torkelson, T. C. Application of dual-beam and split-beam target tracking in fisheries acoustics	329
Erzini, K., Gonçalves, J. M. S., Bentes, L., Lino, P. G., and Cruz, J. Species and size selectivity in a Portuguese multispecies artisanal long-line fishery	811
Fernández de Puelles, M. L., Valdés, L., Varela, M., Alvarez-Ossorio, M. T., and Halliday, N. Diel variations in the vertical distribution of copepods off the north coast of Spain.	97
Fjøsne, K., and Gjørseter, J. Dietary composition and the potential of food competition between 0-group cod (<i>Gadus morhua</i> L.) and some other fish species in the littoral zone.	757
Fossum, P. A study of first-feeding herring (<i>Clupea harengus</i> L.) larvae during the period 1985–1993.	51
Fréon, P., Gerlotto, F., and Soria, M. Diel variability of school structure with special reference to transition periods	459

Frid, C. L. J., and Huliselan, N. V. Far-field control of long-term changes in Northumberland (NW North Sea) coastal zooplankton.	972
Gledhill, C. T., Lyczkowski-Shultz, J., Rademacher, K., Kargard, E., Crist, G., and Grace, M. A. Evaluation of video and acoustic index methods for assessing reef-fish populations	483
Goodson, A. D., and Sturtivant, C. R. Sonar characteristics of the harbour porpoise (<i>Phocoena phocoena</i>): source levels and spectrum.	465
González, A. F., Castro, B. G., and Guerra, A. Age and growth of the short-finned squid <i>Illex coindetii</i> in Galician waters (NW Spain) based on statolith analysis	802
Greve, W., Reiners, F., and Nast, J. Biocoenotic changes of the zooplankton in the German Bight: the possible effects of eutrophication and climate	951
Griffiths, G., and Diaz, J. I. Comparison of acoustic backscatter measurements from a ship-mounted Acoustic Doppler Current Profiler and an EK500 scientific echo-sounder	487
Hall, J. A., Frid, C. L. J., and Proudfoot, R. K. Effects of metal contamination on macrobenthos of two North Sea estuaries	1014
Hamano, A., Sasakura, T., Kieser, R., Cooke, K., Kubota, K., and Clay, A. Target-strength measurements of Pacific hake (<i>Merluccius productus</i>) in Canadian waters using quasi-ideal and conventional beam transducers	273
Hampton, I. Acoustic and egg-production estimates of South African anchovy biomass over a decade: comparisons, accuracy, and utility	493
Hansson, S., Rudstam, L. G., Kitchell, J. F., Hildén, M., Johnson, B. L., and Peppard, P. E. Predation rates by North Sea cod (<i>Gadus morhua</i>) – predictions from models on gastric evacuation and bioenergetics.	107
Haralabous, J., and Georgakarakos, S. Artificial neural networks as a tool for species identification of fish schools	173
Hatfield, E. M. C. Towards resolving multiple recruitment into loliginid fisheries: <i>Loligo gahi</i> in the Falkland Islands fishery	565
Heessen, H. J. L., and Daan, N. Long-term trends in ten non-target North sea fish species.	1063
Heide-Jørgensen, M. P., and Reeves, R. R. Evidence of a decline in beluga, <i>Delphinapterus leucas</i> , abundance off West Greenland.	61
Hewitt, R. P., and Demer, D. A. Lateral target strength of Antarctic krill	297
Hislop, J. R. G. Changes in North Sea gadoid stocks	1146
Huse, I., and Ona, E. Tilt angle distribution and swimming speed of overwintering Norwegian spring spawning herring	863
Iida, K., Mukai, T., and Hwang, D. Relationship between acoustic backscattering strength and density of zooplankton in the sound-scattering layer	507
Jaffe, J. S. Temporal sampling of backscattered sonar signals	359
Jiang, W., and Jørgensen, T. The diet of haddock (<i>Melanogrammus aeglefinus</i> L.) in the Barents Sea during the period 1984–1991.	11
Kehayias, G., Lykakis, J., and Fragopoulou, N. The diets of the chaetognaths <i>Sagitta enflata</i> , <i>S. serratodentata atlantica</i> and <i>S. bipunctata</i> at different seasons in Eastern Mediterranean coastal waters.	837
Kloser, R. J. Improved precision of acoustics surveys of benthopelagic fish by means of a deep-towed transducer	407
Kuikka, S., Suuronen, P., and Parmanne, R. The impacts of increased codend mesh size on the northern Baltic herring fishery: ecosystem and market uncertainties	723
Laane, R. W. P. M., Southward, A. J., Slinn, D. J., Allen, J., Groeneveld, G., and de Vries, A. Changes and causes of variability in salinity and dissolved inorganic phosphate in the Irish Sea, English Channel, and Dutch coastal zone.	933
Lewis, T. N., and Rogers, P. H. The vibrational response of single-chambered fish swim-bladders to low-frequency sound.	285
Lillo, S., Cordova, J., and Paillaman, A. Target-strength measurements of hake and jack mackerel.	267
Macdonald, R. W., and Bowers, J. M. Contaminants in the arctic marine environment: priorities for protection	537
MacLennan, D. N., and Holliday, D. V. Fisheries and plankton acoustics: past, present, and future	513
MacLennan, D. N., and Menz, A. Interpretation of <i>in situ</i> target-strength data.	233
Marchal, E., and Lebourges, A. Acoustic evidence for unusual diel behaviour of a mesopelagic fish (<i>Vinciguerria nimbaria</i>), exploited by tuna	443

Martin, L. V., Stanton, T. K., Wiebe, P. H., and Lynch, J. F. Acoustic classification of zooplankton	217
Massé, J., Koutsikopoulos, C., and Patty, W. The structure and spatial distribution of pelagic fish schools in multispecies clusters: an acoustic study	155
McClatchie, S., Alsop, J., and Coombs, R. F. A re-evaluation of relationships between fish size, acoustic frequency, and target strength	780
McClatchie, S., Alsop, J., Ye, Z., and Coombs, R. F. Consequence of swimbladder model choice and fish orientation to target strength of three New Zealand fish species	847
McGehee, D., and Jaffe, J. S. Three-dimensional swimming behaviour of individual zooplankters: observations using the acoustical imaging system FishTV	363
Maucorps, A. Opening address	885
Meisfjord, J., and Sundt, R. C. Genetic variation between populations of the harp seal, <i>Phoca groenlandica</i>	89
Michalsen, K., Godø, O. R., and Fernø, A. Diel variation in the catchability of gadoids and its influence on the reliability of abundance indices	389
Millner, R. S., and Whiting, C. L. Long-term changes in growth and population abundance of sole in the North Sea from 1940 to the present	1185
Misund, O. A., and Beltestad, A. K. Target-strength estimates of schooling herring and mackerel using the comparison method	281
Misund, O. A., Aglen, A., Hamre, J., Ona, E., Røttingen, I., Skagen, D., and Valdemarsen, J. W. Improved mapping of schooling fish near the surface: comparison of abundance estimates obtained by sonar and echo integration	383
Mitson, R. B., Simard, Y., and Goss, C. Use of a two-frequency algorithm to determine size and abundance of plankton in three widely spaced locations	209
Miyashita, K., Aoki, I., and Inagaki, T. Swimming behaviour and target strength of isada krill (<i>Euphausia pacifica</i>).	303
Morgan, M. J., and Trippel, E. A. Skewed sex ratios in spawning shoals of Atlantic cod (<i>Gadus morhua</i>)	820
Mukai, T., and Iida, K. Depth dependence of target strength of live kokanee salmon in accordance with Boyle's law	245
Mulligan, T. J., and Kieser, R. A split-beam echo-counting model for riverine use	403
Murray, A. W. A. Comparison of geostatistical and random sample survey analyses of Antarctic krill acoustic data	415
Mutlu, E. Target strength of the common jellyfish (<i>Aurelia aurita</i>): a preliminary experimental study with a dual-beam acoustic system	309
Myers, R. A., Barrowman, N. J., Hoenig, J. M., and Qu, Z. The collapse of cod in Eastern Canada: the evidence from tagging data	629
Nielsen, E., and Richardson, K. Can changes in the fisheries yield in the Kattegat (1950–1992) be linked to changes in primary production?	988
Ona, E., and Mitson, R. B. Acoustic sampling and signal processing near the seabed: the deadzone revisited	677
Pavlov, D. A., and Moksness, E. Sensitive stages during embryonic development of wolffish, <i>Anarhichas lupus</i> L. determining the final numbers of rays in unpaired fins and skeletal abnormalities.	731
Pedersen, J. Discrimination of fish layers using the three-dimensional information obtained by a split-beam echo-sounder	371
Petitgas, P., and Levenez, J. J. Spatial organization of pelagic fish: echogram structure, spatio-temporal condition, and biomass in Senegalese waters	147
Philippart, C. J. M., Lindeboom, H. J., van der Meer, J., van der Veer, H. W., and Witte, J. IJ. Long-term fluctuations in fish recruit abundance in the western Wadden Sea in relation to variation in the marine environment	1120
Pitcher, T. J., Misund, O. A., Fernø, A., Totland, B., and Melle, V. Adaptive behaviour of herring schools in the Norwegian Sea as revealed by high-resolution sonar.	449
Pope, J. G., and Macer, C. T. An evaluation of the stock structure of North Sea cod, haddock, and whiting since 1920, together with a consideration of the impacts of fisheries and predation effects on their biomass and recruitment	1157
Porteiro, C., Carrera, P., and Miguel, J. Analysis of Spanish acoustic surveys for sardine, 1991–1993: abundance estimates and inter-annual variability.	429
Ransom, B. H., Steig, T. W., and Neelson, P. A. Comparison of hydroacoustic and net catch estimates of Pacific salmon smolt (<i>Oncorhynchus</i> spp.) passage at hydro-power dams in the Columbia River Basin, USA.	477

Reynisson, P. Evaluation of threshold-induced bias in the integration of single-fish echoes	345
Rice, J., and Gislason, H. Patterns of change in the size spectra of numbers and diversity of the North Sea fish assemblage, as reflected in surveys and models	1214
Rijnsdorp, A. D., and Millner, R. S. Trends in population dynamics and exploitation of North Sea plaice (<i>Pleuronectes platessa</i> L.) since the late 1800s	1170
Rijnsdorp, A. D., and van Leeuwen, P. I. Changes in growth of North Sea plaice since 1950 in relation to density, eutrophication, beam-trawl effort, and temperature	1199
Rijnsdorp, A. D., van Leeuwen, P. I., Daan, N., and Heessen, H. J. L. Changes in abundance of demersal fish species in the North Sea between 1906–1909 and 1990–1995	1054
Roe, H. S. J., Griffiths, G., Hartman, M., and Crisp, N. Variability in biological distributions and hydrography from concurrent Acoustic Doppler Current Profiler and SeaSoar surveys	131
Rogers, S. I., and Millner, R. S. Factors affecting the annual abundance and regional distribution of English inshore demersal fish populations: 1973 to 1995	1094
Rose, G. A., and Porter, D. R. Target-strength studies on Atlantic cod (<i>Gadus morhua</i>) in Newfoundland waters	259
Scalabrin, C., Diner, N., Weill, A., Hillion, A., and Mouchot, M-C. Narrowband acoustic identification of monospecific fish shoals	181
Selivanovsky, D. A., and Ezersky, A. B. Sound scattering by hydrodynamic wakes of sea animals	377
Selivanovsky, D. A., Stunzhas, P. A., and Didenkulov, I. N. Acoustical investigation of phytoplankton	313
Serchuk, F. M., Kirkegaard, E., and Daan, N. Status and trends of the major roundfish, flatfish, and pelagic fish stocks in the North Sea: thirty-year overview	1130
Simmonds, E. J., Armstrong, F., and Copland, P. J. Species identification using wideband backscatter with neural network and discriminant analysis	189
Simmonds, E. J., and Fryer, R. J. Which are better, random or systematic acoustic surveys? A simulation using North Sea herring as an example	39
Smith, S. J., and Page, F. H. Associations between Atlantic cod (<i>Gadus morhua</i>) and hydrographic variables: implications for the management of the 4VsW cod stock	597
Socha, D. G., Watkins, J. L., and Brierley, A. S. A visualization-based post-processing system for analysis of acoustic data	335
Soria, M., Fréon, P., and Gerlotto, F. Analysis of vessel influence on spatial behaviour of fish schools using a multi-beam sonar and consequences for biomass estimates by echo-sounder	453
Soule, M. A., Hampton, I., and Barange, M. Potential improvements to current methods of recognizing single targets with a split-beam echo-sounder	237
Sparholt, H. Causal correlation between recruitment and spawning stock size of central Baltic cod?	771
Spencer, P. D., and Collie, J. S. A simple predator–prey model of exploited marine fish populations incorporating alternative prey	615
Stanley, D. R., and Wilson, C. A. Abundance of fishes associated with a petroleum platform as measured with dual-beam hydroacoustics	473
Stanton, T. K., Chu, D., and Wiebe, P. H. Acoustic scattering characteristics of several zooplankton groups	289
Steig, T. W., and Johnston, S. V. Monitoring fish movement patterns in a reservoir using horizontally scanning split-beam techniques	435
Stefánsson, G. Analysis of groundfish survey abundance data: combining the GLM and delta approaches	577
Suthers, I. M., and Sundby, S. Role of the midnight sun: comparative growth of pelagic juvenile cod (<i>Gadus morhua</i>) from the Arcto-Norwegian and a Nova Scotian stock	827
Suuronen, P., Perez-Comas, J. A., Lehtonen, E., and Tschernij, V. Size-related mortality of herring (<i>Clupea harengus</i> L.) escaping through a rigid sorting grid and trawl codend meshes	691
Takao, Y., and Furusawa, M. Dual-beam echo integration method for precise acoustic surveys	351
Tameishi, H., Shinomiya, H., Aoki, I., and Sugimoto, T. Understanding Japanese sardine migrations using acoustic and other aids	167
Tarbox, K. E., and Thorne, R. E. Assessment of adult salmon in near-surface waters of Cook Inlet, Alaska	397

Index to Volume 53

Thompson, C. H., and Love, R. H. Determination of fish size distributions and areal densities using broadband low-frequency measurements	197
Traynor, J. J. Target-strength measurements of walleye pollock (<i>Theragra chalcogramma</i>) and Pacific whiting (<i>Merluccius productus</i>).	253
Turrell, W. R., Slessor, G., Payne, R., Adams, R. D., and Gillibrand, P. A. Hydrography of the East Shetland Basin in relation to decadal North Sea variability	899
Ulltang, Ø. Stock assessment and biological knowledge: can prediction uncertainty be reduced?	659
van Leussen, W., Radach, G., van Raaphorst, W. Colijn, F., and Laane, R. The North-West European Shelf Programme (NOWESP): integrated analysis of shelf processes based on existing data sets and models	926
Walker, P. A., and Heessen, H. J. L. Long-term changes in ray populations in the North Sea	1085
Watkins, J. L., and Brierley, A. S. A post-processing technique to remove background noise from echo integration data	339
Williamson, N. J., and Traynor, J. J. Application of a one-dimensional geostatistical procedure to fisheries acoustic surveys of Alaskan pollock	423
Winters, G. H., and Wheeler, J. P. Environmental and phenotypic factors affecting the reproductive cycle of Atlantic herring	73
Witbaard, R. Growth variations in <i>Arctica islandica</i> L. (Mollusca): a reflection of hydrography-related food supply	981
Ye, Z., Curran, T., and Lemon, D. Fish detection by an acoustic scintillation technique	317
Ye, Z., and Farmer, D. M. Acoustic scattering by fish in the forward direction	249
Zakharia, M. E., Magand, F., Hetroit, F., and Diner, N. Wideband sounder for fish species identification at sea	203
 Memorial	
Professor Ray Beverton	1
Introduction to Symposium on Fisheries and Plankton Acoustics.	129
Introduction to Symposium on Changes in the North Sea Ecosystem and Their Causes: Århus 1975 Revisited.	879
Symposium Contributions	519
 Short communications	
Basford, D. J., Moore, D. C., and Eleftheriou, A. S. Variations in benthos in the north-western North Sea in relation to the inflow of Atlantic water, 1980–1984	957
Boddeke, R., and Vingerhoed, B. The anchovy returns to the Wadden Sea	1003
de Groot, S. J. The physical impact of marine aggregate extraction in the North Sea.	1051
Frid, C. L. J., Buchanan, J. B., and Garwood, P. R. Variability and stability in benthos: twenty-two years of monitoring off Northumberland.	978
Hasti, L. C. Estimation of trawl codend selectivity for squid (<i>Loligo forbesi</i>), based on Scottish research vessel survey data	741
Heessen, H. J. L. Time-series data for a selection of forty fish species caught during the International Bottom Trawl Survey	1079
Heessen, H. J. L., Hislop, J. R. G., and Boon, T. W. An invasion of the North Sea by blue-mouth, <i>Helicolenus dactylopterus</i> (Pisces, Scorpaenidae).	874
Millner, R., Flatman, S., Rijnsdorp, A. D., van Beek, F. A., De Clerck, R., Damm, U., Tetard, A., and Forest, A. Comparison of long-term trends in growth of sole and plaice populations	1196
Modin, J., Fagerholm, B., Gunnarsson, B., and Pihl, L. Changes in otolith microstructure at metamorphosis of plaice, <i>Pleuronectes platessa</i> L.	745
Pedersen, B. Metal concentration in biota in the North sea: changes and causes	1008
Referees to Symposium on Fisheries and Plankton Acoustics.	513
Referees to Symposium on Changes in the North Sea Ecosystem and Their Causes: Århus 1975 Revisited.	1226
Editorial Note: Platinum Jubilee.	749
Erratum	641