

## Appendix B. *Abbreviations and Acronyms*

The following abbreviations and acronyms are encountered frequently in AFS publications. Unless indicated otherwise, they should be spelled out in full at first use.

AAAS	American Association for the Advancement of Science
Ab	antibody
ACE	Army Corps of Engineers
ACR	acute-chronic ratio
ACS	American Chemical Society (Washington, D.C.)
ACSIRO	Australia Commonwealth Scientific and Industrial Research Organisation
ADCP	Aquaculture Development and Coordination Programme (FAO)
ADF&G	Alaska Department of Fish and Game (ADFG also acceptable)
AEC	Atomic Energy Commission (became ERDA in 1977)
AFA	(1) Anadromous Fish Act; (2) a fixative consisting of acetic acid, formalin, and alcohol
AFCA	Anadromous Fish Conservation Act (see Fisheries 12[6]:7–9)
AFTA	American Factory Trawlers Association (Seattle)
AGU	American Geophysical Union
AI	artificial intelligence
AIBS	American Institute of Biological Sciences
AICHE	American Institute of Chemical Engineers
AID	Agency for International Development (U.S.)
AIFRB	American Institute of Fishery Research Biologists
ALS	American Littoral Society
A&M	e.g., Texas A&M University ( <i>not</i> “A and M”)
ANC	acid-neutralizing capacity
ANCOVA	analysis ( <i>or</i> analyses) of covariance
ANL	Argonne National Laboratory (Argonne, Illinois)
ANODEV	analysis ( <i>or</i> analyses) of deviance
ANOVA	analysis ( <i>or</i> analyses) of variance
AOAC	Association of Official Analytical Chemists (Arlington, Virginia)
AOSERP	Alberta Oil Sands Environmental Research Program
APHA	American Public Health Association (Washington, D.C.)
APHIS	Animal and Plant Health Inspection Service (USDA)
API	(1) American Petroleum Institute; (2) Analytical Profile Index System (as in “API20E test strips”; standard notation, <i>no need to spell out</i> )
APL	(1) A Programming Language ( <i>never spelled out</i> but should be identified as a computer language); (2) Applied Physics Laboratory (Laurel, Maryland)
ARC	Aquaculture Research Center (Norwegian; as in “Nutreco ARC”)
ARMA	autoregressive moving average
ARS	Agricultural Research Service (USDA)
A/S	Aksje Selskap (Norwegian equivalent of “Inc.”; <i>do not spell out</i> )
ASB	Association of Southeastern Biologists
ASCE	(1) American Society of Civil Engineers; (2) American Society of Chemical Engineers
ASCII	American Standard Code for Information Interchange (in Webster’s, <i>no need to spell out</i> )
ASI	American Sportfishing Institute
asl	above sea level
ASME	American Society of Mechanical Engineers

ASMFC	Atlantic States Marine Fisheries Commission (Washington, D.C.)
ASPP	American Society of Plant Pathologists
ASTM	American Society for Testing and Materials (Philadelphia)
ASW	artificial seawater
ATCC	American Type Culture Collection (acronym used in the codes that designate cell lines)
ATP	adenosine triphosphate (in Webster's, <i>no need to define/spell out</i> )
AWG	American wire gage
b	base (usually used with a prefix to denote thousands of bases, i.e., kb; see bp)
BALB/c	strain of mouse (standard notation, <i>no need to spell out</i> )
BaP	benzo[ <i>a</i> ]pyrene
BARD	Binational Agricultural Research and Development
BASIC	Beginners All-Purpose Symbolic Instruction Code (in Webster's, <i>do not spell out</i> )
B.A.S.S.	Bass Anglers Sportsman Society
BB	brown bullhead (a cell line)
BBL	Baltimore Biological Laboratories
BCWD	bacterial cold-water disease
BHI	brain–heart infusion
BHIA	brain–heart infusion agar
BIA	Bureau of Indian Affairs (USDI)
BKD	bacterial kidney disease
BLM	Bureau of Land Management (USDI)
BMDP	Biomedical Programs (statistical software package published by the University of California Press)
BOD	biochemical oxygen demand
BOR	Bureau of Reclamation (USDI)
bp	base pair; a paired purine and pyrimidine in double-stranded DNA
BP	before present (radio carbon dating; present = 1950)
B.P.	Boite Postale (French equivalent of “Post Office Box”)
BPA	Bonneville Power Administration (USDOE, Portland, Oregon)
BRD	Biological Resources Division (research arm of USGS)
BSA	bovine serum albumin
BSS	balanced salt solution (see HBSS)
BST	British summer time
BVET	basinwide visual estimation technique (see Dolloff et al., <i>NAJFM</i> 17[2])
CAD	computer-aided design
CAFIR	Comité d'Attribution des Fonds Internes de Recherche
CAFSAC	Canadian Atlantic Fisheries Scientific Advisory Committee (Dartmouth or Halifax, Nova Scotia)
CalCOFI	California Cooperative Oceanic Fisheries Investigations
CBE	Council of Biological Editors
CBG	C-bands treated with barium hydroxide and stained with Giemsa (e.g., “CBG-banded chromosomes”)
CBI	Chesapeake Bay Institute (Baltimore)
CBL	Chesapeake Biological Laboratory
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCL	certified cell line (a designation of the American Type Culture Collection indicating a cell line that has been better studied and characterized than one designated CRL)
CCV	channel catfish virus cumulative
cdf	density function (see pdf)
CECPI	Commission Européenne Consultative pour les Pêches dans les Eaux Intérieures (FAO; see also EIFAC)
Cedex	Courrier d'Entreprise à Distribution Exceptionnelle (basically a P.O. Box for businesses; <i>do not spell out</i> )

CEMAGREF	Centre d'Etude du Machinisme Agricole, du Rural, des Eaux et Forêts (Bordeaux, France)
CEMF	counter electromotive force (a voltage)
CEQ	Council on Environmental Quality (U.S.)
CERF	Coastal Education and Research Foundation (Charlottesville, Virginia)
CFA	complete Freund's adjuvant
CFI	Council of Forest Industries (Vancouver, Canada)
CFU	colony-forming unit (see PFU)
CGPM	Conseil Général des Pêches pour la Méditerranée (FAO; see also GFCM)
CHH	chum salmon heart (a cell line)
CHSE	Chinook salmon embryo (a cell line)
CI	confidence interval
CICESE	Centro de Investigación Científica y de Educación Superior de Ensenada (Baja California)
CICTUS	Center of Scientific and Technological Research of the University of Sonora
CIE	counterimmunoelectrophoresis
CIEM	Conseil International pour l'Exploration de la Mer (Charlottenlund, Denmark; see also ICES)
CIFA	Committee for Inland Fisheries of Africa (a committee in the Fisheries Division of FAO; also CPCA)
CIMAS	Cooperative Institute for Marine and Atmospheric Studies (Rosenstiel School of Marine and Atmospheric Sciences, University of Miami)
CISTI	Canada Institute for Scientific and Technical Information
CITES	Convention on International Trade in Endangered Species (of Wild Fauna and Flora)
CJFAS	Canadian Journal of Fisheries and Aquatic Sciences
CL	(1) certified line (a variant of CCL); (2) confidence limit
CMFRI	Central Marine Fisheries Research Institute (Ernakulum, Cochin, India)
CMOS	complementary-metal-oxide semiconductor
CNEXO	Centre National pour l'Exploitation des Océans (Paris; see IFREMER)
CNRS	Centre National de la Recherche Scientifique
COD	chemical oxygen demand
COE	Corps of Engineers (U.S. Army)
COLS	corrected ordinary least squares
COPESCAL	Comisión de Pesca Continental para América Latina (FAO)
COPRAQ	Cooperative Programme of Research in Aquaculture
CORR	correlation procedure (SAS statistical procedure)
C.P.	(1) Casier postal (French for "postal drawer"; <i>do not spell out</i> ) (2) Código postal (Spanish for "postal code"; <i>do not spell out</i> )
CPCA	Comité des Pêches Continentales pour l'Afrique (FAO; also CIFA)
CPE	(1) catch per effort (can also stand for "catch per unit [of] effort"); (2) cytopathic effect
CPUE	catch per unit (of) effort
CR	Carrier Route (in address)
CRD	Coastal Resource Division (NMFS)
CREES	Cooperative Research, Education, and Extension Service (USDA; see CSREES)
CRL	cell repository line (designation of the American Type Culture Collection; see CCL)
cRNA	complementary RNA
CRSP	Cooperative Research Support Program (Pond Dynamics Aquaculture)
CSE	coho salmon embryo (a cell line)
CSIC	Consejo Superior de Investigaciones Científicas
CSIR	Council of Scientific and Industrial Research (New Delhi, India)
CSIRO	Commonwealth Scientific and Industrial Research Organization (often preceded by the first letter of a country; see ACSIRO)
CSREES	Cooperative State Research, Education, and Extension Service (USDA)
CSRS	Cooperative State Research Service (under Science and Education in USDA)
CT	buffer system of Clayton and Tretiah (1972)
CTAB	hexadecyltrimethylammonium bromide (used in the process of extracting mtDNA; entered as centrimonium bromide in Merck, but accept the more common alternative name)

CTM	critical thermal maximum (does not require further definition in Abstract but needs explanation in Methods; see UILT)
CV	coefficient of variation (must be defined; usually $100 \times \text{SD}/\text{mean}$ but sometimes $100 \times \text{SE}/\text{mean}$ )
Da	dalton (unit of molecular mass; often kDa [ $1 \text{ Da} = 1 \text{ g}/\text{Avogadro's number}$ ]; note: no units if molecular <i>weight</i> )
DAPI	4',6-diamidino-2-phenylindole (a stain)
DBA	dot blot analysis ( <i>or</i> assay)
DDBA	direct dot blot assay
DDE	1,1-dichloro-2,2-bis( <i>p</i> -chlorophenyl)ethane (in Webster's, <i>no need to spell out</i> ); also known as DDD (dichlorodiphenyldichloroethane, which is in Webster's), <i>p,p'</i> -DDD, and TDE (tetrachlorodiphenylethane)
DEA	Department of External Affairs (Canada)
DEAE	diethylaminoethanol (often used in descriptions of column chromatography; e.g., "DEAE-cellulose")
DEC	Department of Environmental Conservation (an agency of several states, e.g., "NYDEC")
DEMR	Department of Energy, Mines, and Resources (Canada)
Dep.	(definition unknown; essential part of some Norwegian addresses)
DFO	Department of Fisheries and Oceans (Canada)
DGICYT	Dirección General de Investigación Científica y Técnica (Spain)
DIC	disseminated intravascular coagulation
DIG	digoxigenin
DMSO	dimethyl sulfoxide (in Webster's, <i>no need to spell out</i> )
DNase	sometimes DNAase: deoxynuclease (in Webster's, <i>no need to spell out</i> )
dNTP	deoxynucleotide triphosphate
DO	dissolved oxygen
DOC	(1) Department of Commerce (U.S.); (2) Department of Conservation (an agency of several states)
DOE	Department of Energy (U.S.)
DORM	dogfish reference material (for trace elements)
DPD	diethylphenylenediamine
DPST	double-pole single-throw switch
DSARMA	deseasonalized ARMA
EC	(1) emulsifiable concentrate; (2) European Commission
ECP	extracellular product(s)
EDF	European Development Fund
EDTA	ethylenediaminetetraacetic acid (in Webster's, <i>no need to spell out</i> )
$E_i$	Ivlev's electivity index
EIBS	erythrocytic inclusion body syndrome
EIFAC	European Inland Fishery Advisory Commission (FAO; see also CECPI)
EIS	environmental impact statement
ELIFA	enzyme-linked immunofiltration assay
ELISA	enzyme-linked immunosorbent assay
EMAP	Environmental Monitoring and Assessment Program (EPA)
EMEM	Eagle's minimum essential medium
EMF	electromotive force
EMI	electromagnetic interference
EMSL	Environmental Monitoring Systems Laboratory (EPA)
EN-SO	El Niño-Southern Oscillation
ENV	erythrocytic necrosis virus
EPA	Environmental Protection Agency (U.S. and some state governments; acceptable with full identification)

EPC	epithelioma papillosum cyprini (cell line derived from an epithelial tumor of common carp)
EPRI	Electric Power Research Institute (Palo Alto, California)
EPSCoR	Experimental Program to Stimulate Competitive Research (NSF)
ERDA	Energy Research and Development Administration (DOE)
ERM	enteric redmouth (disease)
EROD	7-ethoxyresorufin- <i>O</i> -deethylase
ESU	evolutionarily significant unit
F	filial generation (on AFS symbols list; <i>does not need definition</i> )
<i>F</i>	instantaneous fishing mortality
$F_{0.1}$	(a) fishing mortality at which yield per recruit is 10% less than its value at $F_{MAX}$ ; (b) fishing mortality at which the slope of the yield-per-recruit curve is 10% of the value at zero fishing mortality; (c) fishing mortality at which the marginal increase in yield from adding one more unit of fishing effort is 10% of the increase in yield from adding the same unit of effort in the very lightly exploited fishery; (d) fishing mortality at which the marginal increase in total yield is one-tenth the original catch per unit effort (all of these definitions are equivalent)
$F_{MAX}$	(a) fishing mortality at which the yield-per-recruit curve has its maximum; or equivalently (b) fishing mortality below which growth overfishing is prevented
FAA	formol–acetic acid–alcohol
Fab	fragment, antigen-binding arm (the region or fragment [either of two] of an IgG molecule that contains the antigen-combining site
F(ab) <sub>2</sub>	fragment of an IgG molecule that contains both Fab regions and the hinge region connecting them
FAME	fatty acid methyl ester
FAO	Food and Agriculture Organization of the United Nations (Rome)
FASEB	Federation of American Societies for Experimental Biology (Bethesda, Maryland)
FAT	fluorescent antibody technique (also see MF-FAT)
FCA	Freund’s complete adjuvant (see FIA)
FCAR	Fonds pour la Formation de Chercheurs de l’Aide à la Recherche
FCMA	Fishery Conservation and Management Act (Public Law 94-265 of 1976; see MFCMA)
FDA	Food and Drug Administration (U.S.)
FDP	fibrin degradation products
FEBS	Federation of European Biochemical Societies
FEMAT	Forest Ecosystem Management Assessment Team (representatives of USFS, BLM, USFWS, NPS, EPA, and NMFS; studies problems of Pacific Northwest forests)
FERC	Federal Energy Regulation Commission (DOE)
FERIC	Forest Engineering Research Institute of Canada
FET	field-effect transistors
FFA	filtration–fluorescent antibody (a staining method)
FFI	Fish Farming International
FHM	fathead minnow (a cell line)
FIA	Freund’s incomplete adjuvant
FITC	fluorescein isothiocyanate
FL	fork length (fish length from snout to the cleft of a forked caudal fin)
FMC	Fishery Management Council
FONDE	
PESCA	Fondo Nacional para el Desarrollo de la Pesca (Mexico)
FORTTRAN	<i>formula translation</i> (or Fortran; in Webster’s, <i>no need to spell out</i> )
FRBC	Fisheries Research Board of Canada
FRED	Fisheries Rehabilitation, Enhancement, and Development (ADF&G)
FSH	follicle-stimulating hormone
FTU	formazin turbidity unit

<i>g</i>	gravity or acceleration due to gravity (e.g., “5,000 × <i>g</i> ”; spelled out unless used more than once)
G <sub>0</sub>	cell-cycle phase consisting of the period of quiescence after cell division
G <sub>1</sub>	cell-cycle phase consisting of the “preparatory” period before DNA synthesis
G <sub>2</sub>	cell-cycle phase consisting of the period after DNA synthesis and before cell division
G <sub>i</sub>	inhibiting form of trimenic G proteins (as used in <i>JAAH</i> 8:10)
GENBANK	a genetics database of the National Center for Biotechnology Information at the National Library of Medicine, National Institutes of Health, Bethesda, Maryland ( <i>no need to define in JAAH</i> )
GFCM	General Fisheries Council for the Mediterranean (FAO; see CGPM)
GFDL	Geophysical Fluid Dynamics Laboratory (Princeton University; acronym is applied to a general circulation climate model developed at the laboratory)
GH	growth hormone
GIS	geographical information systems
GISS	Goddard Institute for Space Sciences (acronym is applied to a general circulation climate model developed at NASA Goddard Space Flight Center, Greenbelt, Maryland)
GLC	(1) gas–liquid chromatography; (2) Great Lakes Commission (Ann Arbor, Michigan)
GLFC	Great Lakes Fishery Commission (Ann Arbor, Michigan)
GLIM	general(ized) linear interactive model
GLM	general(ized) linear model (acronym of SAS Institute)
GLP	good laboratory practice
GLPS	good laboratory practice standards
GLRC	Great Lakes Research Consortium
GLS	generalized least squares
GmbH	German equivalent of “Co.” or “Corp.”
GMFMC	Gulf of Mexico Fishery Management Council (Tampa, Florida)
GnRH	gonadotropin-releasing hormone; synonym of LHRH
GPC	Government Printing Centre (Canada)
GPO	(1) Government Printing Office (Washington, D.C.); (2) General Post Office (in Australian addresses)
GPS	Global Positioning System
GRAS	generally recognized as safe (FDA registration standard)
GSI	gonadosomatic index (calculated by dividing the weight of reproductive tissue by the total body weight)
GSMFC	Gulf States Marine Fisheries Commission (Ocean Springs, Mississippi)
GtH	gonadotropic hormone
H&E	hematoxylin and eosin (a group of stains; equivalent to HE)
HAT	hypoxanthine, aminopterin, and thymidine (a tissue culture medium)
Hb	hemoglobin
HBSS	Hanks’ balanced salt solution (= physiological saline)
HCG	human chorionic gonadotropin
HCP	health and condition profile (e.g., Goede and Barton in AFS Symposium 8)
HCR	Highway Contract Route (in addresses, e.g., “HCR-7, Box 27”; <i>do not spell out</i> )
Hct	hematocrit
HE	hematoxylin–eosin (a group of stains; equivalent to H&E)
HEPES	<i>N</i> -(2-hydroxyethyl)-1-piperazineethanesulfonic acid (a buffer; primary entry in the Merck Index, <i>no need to spell out</i> )
HPI axis	hypothalamic–pituitary–interrenal axis
HPLC	high-performance liquid chromatography
HRP	horseradish peroxidase
HSD	honestly significantly different ( <i>also</i> , honestly significantly difference test)
HUFA	highly unsaturated fatty acid

IAEA	International Atomic Energy Agency (Vienna)
IAFWA	International Association of Fish and Wildlife Agencies
IAM	Institute of Applied Microbiology (University of Tokyo)
IATTC	Inter-American Tropical Tuna Commission (Scripps Institution of Oceanography, La Jolla, California)
IBI	index of biotic integrity
IBP	International Biological Programme
IC	integrated circuit
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea (see also CIEM)
ICLARM	International Center for Living Aquatic Resources Management (Manila, Philippines)
ICNAF	International Commission for the Northwest Atlantic Fisheries (now defunct; replaced by NAFO)
ICP	inductively coupled argon plasma emission spectrometry
ICPRB	Interstate Commission on the Potomac River Basin
ICU	international chick units (used with vitamin dosages)
ID	inside diameter
IDBA	indirect dot blot assay
IDRC	International Development Research Centre (Ottawa, Canada)
IEEE	Institute of Electrical and Electronics Engineers
IFAT	indirect fluorescent antibody test (or technique)
IFIM	instream flow incremental methodology
IFR	instream flow recommendation
IFRDC	Institut Français de Recherche Scientifique pour le Developpement en Cooperation
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (Paris [also Nantes], France)
IFS	International Foundation for Science (Stockholm, Sweden)
IgA	immunoglobulin A (other immunoglobulins: IgD, IgE, IgG, and IgM)
IGFA	International Game Fish Association
IHHNV	infectious hypodermal and hematopoietic necrosis virus ( <i>or</i> IHNV virus)
IHNV	infectious hematopoietic necrosis virus ( <i>or</i> IHN virus)
IJC	International Joint Commission (Washington, D.C.)
ILT	incipient lethal temperature
<i>I<sub>n</sub></i>	informativeness index
INAD	investigational new animal drug (a type of FDA permit)
INPFC	International North Pacific Fisheries Commission (Vancouver, British Columbia)
INRA	Institut National de la Recherche Agronomique (several locations in France and its former colonies)
INRAT	( <i>or</i> I.N.R.A.T.) Institut National de la Recherche Agronomique Tunisia (Arabia)
I-O	input-output (a type of economic analysis)
IOC	Intergovernmental Oceanographic Commission
ip	intraperitoneal(ly) (sometimes IP or i.p.)
IPFC	Indo-Pacific Fisheries Commission (FAO)
IPHC	International Pacific Halibut Commission (Seattle)
IPNV	infectious pancreatic necrosis virus ( <i>or</i> IPN virus)
IPSFC	International Pacific Salmon Fisheries Commission
IPTP	Indo-Pacific Tuna Development and Management Programme
IRI	index of relative importance
ISACF	International Society of Arctic Char Fanatics (published in Drottningholm, Sweden)
ISH	in situ hybridization
ISO	International Organization for Standardization (Geneva, Switzerland)
IWC	International Whaling Commission (Cambridge, UK)
JEM	a company name (now JEOL, Ltd., Peabody, Massachusetts)
JFRBC	Journal of the Fisheries Research Board of Canada (became CJFAS in 1980)
JTU	Jackson turbidity units

<i>K</i>	condition factor (generally $10^5 \times \text{weight/fork length}^3$ )
K/A	alkaline/acid
kDa	kilodaltons
KDM	kidney disease medium
K1K	walking catfish kidney (a cell line)
LC50	concentration that is lethal to 50% of test organisms in a specified time (usually 96 h; different mortality criteria and time periods are possible)
LD50	dose that is lethal to 50% of test organisms in a specified time
LED	light-emitting diode
LGLFRO	Lower Great Lakes Fisheries Resources Office (USFWS)
LH	lutinizing hormone
LHRF	lutinizing hormone releasing factor (an acceptable synonym for LHRH)
LHRH	lutinizing hormone releasing hormone
LHRH-A	synthetic analogues of LHRH
LILT	lower incipient lethal temperature
LOEC	lowest-observed-effect concentration (see NOEC)
LPS	lipopolysaccharide
LSC	liquid scintillation count (counting)
LSD	least significant difference ( <i>also</i> , least-significant-difference test)
LT50	temperature that is lethal to 50% of test organisms (invariably refers to the upper temperature limit)
LWD	large woody debris (or lwd)
<i>M</i>	instantaneous natural mortality
M	cell-cycle phase consisting of the period of cell division
MAb	( <i>or</i> MoAb) monoclonal antibody
MAFF	Ministry of Agriculture, Fisheries, and Food (Great Britain)
MAFMC	Mid-Atlantic Fishery Management Council (Washington, D.C.)
MANOVA	multivariate ANOVA
MARFIN	Marine Fisheries Initiative Program (USDOC)
MARMAP	Marine Resources Monitoring, Assessment, and Prediction (a program of NMFS)
MATC	maximum acceptable toxicant concentration
MDS	a manufacturer's designation ( <i>do not spell out</i> )
<i>m/e</i>	ratio of molecular mass (weight) to ionic charge (used in mass spectrometry; also denoted <i>m/z</i> )
MEH	mean erythrocytic hemoglobin
MEHC	mean erythrocytic hemoglobin content
MEI	morphoedaphic index
MEM	minimum essential medium
meq	milliequivalents (blood Na and K are often given as meq/L)
MEV	(1) mean erythrocyte volume; (2) million electron-volts
MFCMA	Magnuson Fishery Conservation and Management Act (see FCMA)
MF-FAT	membrane filtration-fluorescent antibody technique
mho	unit of conductance or conductivity (replaced by S [siemens] in the International System of Units)
MIC	minimum inhibitory concentration of a drug (e.g., MIC50 is the minimum concentration needed to inhibit the growth of cultured bacteria or other cells by 50%)
MICRA	Mississippi Interstate Cooperative Resource Association (Bettendorf, Iowa)
micron	micrometer (in Webster's, but not allowed in AFS style; <i>spell out or use <math>\mu\text{m}</math></i> )
mil	nonmetric measure of thickness (1 mil = 0.001 in = 0.0254 mm; <i>not an abbreviation</i> )
MMC	Marine Mammal Commission (Washington, D.C.)
MNRM	( <i>or</i> M.N.R.M.) Master's of Natural Resource Management (use "master's thesis" in AFS references)
MOA	memorandum of agreement

MoAb	( <i>or</i> MAb) monoclonal antibody
mos	metallic-oxide semiconductor
MOSFET	metallic-oxide semiconductor field-effect transistor
MOU	memorandum of understanding
mRNA	messenger RNA
MS	mean square
MS-222	tricaine methanesulfonate (proprietary name)
MSE	mean square(d) error ( <i>not</i> “mean SE” or “mean <sup>2</sup> error”)
MSH	melanocyte-stimulating hormone (occurs in two forms: alpha- and beta-MSH)
msl	mean sea level
MSY	maximum sustainable yield
mtDNA	mitochondrial DNA
<i>m/z</i>	see <i>m/e</i>
<i>N</i>	normal (chemical term)
NAD	nicotinamide adenine dinucleotide (in Webster’s, <i>no need to spell out</i> )
NADH	reduced form of NAD (in Webster’s, <i>no need to spell out</i> )
NADP	(1) nicotinamide adenine dinucleotide phosphate (in Webster’s, <i>no need to spell out</i> ); (2) National Atmospheric Deposition Program
NADPH	reduced form of NADP (in Webster’s, <i>no need to spell out</i> )
NAFO	North Atlantic Fisheries Organization (supercedes ICNAF; Dartmouth, Nova Scotia)
NAPAP	National Acid Precipitation Assessment Program
NASCO	North Atlantic Salmon Conservation Organization
NAS–NAE	Academy of Sciences–National Academy of Engineering
NBII	national biological information infrastructure
NBT	nitro-blue tetrazolium
NCASI	National Council of the Paper Industry for Air and Stream Improvements (New York)
NCMB	National Collection of Marine Bacteria
NCRAC	North Central Regional Aquaculture Center
NCSS	a computer package
NCTC	National Collection of Type Cultures (now NTCC)
NEAFC	North-East Atlantic Fisheries Commission (London)
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center Natural Environmental Research Council (UK)
NERC	nombro fundamental (chromosome arm number)
NF	nitrogen-free extract
NFE	Norwegian Council of Fisheries Research
NFFR	National Geodetic Vertical Datum (see Kondolf, <i>TAFS</i> 125[6])
NGVD	National Institutes of Environmental Health Services
NIEHS	( <i>or</i> N.I.F.I.) National Inland Fisheries Institute (Fisheries Department, Bangkok, Thailand)
NIFI	National Institutes of Health
NIH	Norwegian Institute for Nature Research
NINA	National Marine Fisheries Service (NOAA)
NMFS	National Oceanic and Atmospheric Administration (USDOD)
NOAA	no-observed-effect concentration (see LOEC)
NOEC	National Ocean Service (USDOD)
NOS	National Park Service (USDI)
NPS	(1) National Research Council (U.S.); (2) Nuclear Regulatory Commission (U.S.)
NRC	National Research Council of Canada
NRCC	Natural Resources Conservation Service (USDA; formerly SCS)
NRCS	National Research Initiative (USDA)
NRI	National Research Initiative Competitive Grants Program (USDA)
NRICGP	

nRNA	nuclear RNA
NSERC	Natural Sciences and Engineering Research Council of Canada
NSF	National Science Foundation (U.S.)
NTCC	National Type Culture Collection (Rockville, Maryland)
NTIS	National Technical Information Service (Springfield, Virginia)
NTNF	Norwegian Council for Scientific and Industrial Research
NTU	nephelometric turbidity units
NWRI	National Water Research Institute
OCS	outer continental shelf
OD	(1) optical density; (2) outside diameter
OECD	Organisation for Economic Cooperation and Development (Paris)
OIE	Office International des Epizooties (Paris)
OLS	ordinary least squares
OMNR	Ontario Ministry of Natural Resources
OMP	Oregon Moist Pellet (a feed; capitalized)
OPD	<i>o</i> -phenylenediamine (a substrate solution for ELISA)
ORNL	Oak Ridge National Laboratory
ORSTOM	( <i>or</i> O.R.S.T.O.M.) Office de la Recherche Scientifique et Technique Outre-Mer
OSY	optimum sustainable yield
OTC	oxytetracycline
P-4501A	cytochrome P-4501A (an enzyme used to monitor exposure to petroleum products)
p.a.	pro analysis (a grade of chemicals, as in p.a. grade; standard notation; <i>no need to spell out</i> )
PAGE	polyacrylamide gel electrophoresis (see SDS)
PAH	polycyclic aromatic hydrocarbon
PAR	periodic autoregressive
PAS	periodic acid–Schiff (a stain)
PAUP	phylogenetic analysis using parsimony
PBS	phosphate-buffered saline
PC	polycarbonate
PCA	principal components analysis
PCO <sub>2</sub>	( <i>or p</i> CO <sub>2</sub> ) partial pressure of the gas CO <sub>2</sub> (PCO <sub>2</sub> preferred but <i>p</i> CO <sub>2</sub> acceptable)
PCR	polymerase chain reaction
PDB	Pee Dee belemnite (isotopic standard for <sup>13</sup> C/ <sup>12</sup> C ratio)
pdf	probability density function ( <i>not</i> probability distribution function; see cdf)
PEG	polyethylene glycol
PERCIS	Percid International Symposium (published in JFRBC 34[10])
PFA	perfluoroalkoxy (as in Teflon PFA pipe)
PFMC	Pacific Fishery Management Council
PFU	plaque-forming unit (see cfu)
PGD	( <i>or</i> PKX) proliferative gill disease
PHA	phytohemagglutinin (erythrocyte agglutinator and T cell mitogen)
PHABSIM	physical habitat simulation system ( <i>no need to spell out</i> )
Pi	inorganic phosphate
pI	isoelectric point of a protein (i.e., the pH at which its net charge is 0)
PIPES	piperazine- <i>N,N</i> -bis-[2-ethanesulfonic acid]
PKX	see PGD
PIT	passive integrated transponder (may be used in title if defined in Abstract)
PMSF	phenylmethylsulfonyl-fluoride
PNFHPC	Pacific Northwest Fish Health Protection Committee
PO <sub>2</sub>	( <i>or p</i> O <sub>2</sub> ) partial pressure of oxygen gas (PO <sub>2</sub> preferred but <i>p</i> O <sub>2</sub> acceptable)

PONAR	dredge used to sample sediments, especially in the Great Lakes region (does not need definition, but should be all caps; letters stand for the surnames of the inventors)
POW	programmable output waveform (e.g., “POW backpack electroshocker [Smith-Root]”)
ppm	parts per million (not allowed in <i>TAFS</i> or <i>JAAH</i> ; <i>change to metric</i> )
pro	as in “pro analysis” (see p.a.)
PSC	Pacific Salmon Commission (Vancouver, British Columbia)
PSD	proportional stock density
PSMFC	Pacific States Marine Fisheries Commission (Portland, Oregon)
PUD	Public Utility District (unique to the State of Washington)
PUFA	polyunsaturated fatty acid
PVC	polyvinyl chloride
PVP	polyvinyl pyrrolidone
$Q$	discharge or flow of water; a subscript sometimes denotes the frequency of a particular discharge (e.g., $Q_{50}$ denotes a 50-year flood, $Q_{2.33}$ a discharge that occurs every 2.33 years on the average)
$Q_{10}$	factor by which a physiological rate increases for a 10°C rise in temperature
RAPD	randomly amplified polymorphic DNA
RBC	( <i>or rbc</i> ) red blood cell
REAP	Restriction Enzyme Analysis Package (a computer program)
RFLP	restriction fragment length polymorphism
RFMC	Regional Fishery Management Council
RIA	radioimmunoassay
RKM	( <i>or rkm</i> ) river kilometer (usually refers to distance above the river’s mouth, but zero point should be defined)
RM	river mile (see RKM)
rms	root mean square
RNase	( <i>or RNAase</i> ) ribonuclease (in Webster’s, <i>no need to spell out</i> )
RNRF	Renewable Natural Resources Foundation (Bethesda, Maryland)
RPMI	a type of complete medium (sometimes followed by a hyphen and number; e.g., “RPMI-1640”; stands for Rosswell Park Memorial Institute but is <i>never spelled out</i> )
RRET	representative reach extrapolation technique (see Dollof et al., <i>NAJFM</i> 17[2])
rRNA	ribosomal RNA
RSD	relative stock density
RSL	buffer system of Ridgeway et al. 1970 (see reference in Kriegler et al., <i>NAJFM</i> 15[4])
RSMAS	Rosenstiel School of Marine and Atmospheric Science (University of Miami)
RTH	rainbow trout hepatoma (a cell line)
RTLA	Registry of Tumors in Lower Animals
S	(1) cell-cycle phase consisting of the period of DNA synthesis; (2) Svedberg unit (used to denote sizes of RNA molecules, e.g., a 1S molecule has a sedimentation coefficient of $1 \times 10^{-13}$ s and an 18S molecule has a coefficient of $18 \times 10^{-13}$ s)
SAF	Society of American Foresters (Bethesda, Maryland)
SAFMC	South Atlantic Fishery Management Council (Charleston, South Carolina)
SAS	Statistical Analysis System (created by the SAS Institute, Cary, North Carolina)
SCOL	Salmonid Communities in Oligotrophic Lakes (symposium published in <i>JFRBC</i> 29[6])
SCOPE	Scientific Committee on Problems of the Environment
SCS	Soil Conservation Service (USDA; now called NRCS)
SCSP	South China Sea Fisheries Development Coordinating Programme (FAO)
SD	standard deviation
SDA	specific dynamic action (the metabolic heat loss from the digestion and transformation of food,

	measured in J/[kg × h])
SDI	shoreline development index (ratio of shoreline length to the circumference of a circle with the same area as the water body)
SDS	sodium dodecyl sulfate (used in conjunction with polyacrylamide gel electrophoresis; sometimes denoted SDS–PAGE)
SE	standard error
SEAFDEC	Southeast Asian Fisheries Development Center (Bangkok, Thailand)
SEM	scanning electron microscope ( <i>or</i> microscopy)
SETAC	Society of Environmental Toxicology and Chemistry
SFI	Sport Fishing Institute (Washington, D.C.; now part of ASI)
SFIA	Sea Fish Industry Authority (Hull, UK)
SGR	specific growth rate
SH	sulphydryl
SIAM	Society for Industrial and Applied Mathematics (Philadelphia)
SIC	standard industrial classification
SINE	short interspersed repetitive DNA element (e.g., “ <i>Hpa</i> I SINE”)
S–K	Saltonstall–Kennedy (NMFS program that provides grants for marine research)
SL	standard length (fish length measured from snout to insertion of caudal fin rays on the last vertebra)
SNARL	Sierra Nevada Aquatic Research Laboratory (Mammoth Lakes, California)
SOPHEIA	solid-phase enzyme immunoassay, trademarked as a kit
sp.	species (plural: spp.; <i>no need to spell out</i> )
SP-4	agar (standard notation, <i>no need to spell out</i> )
SPC	South Pacific Commission (Noumea, New Caledonia)
SPF	specific pathogen free
SPOF	Strategic Plan for Ontario Fisheries
spp.	species (plural of sp.)
SPSS	Statistical Package for the Social Sciences (McGraw-Hill)
SPST	single-pole single-throw (a kind of switch)
SRBC	sheep red blood cells
SRR	stock–recruit(ment) relationship
SS	sum of squares
SSC	standard sodium citrate (a solution of 150 mM NaCl and 15 mM sodium citrate that is often used to stabilize preparations for DNA analysis [the actual concentration of the solution is usually expressed as a multiple of the standard: 5× SSC, 0.1× SSC, etc.]
SSE	sockeye salmon embryo (a cell line)
ssp.	subspecies
SSP	Society for Scholarly Publishing
SST	sea surface temperature
STE	salt–tris–EDTA (a buffer)
SV	simian virus
	triiodothyronine (a thyroid hormone)
T <sub>3</sub>	thyroxine (a thyroid hormone)
T <sub>4</sub>	Tween-20
T20	total allowable catch
TAC	tris-acetate–EDTA (a buffer)
TAE	total ammonia nitrogen
TAN	Technical Association of the Pulp and Paper Industry (Norcross, Georgia)
TAPPI	thiobarbituric
TBAR	tris–boric acid (borate)–EDTA (a buffer)
TBE	thiosulphate–citrate–bile–sucrose
TCBS	tissue culture infective dose of a cytopathogenic agent (virus) that produces a cytopathic effect in
TCID50	50% of inoculated cultures (in <i>JAAH</i> , often “tissue culture infectious dose with 50% endpoint”)

TDE	tetrachlorodiphenylethane (see DDE)
TDS	total dissolved solids
TE	tris-EDTA (a buffer)
TED	turtle excluder device
TEM	transmission electron microscope ( <i>or</i> microscopy)
TFN	transfer-function noise (a model)
TINRO	Pacific Scientific Research Institute of Fisheries and Oceanography (Russia)
TL	total length (fish length measured from snout to tip of longest caudal fin ray)
TLC	thin-layer chromatography
TRLSC	time-resolved liquid scintillation count (counting)
tRNA	transfer RNA
TSB	trypticase soy broth <i>or</i> tryptic soy broth ( <i>not</i> “soya”)
TSP	( <i>or</i> tsp) triple super phosphate
TTBS	tris-Tween buffered saline (a typical formulation: 50 mM tris, 0.9% NaCl, 0.1% Tween-20; final pH 7.2)
TVA	Tennessee Valley Authority
TVG	time-varied gain <i>or</i> time-varying gain (hydroacoustic term)
TYES	trypticase yeast extract agar + skim milk
U	unit (used chiefly for drugs or other pharmaceuticals)
UILT	upper incipient lethal temperature (see ctm)
UNDP	United Nations Development Programme (New York)
UNEP	United Nations Environment Programme (Nairobi, Kenya)
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UPGMA	unweighted pair-group method with arithmetic averages
USACE	U.S. Army Corps of Engineers
USAID	U.S. Agency for International Development
USBLM	U.S. Bureau of Land Management
USDA	U.S. Department of Agriculture
USDA/NRI	U.S. Department of Agriculture, National Research Initiative
USDI	U.S. Department of the Interior
USDOC	U.S. Department of Commerce
USDOE	U.S. Department of Energy
USFS	U.S. Forest Service (USDA)
USFWS	U.S. Fish and Wildlife Service (USDI)
USGS	U.S. Geological Survey
USNM	U.S. National Museum
USP	U.S. Pharmacopeia <i>or</i> U.S. Pharmaceutical (grade; may need to add “units”)
VCR	video cassette recorder (in Webster’s, <i>no need to spell out</i> )
VEN	viral erythrocytic necrosis
VESO	Veterinaermedisink Senter for Oppdragvirksomhet (Norwegian for “veterinary contract research center”; <i>do not spell out</i> )
VHS	(1) viral hemorrhagic septicemia; (2) video home system
VHSV	viral hemorrhagic septicemia virus (also referred to as the Egtved virus)
VI	visual implant (type of tag)
VNIRO	a publishing company (Moscow)
VNTR	variable number of tandem repeats (refers to repeated sequences of DNA bases in a gene)
VOM	volt-ohm-milliammeter or volt ohm milliammeter (a multimeter used to measure volts, ohms, and milliamperes)
VP	Voges-Proskauer test (APHA)
VPA	virtual population analysis

v/v	( <i>or</i> v:v) volume per volume (mL/L; only used parenthetically)
WAS	World Aquaculture Society
WRRI	Water Resources Research Institute
WSD	wholly significantly different ( <i>or</i> , wholly significant difference test)
WTA	willingness to accept (compensation)
WTP	willingness to pay
w/v	( <i>or</i> w:v) weight per volume (g/L; only used parenthetically)
w/w	( <i>or</i> w:w) weight per weight (mg/g; only used parenthetically)
YOY	young of (the) year ( <i>avoid using this acronym</i> ; define young of [the] year as “age 0” and use that term thereafter)
Z	instantaneous total mortality (= natural + fishing mortality)