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GLOSSARY

A

ADAPS	USGS computerized water data file.
Adult life stage	Trout 6 or more inches long.
Alpha	Used in statistical tests as the probability of incorrectly rejecting the hypothesis that the data come from an assumed relationship.
Average daily flow	The arithmetic mean of individual daily mean discharges during a period of record.
ADF	Average daily flow.
Associated habitat duration analysis	Development of habitat probability relationship by determining habitat corresponding to a flow and assigning the probability of the flow to the habitat.

B

Binary suitability criteria	Habitat suitability criteria that have values only of zero or unity.
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C

Calibration flow	Flow at which satisfactory field measurements have been made, and used to calibrate hydraulic model(s).
CDS	Complete data set.
Channel	The groove through which water of a stream normally flows.
Chi-square test	A statistical method for determining whether observations fit an assumed probability distribution.
Complete data set	A data set collected at a study site, preferably in the range necessary to allow extrapolation to the highest flow necessary to be modeled; generally includes bottom and overbank survey, velocity and depth measurements at each measurement point, water surface elevation and substrate/cover determination for each transect at that site, and flow rate computation.
Conservation flow	Mandated flow expected to be maintained downstream from a water storage facility or water intake to protect instream uses, including fishery habitat.

Conservation releases	Releases made from a controlled water storage facility to maintain some amount of flow in the stream downstream from the facility.
Consumptive use	Loss of water from ground-water or surface water source, through a man-made conveyance system, by a process that does not return the water to the basin.
Cover	Areas of shelter that provide resting places, visual isolation, or protection from predators for aquatic organisms.
cfs	Cubic foot per second.
csn	Streamflow rate per unit of drainage area, cubic feet per second per square mile.
Cross section	Same as transect.
Cubic foot per second	Unit of measurement of flow of a stream.
Current meter	A device used to measure the velocity of water in a body of water.

D

Daily flow	Average of instantaneous discharges during a clock day.
Duration analysis	Categorization of events (e.g., flow rates or habitat available) to determine the probability of exceedance by arranging the values in order of magnitude.
Detailed analysis program	Computer program written in Microsoft Excel format for complete analysis of the impact of any combination of withdrawal and passby flows on the flow and habitat of a project stream; see preliminary analysis program.
Diversion	Withdrawal from a body of water by man-made conveyance system.

E

Ecoregion	An area expected to have similar ecological characteristics (Omernik, 1987a, b).
Electrofishing	Sampling fish populations by temporarily stunning them with an electrical current.
Exceptional Value Waters	A stream or watershed that constitutes an outstanding national, state, regional or local resource...of substantial recreation or ecological significance (Pennsylvania Code, Title 25, ch. 93, pp. 93-8).

Evaluation species Species used to estimate effects of changes in flow on the aquatic ecosystem.

F

Fall season Months of October through February when adult, juvenile, and spawning life stages are present.

Flow duration analysis Duration analysis of streamflow data of a selected time step (e.g., daily or monthly).

Freestone A general term for the class of rocks that do not contain significant amounts of carbonate minerals. See limestone.

Freestone streams Streams that drain areas underlain by noncarbonate rocks; defined in this study as streams not meeting the criteria to be considered as limestone streams. See limestone streams.

Flow protection Maintenance of flows to prevent significant reductions in habitat for aquatic species, or other instream uses.

Fry life stage Immature fish after emergence from gravel, assumed herein to be less than 2 inches long.

G

Gaging station Point on a stream or water body where water surface elevations or flow are systematically measured.

Glacial boundary Location of the terminal moraine of the late Wisconsin glacial advance, as defined by Sevon (1995).

H

Habitat The place where an organism or population lives and its surroundings, both living and nonliving; used herein to refer to the physical aspects of habitat represented as weighted usable area.

Habitat suitability criteria Relationship(s) describing usability of different values of physical habitat variable(s) (depth, velocity, substrate/cover) that compose the physical habitat of species.

High Quality Waters A stream or watershed that has excellent quality waters and environmental or other features that require special water quality protection (Pennsylvania Code, Title 25, ch. 93, pp. 93-8).

HSC	Habitat suitability criteria.
Hydrologic region	A portion of a study region assumed to be hydrologically similar for computing ADF and median monthly flows for project streams.
Habitat duration	Duration analysis of habitat data of selected time step (e.g., daily or monthly).

I

Impact	Absolute or percentage difference between the amount of habitat available without the withdrawal and the amount available with the withdrawal.
Instream use	Any use of water that does not require diversion or withdrawal from the natural watercourse.
Instream Flow Incremental Methodology	A method to quantify the effects of alterations of streamflow on the aquatic ecosystem.
IFIM	Instream Flow Incremental Methodology.
Inflection point	Point where the slope of a curve changes.
Invertebrate	Animal that has no backbone; used herein to refer to aquatic insects.

J

Juvenile life stage	Immature fish larger than fry; assumed herein to be between 2 and 6 inches long.
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L

Life stage	An arbitrary age classification of an organism used in this study to describe adult, juvenile, fry and spawning periods in the life of selected species.
Limestone	A general term for the class of rocks that contain carbonate minerals (calcium carbonate or magnesium carbonate), as shown by Pa. DER (1990).
Limestone streams	Streams draining areas underlain by carbonate rocks; defined in this study as streams having total alkalinity greater than 70 mg/l, or identified as limestone streams by Shaffer (1991).

M

Median monthly flow	Median value of all the daily flows during a particular month for some period-of-record.
Median monthly habitat	Habitat available half the time during a particular month in the record; defined in this study as habitat available at the median monthly flow.
Mesohabitat	Collective term for different stream habitat types (e.g., riffle, run, pool).
Microhabitat	Small localized areas within a mesohabitat type, typically described by a combination of depth, velocity, substrate, or cover.
Morphology	The form and structure of a watershed, stream channel, or biological community.
Modified forage index	An electivity index used to measure the degree of preference for various microhabitat conditions.

N

No-loss of habitat	No reduction of weighted usable area at any flow.
No-net-loss of habitat	No reduction in weighted usable area at the median monthly flow.
No-net-loss flow	The flow that results in no-net-loss of habitat, computed as the smaller of the flow at the maximum renormalized minimum weighted usable area and the median monthly flow.
Normalized Modified Forage Index	Modified forage index scaled to a range from zero to one; used to develop habitat suitability criteria.
NMFI	Normalized modified forage index.

P

Partial data set	A data set collected at a study site, at an appropriate flow, for model calibration; generally includes at least flow rate and water surface elevation measurements for each transect at that site.
Passby flow	The flow rate below which a withdrawal can not be allowed.
Periodicity	Time of occurrence of different life stages during the year.
PDS	Partial data set.

PHABSIM	Physical Habitat Simulation Program; a set of software and methods used to compute relationships between physical habitat and streamflow.
Physiographic province	Region with similar structural characteristics and a unified geomorphic history, as described by Fenneman (1938) and delineated by Pa. DER (1989) and Sevon (1995).
Physiographic section	A subdivision of a physiographic province, as delineated by Pa. DER (1989), Sevon (1995), or Sevon (in preparation).
Pool	Part of a stream where velocity is reduced, usually with deeper water than surrounding areas.
Preliminary analysis program	Computer program written in Microsoft Excel format for initial analysis of the impact of combinations of withdrawal and pre-specified passby flows on the flow and habitat of a project stream; see detailed analysis program.
Project stream	Stream where the impact of a proposed withdrawal is to be evaluated.
Protection	Maintenance or protection of habitat.

Q

Q₇₋₁₀	Seven-day, ten-year low flow.
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R

Reach	Any defined length of a river or stream.
Redd	A depression in the streambed created by trout or salmon for spawning purposes.
Renormalized minimum weighted usable area	The amount of weighted usable area available for the most limited life stage at each flow, rescaled to a range of zero to unity.
Reproducing trout stream	Stream with naturally reproducing trout population(s).
Riffle	Shallow rapids in a stream where obstructions create waves.
RMWUA	Renormalized minimum weighted usable area.
Run	A part of a stream characterized by rapid velocity and few waves over a significant length.

S

Season	Period of time when the same life stages are present.
Segment	A certain length of a study stream.
Seven-day, ten-year low flow	The smallest flow in a period of seven consecutive days expected to occur, on the average, once every ten years at a particular location along a stream.
Simulation flow	Any flow rate for which depth, velocity and weighted usable area have been computed.
Spawning life stage	Life stage defined herein as including redd construction, laying and incubation of eggs, and immature trout up to the time of emergence from the substrate in the spring of the year.
Spring season	Months of March through June, when adult, juvenile, and fry life stages are present.
Study region	A part of a physiographic province or section assumed to have homogeneous topographic, geologic, hydrologic, and habitat characteristics.
Study site	A representative portion of a study segment selected for detailed data collection and modeling.
Study stream	A stream selected from lists of trout streams and assumed to be representative of other trout streams in the same study region.
Substrate	The material on the bottom of the stream channel such as rocks, gravel, or sand.
Summer season	Months of July through September, when only adult and juvenile life stages are present.

T

Time series	A set of values arranged in chronological order.
Transect	A vertical cross section taken across the stream.

U

Univariate suitability criteria	Habitat suitability criteria that vary continuously over the range from zero to unity.
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Unit flow rate (csm) Flow rate per unit drainage area, cubic feet per second per square mile.

W

Weighted usable area Unit of measurement of habitat used in Instream Flow Incremental Methodology; the wetted area of a stream weighted by its suitability for use by aquatic organisms or recreational activity (units of square feet per thousand feet of stream).

Wetted perimeter The length along the bottom and sides of a stream channel, perpendicular to the flow, that is in contact with the water at a particular flow rate.

Wetted perimeter method A method for determining flows that maintain the availability of food based on the relationship of wetted perimeter to flow.

WUA Weighted usable area.

WWTP Wastewater treatment plant.